
# Missouri

## UNDERGRADUATE CATALOG

University of Missouri-Columbia

2001-03

"With thy watchwords Honor, Duty..."
*Old Missouri,* the Alma Mater

# A Statement of Values

The University of Missouri-Columbia, as the state's major land-grant university, honors the public trust placed in it and accepts the associated accountability to the people of Missouri for its stewardship of that trust. Our duty is to acquire, create, transmit, and preserve knowledge, and to promote understanding.

We the students, faculty, and staff of MU hold the following values to be the foundation of our identity as a community. We pledge ourselves to act, in the totality of our life together, in accord with these values.

## Respect

Respect for one's self and for others is the foundation of honor and the basis of integrity. A hallmark of our community is respect—for the process by which we seek truths and for those who engage in that process. Such respect is essential for nurturing the free and open discourse, exploration, and creative expression that characterize a university. Respect results in dedication to individual as well as collective expressions of truth and honesty. Respect is demonstrated by a commitment to act ethically, to welcome difference, and to engage in open exchange about both ideas and decisions.

## Responsibility

A sense of responsibility requires careful reflection on one's moral obligations. Being responsible imposes the duty on us and our university to make decisions by acknowledging the context and considering consequences, both intended and unintended, of any course of action. Being responsible requires us to be thoughtful stewards of resources—accountable to ourselves, each other, and the publics we serve.

## Discovery

Learning requires trust in the process of discovery. Discovery often fractures existing world views and requires acceptance of uncertainty and ambiguity. Therefore, the university must support all its members in this lifelong process that is both challenging and rewarding. As we seek greater understanding and wisdom, we also recognize that knowledge itself has boundaries—what we know is not all that is.

## Excellence

We aspire to an excellence which is approached through diligent effort, both individual and collective. Pursuing excellence means being satisfied with no less than the highest goals we can envision. Pursuing excellence involves being informed by regional, national, and global standards, as well as our personal expectations. We recognize and accept the sacrifices, risks, and responsibilities involved in pursuing excellence, and so we celebrate each other's successes. We commit ourselves to this process in an ethical and moral manner.

*These statements are mere words until we integrate them as values in our individual lives and reflect them in our institutional policies and practices. We pledge ourselves to make them effective in the very fabric of our lives, our community, and all our relationships with others, thereby enhancing the development of individuals and the well-being of society.*

University of Missouri-Columbia

# Table of Contents

**UNIVERSITY OF MISSOURI CURATORS**
**Theodore C. Beckett,** Kansas City
**Paul T. Combs,** Kennett
**Malaika B. Horne,** St. Louis
**Mary L. James,** Harrisonville
**John A. Mathes,** Sunset Hills
**M. Sean McGinnis,** Springfield
**Kathleen Miller,** secretary to the board of curators
**Connie Hager Silverstein,** St. Louis
**Paul W. Steele,** vice president, Chillicothe
**Hugh E. Stephenson Jr., M.D.,** president, Columbia
**Stephen T. Sugg,** student representative

**UNIVERSITY OF MISSOURI ADMINISTRATION**
**Manuel Pacheco,** president UM System
**James Cofer,** vice president for finance & administration
**Stephen Lehmkuhle,** vice president for academic affairs
**Ralph Caruso,** vice president for information systems
**Ronald J. Turner,** executive vice president
**Marvin Wright,** general counsel
**Ken Hutchinson,** vice president of human resources
**Stephen C. Knorr,** assistant to the president of federal relations
**Jim Snider,** assistant to the president of state governmental relations
**David R. Russell,** university relations director

**LEADERSHIP OF THE UNIVERSITY OF MISSOURI-COLUMBIA**
**Richard L. Wallace,** chancellor
**Michael Middleton,** deputy chancellor
**Brady J. Deaton,** provost
**Lori Franz,** associate provost
**Peter J. Markie,** vice provost, undergraduate studies
**Jack Burns,** vice provost for research
**Daniel Winship,** vice chancellor for health affairs
**Kee W. Groshong,** vice chancellor, administrative services
**James N. Bunton,** assistant vice chancellor, administrative services and budget director
**David Housh,** interim vice chancellor, development
**Cathy Scroggs,** interim vice chancellor, student affairs
**Michael Alden,** director, intercollegiate athletics
**Chris Koukola,** assistant to the chancellor for university affairs
**Karen Touzeau,** assistant vice chancellor, human resource services
**Vicki Dennison,** manager, office of the chancellor
**Earl Wilson,** director, School of Accountancy
**Thomas Payne,** dean, College of Agriculture, Food and Natural Resources
**Richard Schwartz,** dean, College of Arts and Science
**Bruce J. Walker,** dean, College of Business
**Richard Andrews,** dean, College of Education
**James E. Thompson,** dean, College of Engineering
**Melvin Platt,** director, School of Fine Arts
**Suzanne Ortega,** vice provost of advanced studies and dean of the Graduate School
**Richard Oliver,** director, School of Health Professions
**Bea Smith,** dean, College of Human Environmental Sciences
**John Wedman,** director, School of Information Science and Learning Technologies
**R. Dean Mills,** dean, School of Journalism
**Timothy J. Heinsz,** dean, School of Law
**William Crist,** dean, School of Medicine
**Albert Vogt,** director, School of Natural Resources
**Rosemary Porter,** dean, School of Nursing
**Barton Weschler,** director, Graduate School of Public Affairs
**Charles Cowger,** director, School of Social Work
**Joe Kornegay,** dean, College of Veterinary Medicine
**Russ Zguta,** chair, Faculty Council
**Paul Morris,** chair, Staff Advisory Council
**Mark Bresnahan,** president, Missouri Students Association
**Adam Brown,** president, Graduate Professional Council
**Dee Esry,** president, MU Alumni Association
**J. Todd Coleman,** assistant vice chancellor, Alumni Relations and Development
**Tom Henderson,** vice provost, Extension
**Jean Zwonitzer,** acting vice provost for Minority Affairs and Faculty Development
**Martha Alexander,** director, University Libraries
**Larry McMullen,** chair, Development Council
**John L. Cook,** chair, Jefferson Club Trustees

# Academic Calendar

| | |
|---|---|
| **Fall Semester** | **2001** |
| Orientation & Registration | Thursday, August 16 |
| Registration | Friday, August 17 |
| Classwork begins, 8:00 a.m. | Monday, August 20 |
| Labor Day recess (no classes) | Monday, September 3 |
| Thanksgiving recess begins, close of day* | Saturday, November 17 |
| Classwork resumes, 8:00 a.m. | Monday, November 26 |
| Classwork ends, close of day* | Friday, December 7 |
| Stop Day | Saturday, December 8 |
| Final examinations begin | Monday, December 10 |
| Fall semester closes, 5:00 p.m. | Saturday, December 15 |
| **Winter Semester** | **2002** |
| Orientation & Registration | Thursday, January 17 |
| Registration | Friday, January 18 |
| Martin Luther King holiday (no classes) | Monday, January 21 |
| Classwork begins, 8:00 a.m. | Tuesday, January 22 |
| Spring recess begins, 12:00 p.m. | Saturday, March 23 |
| Classwork resumes, 8:00 a.m. | Monday, April 1 |
| Classwork ends, close of day* | Friday, May 10 |
| Stop Day | Saturday, May 11 |
| Final examinations begin | Monday, May 13 |
| Winter semester closes, 5:30 p.m. | Saturday, May 18 |
| Commencement | Saturday, May 19 |
| **Summer Session** | **2002** |
| **8-week session** | |
| Orientation & Registration | Monday, June 10 |
| Classwork begins, 7:30 a.m. | Tuesday, June 11 |
| Independence Day recess (no classes) | Thursday, July 4 |
| 8-week session closes, 5:00 p.m. | Friday, August 2 |
| Commencement | Friday, August 2 |
| **First 4-week session** | **2002** |
| Orientation & Registration | Monday, June 10 |
| Classwork begins, 7:30 a.m. | Tuesday, June 11 |
| First 4-week session closes, 5:00 p.m. | Friday, July 5 |
| **Second 4-week session** | **2002** |
| Orientation & Registration | Monday, July 8 |
| Classwork begins, 7:30 a.m. | Monday, July 8 |
| Second 4-week session closes, 5:00 p.m. | Friday, August 2 |

*Close of day is defined as including late afternoon and evening classes.
http://web.missouri.edu/~provost/studentcalendarinfo.html

The faculty is reminded that a substantial number of students may want to observe religious holidays and days of special commemoration. The faculty is encouraged to avoid scheduling exams on such days.

### MU's Notice of Nondiscrimination

The University of Missouri-Columbia does not discriminate on the basis of race, color, religion, national origin, ancestry, sex, age, disability, or status as a disabled veteran or veteran of the Vietnam era. Any person having inquiries concerning the University of Missouri-Columbia's compliance with implementing Title VI of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, Section 504 of the Rehabilitation Act of 1973, the Americans with Disabilities Act of 1990, or other civil rights laws should contact the Assistant Vice Chancellor, Human Resource Services, University of Missouri-Columbia, 130 Heinkel Building, Columbia, Mo., 65211, (573) 882-4256, or the Assistant Secretary for Civil Rights, U.S. Department of Education.

### Accommodations For Students With Disabilities

"The University of Missouri-Columbia complies with the Americans with Disabilities Act and other applicable laws and regulations. If you have a disability and need accommodations in connection with registration or advisement, please contact Disability Services, A038 Brady Commons, Voice (573) 882-4696, TTY (573) 882-8054, as soon as possible so that appropriate arrangements can be made. If you need this information in an alternative format (Braille, large print, audiotape or computer disk), Disability Services can provide assistance."

### Equity in Athletics Disclosure Act

The University of Missouri-Columbia is in compliance with the Equity in Athletics Disclosure Act of 1994, Section 360B of Pub.L. 103-382. This act and accompanying federal regulations require that certain information with regard to intercollegiate athletics, including operating expenses, revenue, salaries and participation rates, be made available to current and prospective students and the public. This report is available by contacting the Department of Intercollegiate Athletics at (573) 882-6501.


## MISSOURI (USPS 651-820)

**General 2001 Series Number 7**

# The University

The University of Missouri-Columbia, with its 20 schools and colleges, is Missouri's flagship university, with the breadth of programs associated with a nationally competitive institution. It is the only campus in the University of Missouri System that offers formal programs in agriculture; forestry, fisheries and wildlife; human environmental sciences; journalism; veterinary medicine; and information science & learning technologies.

Formal areas of study also are conducted in arts and science; business and public affairs; accountancy; education; engineering; health professions; medicine; nursing; law; and social work.

MU is accredited by the North Central Association of Colleges and Secondary Schools. Various schools, colleges and departments are also accredited by their respective professional associations and accrediting agencies.

MU is one of only 32 public U.S. universities, and the only public institution in Missouri, to be selected for membership in the Association of American Universities and designated "Doctoral/Research Extensive" by the Carnegie Foundation for the Advancement of Teaching. AAU members are the nation's most prestigious research institutions.

## MU Students

MU attracts more Curators Scholars, Bright Flight Scholars and valedictorians than any other college or university in the state. More than one-third of MU freshmen ranked in the top 10 percent of their high school classes; more than half were in the top 20 percent.

Students from all 50 states and more than 100 countries live and learn on the 1,340-acre campus. Diversity of backgrounds, opinions and lifestyles improves the overall quality of the student experience. Because on-campus living is an important factor in college success, most first-year students live in University-operated residence halls or University-recognized fraternities or sororities. There are 19 residence halls on campus as well as 45 national social fraternities and sororities, including one Latin sorority and 5 historically African-American sororities and fraternities.

The University has more than 18,000 undergraduate students, who choose courses from a broad range of academic disciplines. Whether students enter the job market immediately after graduation or continue on to advanced study, they find that an MU education — with its broad liberal arts foundation, emphasis on writing and reasoning skills, and directed study in a specialized field — prepares them well. The University also has more than 4,000 graduate students enrolled in more than 90 different degree programs. The graduate student enrollment includes more than 1,000 professional students in law, medicine and veterinary medicine.

## About the Campus

The University of Missouri was established in Columbia in 1839 as the first public university west of the Mississippi River. In 1870, the University was approved as a land-grant university under the Morrill Act of 1862.

In 2002, MU celebrates 163 years of service to the citizens of Missouri. As the largest of the four campuses of the University of Missouri System, MU continues its historic mission through its emphasis on excellence in teaching, research and service.

Approximately one-fourth of MU's budget comes from state appropriations. The sources of the remainder of the budget include private gifts, grants, student tuition and fees and auxiliary enterprises.

MU is unique in Missouri in the comprehensiveness of its educational inquiry. The campus provides a rich environment in which students and teachers can reach beyond traditional fields of study and expand their educational experiences. A broad spectrum of programs is available outside the classroom, including seminars and colloquia, speeches and lectures by well-known public figures, open houses, concerts, a film series, museums, and musical and dramatic productions.

## Mission Statement

*Approved by the Board of Curators, March 20, 1992*

The University of Missouri-Columbia, MU, is the largest and oldest campus of the state's major public research institutions. MU's primary mission in research and doctoral education provides enhanced opportunities and challenges in the undergraduate areas of humanities, arts, and sciences and in selected professional fields and provides the basis for service to the people of the state via outreach programs.

A predominantly residential campus, MU serves select and diverse undergraduate and professional students from all parts of the state. Its graduate students are recruited nationally and internationally. Through its outreach programs, MU meets selected educational and informational needs of Missouri citizens throughout the state.

MU aspires to achieve national and international prominence for its research and educational contributions. It will build on its research strengths in basic and applied biological and biomedical sciences; nuclear and related physical and engineering sciences; and selected social and behavioral sciences. It will strengthen its leadership roles in agriculture and journalism. Because of its large enrollment of undergraduates, MU will enhance the core disciplines required of all those seeking baccalaureate degrees, giving special attention to areas, such as languages and mathematical sciences, that provide the necessary foundation for truly educated citizens.

## UNDERGRADUATE DEGREE PROGRAMS

The University offers the following undergraduate degree programs and emphasis areas (emphasis areas are shown in italic type):

**COLLEGE OF AGRICULTURE, FOOD AND NATURAL RESOURCES**

- **Agricultural Economics (BS)**
- **Agricultural Education (BS)**
- **Agricultural Journalism (BS)**
- **Agricultural Systems Management (BS)**
- **Animal Sciences (BS)**
- **Biochemistry (BS)**
- **Food Science and Nutrition (BS)**
- **General Agriculture (BS)**
- **Hotel and Restaurant Management (BS)**
- **Plant Sciences (BS)**
- **Agribusiness Management (BS)**

**COLLEGE OF ARTS AND SCIENCE**

- **Anthropology (AB)**
- **Art (AB, BFA)**
- **Art History and Archaeology (AB)**
- **Biological Sciences (AB, BS)**
- **Chemistry (AB, BS)**
- **Classics (AB),** *Classical Humanities, Greek, Latin*
- **Communication (AB)**
- **Computer Science (AB)**
- **Economics (AB, BS)**
- **Environmental Geology (AB)**
- **English (AB)**
- **French (AB)**
- **General Studies (BGS)**
- **Geography (AB)**
- **Geological Sciences (AB, BS)**
- **German (AB)**
- **History (AB)**
- **Interdisciplinary (AB)**
- **International Studies (AB),** *East Asian Area Studies, Environmental Studies, European Studies, International Agriculture/Community Development, International Business, Latin American Studies, Peace Studies, Russian Studies, South Asian Area Studies*
- **Linguistics (AB)**
- **Mathematics (AB, BS)**
- **Microbiology (AB)**
- **Music (AB, BM)**
- **Philosophy (AB)**
- **Physics (AB, BS)**
- **Political Science (AB)**
- **Psychology (AB)**
- **Religious Studies (AB)**
- **Russian (AB)**
- **Sociology (AB)**
- **Spanish (AB)**
- **Statistics (AB, BS)**
- **Theatre (AB)**

**COLLEGE OF BUSINESS**

- **Accountancy (BS Acc)**
- **Business Administration (BS BA),** *Economics, Finance and Banking, International Business, Management, Marketing, Real Estate*

**COLLEGE OF EDUCATION**

- **Early Childhood Education (BS Ed)**
- **Educational Studies (BES),** *Curriculum and Instruction, Interdepartmental, Practical Arts and Vocational-Technical Education*
- **Elementary Education (BS Ed),** *Elementary Education, Elementary School Art, Elementary School Music*
- **Secondary Education (BS Ed),** *Art Education, Behavioral Science, Biology, Business and Marketing Education, Chemistry, Earth Science, French, General Science, German, Italian, Language Arts, Latin, Mathematics Education, Music Education, Physics, Social Studies, Spanish, Technical Education*

**COLLEGE OF ENGINEERING**

- **Biological and Agricultural Engineering (BS BE)**
- **Chemical Engineering (BS ChE)**
- **Civil Engineering (BS CiE)**
- **Computer Engineering (BS CoE)**
- **Computer Science (BS)**
- **Electrical Engineering (BS EE)**
- **Industrial Engineering (BS IE)**
- **Mechanical and Aerospace Engineering (BS ME)**

**SCHOOL OF HEALTH PROFESSIONS**

- **Communication Science and Disorders (BHS)**
- **Occupational Therapy (BHS)**
- **Preprofessional Physical Therapy (BHS)**
- **Radiologic Sciences (BHS),** *Radiography, Nuclear Medicine Technology, Radiation Therapy Technology*
- **Respiratory Therapy (BHS)**

**COLLEGE OF HUMAN ENVIRONMENTAL SCIENCES**

- **Consumer and Family Economics (BS HES)**
- **Environmental Design (BS HES)**
- **Human Development and Family Studies (BS HES)**
- **Nutritional Sciences (BS HES),** *Medical Dietetics, Nutrition and Fitness*
- **Textile and Apparel Management (BS HES)**

**SCHOOL OF JOURNALISM**

- **Journalism (BJ),** *Advertising, Broadcast News, Magazine, News Editorial, Photojournalism*

**SCHOOL OF NATURAL RESOURCES**

- **Fisheries and Wildlife (BSFW)**
- **Forestry (BSF)**
- **Parks, Recreation and Tourism (BS)**
- **Soil and Atmospheric Sciences (BS)**

**SCHOOL OF NURSING**

- **Nursing (BSN)**

**SCHOOL OF SOCIAL WORK**

- **Social Work (BSW)**

**THE FOLLOWING INTERDISCIPLINARY MINORS ARE OFFERED:**

**Aerospace Studies, Black Studies, Consumer & Family Economics, Entomology, Extension Education, Film Studies, Geographic Information Science, Military Science, Natural Resources, Peace Studies, Pest Management, Plant Pathology, Women Studies**

# Admission Procedures

Applicants should complete the application form and send it along with the application fee to the Director of Admissions, 230 Jesse Hall, Columbia, MO, 65211. Transcripts should be sent to the same address. Students can also apply via the World Wide Web: http://www.missouri.edu

The following criteria are employed to determine admissibility to the University of Missouri-Columbia. Meeting the minimum requirements, however, does not guarantee admission. The Office of Admissions will notify applicants in a timely manner whether they have been accepted, denied, or placed on a waiting list.

**FRESHMEN** Admission to the freshman class is based on a student's probability of success with MU course work. Admissions criteria is based on a combination of the student's class rank, standardized test scores and high school course work. The core high school work required by MU includes four units of math (Algebra I and higher), four units of English, three units of science, three units of social studies, two units of the same foreign language, and one unit of fine art.

**TRANSFER STUDENTS** Transfer students are admitted based on their past academic performance and probability of success at MU. Transfer applicants must have all official transcripts from all colleges attended sent to the Admissions Office before their application can be evaluated. Transfer admission requirements varies significantly with some programs on campus, so interested students need to request further information from the Office of Admissions, or see the transfer of credit section in the Academic Regulations section of this catalog and in the individual college and school sections.

**INTERNATIONAL STUDENTS** More than 1,152 students from more than 110 countries currently are enrolled at MU. All prospective students who are neither U.S. citizens nor permanent residents of the United States should write to the International Admissions Office, 230 Jesse Hall, Columbia, MO, 65211. This office is responsible for answering all initial inquiries about admission to the University.

In addition to the English language requirement for admission, all undergraduate international students are required to take the English Language Support Program Test prior to registering for courses.

**PREVIOUSLY ENROLLED STUDENTS** Students who are returning to MU after an absence of at least one semester must contact the Office of Admissions in 230 Jesse Hall, Columbia, MO, 65211 to apply for readmission.

**COLLEGES AND SCHOOLS TO WHICH FRESHMEN MAY BE ADMITTED** Freshmen may enter the colleges of Agriculture, Food and Natural Resources, Arts and Science, College of Business, Education, Engineering, and Human Environmental Sciences and the schools of Natural Resources, Nursing, Health Professions and Social Work.

**SCHOOL TO WHICH JUNIORS MAY BE ADMITTED** Students who have met the entrance requirements may enter the School of Journalism as juniors.

**RECIPROCAL AGREEMENTS** Under reciprocal agreements between states, students from Kansas may attend the School of Natural Resources in forestry, and students from Nebraska may attend in fisheries and wildlife, forestry, occupational therapy and respiratory therapy with exemption from non-resident tuition. Students from Missouri are also eligible to apply to the architecture schools of The University of Kansas/ Kansas State University at in-state student tuition rates. A limited number of out-of-state waivers are available.

**RECIPROCAL AGREEMENTS Nebraska-Missouri Agreement for Exchange of Students** By joint agreement of the Board of Regents of the University of Nebraska and the Board of Curators of the University of Missouri System, qualified Missouri students may enroll at the University of Nebraska in certain educational programs and be charged fees at the rate paid by Nebraska residents. A qualified student is one who meets the residence requirements of MU and who meets the minimum academic admission requirements of the University of Nebraska. Undergraduate programs available for Missouri students include architecture, community and regional planning, construction management and actuarial science.

All graduate programs (not including professional degrees) at both institutions are available in a separate agreement under which eligible persons from either state are treated as residents. ***For further information, call or write the director of admissions at the institution offering the specific program.***

**KANSAS - MISSOURI AGREEMENT FOR EXCHANGE OF STUDENTS** By joint agreement of the Board of Regents of the State of Kansas and the Board of Curators of the University of Missouri, qualified students who are eligible to pay only resident fees at the University of Missouri may enroll in certain educational programs at the University of Kansas or Kansas State University and be charged fees at the rate paid by Kansas residents. Conversely, qualified students who are eligible to pay only resident fees at the University of Kansas or Kansas State University may enroll in certain educational programs on one of the campuses of the University of Missouri and be charged fees at the rate paid by Missouri residents.

An additional reciprocal tuition agreement exists between the Kansas Board of Regents, the Missouri Coordinating Board for Higher Education, and the Curators of the University of Missouri for Missouri residents desiring to enroll in architecture programs at the University of Kansas and Kansas State University and Kansas Students desiring to enroll in Dentistry programs at the University of Missouri-Kansas City or in Optometry programs at the University of Missouri-St. Louis. For further information about these programs, please contact the Admissions office at the institution offering the program in which you are interested.

**MIDWEST STUDENT EXCHANGE PROGRAM** The Midwest Student Exchange Program is an interstate initiative established by the Midwestern Higher Education Commission (MHEC) to increase educational opportunities for students in its member states. This program enables residents of **Kansas, Michigan, Minnesota, Missouri** and **Nebraska** to enroll in designated institutions and selected programs at reduced tuition levels outside of their home state.

# Preprofessional Admission Programs

High school seniors and MU freshmen with an ACT composite score of 30 or a minimum SAT score of 1300 are eligible to apply to the **Conley Scholars Program (CSP).** This program guarantees acceptance into the School of Medicine, upon completion of undergraduate and CSP requirements. Application materials are available in the School of Medicine's Office of Medical Education. Completed application files will be reviewed, with selected applicants invited to interview at the medical school.

Conley Scholars are required to take a minimum of one year of course work in biology, organic chemistry and physics, earning an A or B grade in these required courses, and maintaining a minimum cumulative grade point average of 3.3. Program participants also are required to complete 20 credit hours of honors courses and meet the School of Medicine's expectations of outstanding personal development.

The School of Law has established the **Judge Ross Roberts**

**Scholars Program,** which guarantees admission to an undergraduate student who enrolls at MU as a freshman under the program and meets the following criteria:

- Receives an ACT composite score of 30 or an SAT score of 1300 or higher
- Has a cumulative grade point average of 3.3 for all undergraduate work at the completion of all undergraduate course work
- Receives a bachelor's degree from MU

Students who fulfill these three requirements are assured of admission to the School of Law. Their score on the Law School Admission Test (LSAT) is not a factor. However, the LSAT score is used for purposes of determining eligibility for law school academic scholarships.

Qualified students must enroll under the Roberts Scholars program either at the beginning of or during their freshman year and must so advise the University admissions office. At the time they apply for admission to the law school, students will be required to complete normal admission requirements. Students who do not meet the required levels of performance for the Roberts Scholars program may still apply for regular admission to the School of Law.

MU freshmen and high school seniors with an ACT composite score of 30 or a minimum SAT score of 1300 are eligible to apply to the **Pre-Veterinary Medicine Scholars Program (PVMSP)**. This program guarantees acceptance into the Veterinary Medical College upon completion of undergraduate and PVMSP requirements. Application materials are available in the Veterinary Medical College's office of Academic Affairs. Pre-Veterinary Scholars are required to average 15 hours of course work a semester, earn an A or B grade in required courses and maintain a minimum cumulative grade point average of 3.3. Program participants are also required to observe veterinarians at work and attain a minimum composite score of 50 on the Veterinary College Admissions Test (VCAT).

***For additional information, students should write the Honors College, 211 Lowry Hall, or call (573) 882-3893.***

# Academic Assessment

The Board of Curators has required that all undergraduate students participate in the assessment process at several points during their undergraduate careers. The assessment process is designed to gather data to be used to improve teaching, learning, and programs at the University. Under the process:

- All newly entering freshmen are expected to take the ACT prior to enrolling.
- All students are expected to participate in the assessment of proficiency in their major fields as seniors.
- Students are expected to participate in the assessment of general education during their undergraduate careers.
- Students may be expected to participate in other assessment activities (writing or questionnaires) as undergraduates.

**MAJOR FIELD ASSESSMENT** Prior to graduation, all seniors will participate in assessment of their mastery of course work in their major field. The assessment program will be determined by the faculty of each department to measure the extent to which students are achieving instructional goals and outcomes for graduates in that field. The methods of assessment will be appropriate to the educational goals for students in their respective major fields. Methods might include:

- Nationally normed examinations
- Admission tests taken by pre-professional students, such as SAT, MCAT, and VAT
- Portfolio review
- Performance review
- Capstone project
- Faculty-developed exit examinations
- Exit Interviews

**GENERAL EDUCATION ASSESSMENT** Prior to graduation, all students will participate in a general education assessment examination. The assessment program will be determined by the MU Academic Assessment Committee and will address general education competencies of MU students in areas to include mathematics, science reasoning, reading, writing and critical thinking.

# Special Academic Programs and Services

**DISABILITY SERVICES** The Office of Disability Services provides accommodations and support services, within the resources of the University, which will ensure all students with disabilities the opportunity to competitively pursue a college education limited only by their abilities, not their disabilities. Our services include learning disabilities and attention deficit disorder support, testing accommodations, auxiliary aids and classroom accommodations, and personal assistant referrals and training. Accommodations may include:

- Extra time on exams
- Distraction-reduced testing rooms
- Textbooks on tape
- Notetakers
- Readers, Scribes
- Adaptive equipment
- Interpreters

For more information write the office at A038 Brady Commons or call (573) 882-4696 or TTY (573) 882-8054.

***For more information, write the office at AO38 Brady Commons or call (573) 882-4696 or TTY (573) 882-8054.***

**OFFICE OF ACADEMIC RETENTION SERVICES** The Office of Academic Retention Services provides academic support programs and services for minority students, giving personalized attention to their interests and needs as they pursue their undergraduate degree at MU. Some of the programs coordinated through this office include the Summer Transition Program, the MAP PROGRAM, the Coca-Cola Ambassadors Program, a paraprofessional program, along with an array of services that connects students to other MU resources. Through many informal activities and special programs, such as orientation, monthly workshops, intercession advising, mid-semester progress checks, and academic recognition activities, students receive invaluable information that can assist them in reaching their fullest potential, as well as help make the MU experience an enriching one.

*The office is located in 85 McReynolds Hall. For additional information, stop by or call (573) 882-9208.*

**BLACK STUDIES** An interdisciplinary area of concentration in Black Studies can be designed in the College of Arts and Science. Students seeking a minor in Black Studies take a minimum of 15 hours of Black Studies courses within the College of Arts and Science. Black Studies' core curriculum consists of a foundation course, BLKST 100: Introduction to Black Studies; and a course in each of its three content areas — History, Society and Culture. One of these must focus on black women. Students are also encouraged to take a course in three regional areas of study: Africa, African-America, and the Black Diaspora.

Students are required to take Black Studies 100. A minimum of six hours must be in courses numbered 200 or above. At least nine of those hours must be in courses other than readings, methods, techniques or problems. In addition, a maximum of three hours of the minor can be taken in Black Studies courses outside of the College of Arts and Science.

***For additional information, see Black Studies in the Department and Courses section of the catalog.***

***Information on course offerings dealing with the black experience and on the Black Theatre Workshop is available at the Black Studies Office, 313 Gentry Hall, (573) 882-6229.***

**THE CAMPUS WRITING PROGRAM (CWP)** was founded in 1985 to improve students' language abilities—writing, speaking, reading, listening, and especially thinking—through "Writing Intensive" (WI) courses. CWP provides funding and training for graduate teaching assistants who assist with WI courses of 40 or more students and sponsors regular informal discussion sessions on writing. CWP's **Writing Intensive Tutorial Ser-**

**vices** employs several graduate students each semester to tutor undergraduates enrolled in WI courses.
***For further information, contact the Campus Writing Program, 325 General Classroom Building, (573) 882-4881, www.cwp.missouri.edu***

**CENTER FOR DISTANCE AND INDEPENDENT STUDY** A broad curriculum of approximately 160 university courses is available through independent study. Each course has been approved and is offered by an academic department at one or more of the four University of Missouri campuses.

Independent study provides a valuable learning alternative for students when scheduling conflicts, financial problems, or other barriers interrupt the flow of education. Students can enroll in independent study any time of the year and take up to nine months to complete each course. The Board of Curators has stipulated that credit earned through independent study may be applied toward a bachelor's degree, subject to the approval of the college or division offering the degree. Students should consult their adviser or dean's office before enrolling in an independent study course. Independent study courses designated as "video" courses use videotapes to accompany the printed course materials; video courses carry University of Missouri resident credit.

The independent study curriculum includes traditional print-based courses. Students who enroll in these courses receive a study guide that provides all lesson assignments and instructions needed to complete the course. Students can submit completed lesson assignments to the Center for processing either in person, by mail, or online for most print-based courses.

In addition, the Center offers an online curriculum with courses that are accessed online. Students who enroll in these online courses use the Internet to access their study guide and complete their assignments.

Textbook and other supplementary materials required to complete independent study courses are available and can be purchased from the Center's bookstore. Most courses require two supervised examinations, which are administered at the Center and other designated testing areas.

The Center for Distance and Independent Study catalog is available in Ellis Library, the Office of Admissions at 230 Jesse Hall, the Brady Commons activities office, and at the Center for Distance and Independent Study at 136 Clark Hall, Columbia, MO, 65211, (573) 882-2491 or 1-800-609-3727. By accessing the Center for Distance and Independent Study's web site, http://cdis.missouri.edu, students can enroll in a course, submit lessons for computer-evaluated, online, and some faculty-evaluated courses, access their online courses, review course offerings, request a course exam be sent to an exam proctor, request a course bulletin, send the Center a message, check their status in their independent study courses, change their address, and view their account balance.

**INTERNSHIPS/COOPERATIVE EDUCATION** Internships/Cooperative Education offers qualified students the opportunity to explore majors and careers through employment in business, industry, government and other organizations. Employment is directly related to the student's academic major and career objective. In addition to Internships/Cooperative Education, students may also find academic and career-related experience through other Career Center programs like part-time jobs, volunteering, service learning, summer camps, work abroad, and work study.
***The Career Center is located in the Student Success Center on Lowry Mall. Stop by, call (573) 882-6801 or (573) 882-JOBS or visit our Web site at http://career.missouri.edu.***

**EASY ACCESS PROGRAM** The easy access program is intended to serve non-degree-seeking individuals. Community residents who are high school graduates may register for any course on a space-available basis without providing previous transcripts. Compliance with course prerequisites is necessary and is the student's responsibility.

Students who have completed work at another institution must provide evidence of eligibility to re-enroll. They do so by presenting a letter of good standing from the institution or completing a provisional form until a letter is received. Students on dismissal status from any institution, including MU, are not eligible to participate in this program until one year has elapsed since their dismissal.

Easy access students may elect to receive grades and undergraduate credit for their courses. Payment of fees is on the same basis as regularly enrolled undergraduate students. Easy access students may enroll only as part-time students (maximum of six hours a semester or three in the summer). If easy access students later decide to become regular students, they must apply to MU for a future semester. Credit received while enrolled in easy access will be evaluated by the division selected for enrollment. A student regularly enrolled in a division cannot transfer to easy access during the semester.

**INTENSIVE ENGLISH AND ENGLISH LANGUAGE SUPPORT PROGRAMS** The Intensive English Program (IEP) offers international students opportunities to acquire the language proficiency and study skills needed to function successfully in an American university environment. The IEP offers 25 hours of instruction each week in reading, composition, grammar, pronunciation, vocabulary and note-taking. Simultaneous enrollment in academic course work is not permitted.

The English Language Support Program (ELSP) offers supplemental English language courses for MU's international students and visiting scholars. Instruction emphasizes reading, writing and speaking skills. Placement in language course work is based on the results of the MU English Language Test administered at the beginning of every academic term.
***For additional information on either program, write or call IEP/ELSP, 208 McReynolds Hall, (573) 882-7523.***

**INTERDISCIPLINARY STUDIES** is a College of Arts and Science program that affords students the opportunity to self-design their areas of concentration. Students with very specific career plans and goals, not easily accommodated in any one department, may find this program suited for their needs.
***For additional information, see Interdisciplinary Studies in the Departments and Courses section of this catalog, or write or call the Office of Special Degree Programs, 210 Switzler Hall, (573) 882-6060.***

**INTERNATIONAL CENTER** The center provides coordination of study abroad, international student advising, international fellowships and special-event programming. The Study Abroad Office offers information and advising on programs throughout the world. Center staff also coordinate applications for Fulbright, NSEP and other fellowships for international graduate study. The center supports International House, a residential learning community in Laws Hall. The Office of International Student and Scholar Services provides comprehensive non-academic advising to MU's international community of 2,000 students, faculty, staff and visiting scholars from 100 countries. The center administers Curators Grant-in-Aid Awards for undergraduate and graduate international students. The center staffs the campus-wide Council on International Initiatives and its Global Scholars Program. MU's Intensive English Program (IEP) and English Language Support Program (ELSP) are administered by the center.
***Additional information is available from the center at N52 Memorial Union, (573) 882-6007 or at http://www.missouri.edu/~icweb/.***

**INTERNATIONAL STUDENTS** The International Student and Scholar Services Office in N52 Memorial Union provides special services for international students, including advice

about non-immigrant status and employment. Working with the International Programming Committee (MSA), the office coordinates cultural and educational programs and advises international student organizations.
***For more information, call (573) 882-6007.***

**INTERNATIONAL STUDIES** is a multi-disciplinary program offered through the College of Arts and Science in cooperation with the College of Agriculture, Food and Natural Resources and the College of Business. Designed to accommodate pre-professional interests as well as provide a sound foundation for more advanced study at the graduate level, this degree offers a broad course of liberal studies with a strong intercultural and international focus.
***For additional information, see International Studies in the Departments and Courses section of this catalog, or write or call the Office of Special Degree Programs, 210 Switzler Hall, (573) 882-6060.***

**MID-MISSOURI ASSOCIATED COLLEGES AND UNIVERSITIES (MMACU)** MMACU was formed in 1964 to encourage the sharing of experiences and resources among its members. In addition to MU, consortium institutions include William Woods University, Stephens College, Westminster College, and Lincoln University. Full-time undergraduate students of the five MMACU institutions may take courses for credit at any of the five campuses — on a space-available basis with the permission of their home institution. The intent of cross-registration is to support students' educational needs when a desired course is unavailable at the home institution or when there are inherent schedule conflicts. To qualify for cross-registration, a student must be in good academic standing and enrolled full-time as an undergraduate. (MU defines full-time as 12 or more credit hours during the fall and winter semester, six or more credit hours during the summer, which includes hours taken at the cooperating institution.)
***Forms and additional information are available from the MMACU office, 111 Jesse Hall, (573) 882-6598.***

***THE MISSOURI REVIEW* AND INTERNSHIPS IN LITERARY PUBLISHING** *The Missouri Review* is a nationally acclaimed literary magazine, publishing fiction, poetry, essays, interviews and special features of literary interest. Those special features include The Found Text Series of never-before-published work by the literary giants of the past and the History as Literature series of diaries, journals and letters of the people who lived through the events crucial to our history. The magazine is widely recognized as one of the best literary magazines in the country. *Writer's Digest* has called it one of the most influential literary magazines in the country, and Pulitzer Prize-winner Robert Olen Butler said it is "quite simply, one of the best literary journals in the world."

English 305 offers internships in literary publishing in which students have the opportunity to study with the editors and gain practical experience on the magazine. The purpose of the course is to learn as much as possible about literary magazines and the process of editing. Students will participate in the actual editing of future issues of *The Missouri Review.* Because the most difficult aspects of literary editing involve a detailed sense of style, much of the work will arise from particular manuscript decisions.

**RESERVE OFFICER TRAINING CORPS** The Army, Navy and Air Force ROTC programs offer college men and women the opportunity to become commissioned officers in the military service of their choice. On completing ROTC course requirements and receiving a bachelor's or advanced degree, the student is commissioned. Active duty commissioned officers earn starting salaries of more than $30,000 a year and are assigned leadership positions that provide valuable managerial experience.

There is no obligation connected with taking ROTC during the freshman and sophomore years. Obligations begin only at the start of a student's last two years of college or when a student activates a scholarship as a sophomore or later. All scholarship recipients and students in the last two years of an ROTC program receive $200-400 monthly during the academic year. Two- three- and four-year scholarships are available to students taking ROTC. These scholarships pay tuition, fees, books and $200-400 a month.

ROTC scholarship recipients are also eligible to receive one of 48 University of Missouri Leadership Grants designated specifically for ROTC students. The Leadership Grant is applied toward the cost of room and board and varies in amounts but is currently $2,500. Each ROTC Commander has 16 grants (renewable) to award each year to incoming freshmen and transfer students.
***For program requirements, see Aerospace Studies, Military Science and Naval Science in the Departments and Courses section of the catalog.***

**SERVICE LEARNING** The Office of Service Learning promotes academically-based community service on a campus-wide basis, to support formalized partnerships with community agencies and organizations, and to provide MU undergraduates with service placements that meet critical community needs and are responsible and respectful to students as learners. Our mission is to create an expectation of service to others as an integral part of students' academic experiences at MU.
***For further information, write the office at 208 Lowry Hall or call (573) 882-0227. A Web site is available at http://www.missouri.edu/~servlrn/.***

**GENERAL STUDIES** A program that provides a format to accommodate a variety of student needs and may be of particular interest to adults returning to school and to students with specific but unusual interests. Each degree is tailored to fit a student's needs and interests.
***For additional information, see the College of Arts and Science section of this catalog, or write or call the Office of Special Degree Programs, 210 Switzler Hall, (573) 882-6060.***

**LEARNING CENTER** The Learning Center is an academic assistance unit that helps students in many of the general education courses required of freshmen and sophomores at Mizzou. During a typical academic year, approximately 60 percent of MU freshmen and 35 to 40 percent of all undergraduates participate in one or more Learning Center activities. Students are encouraged to work together and to become active, effective, and efficient learners.

- **Tutoring** Regularly scheduled tutoring sessions are available in many introductory courses in mathematics, the sciences, and foreign languages. Sessions are offered for mathematics courses such as algebra (Math 5, 10A, 10B & 14), finite mathematics (Math 60), and calculus (Math 61, 80, 108 & 175). Other courses with weekly tutoring sessions normally include biology, chemistry, computer science, economics, Spanish, physics, statistics, or other courses with large freshmen and sophomore enrollments. Sessions typically include a review of the week's content in the course, problem-solving strategies, and a question and answer period. Test reviews are offered before major tests in many of the tutoring sessions. Times and locations of tutoring sessions and exam reviews are announced in class and on our Web page at http://web.missouri.edu/~lcwww.
- **Student Support Services Grant** Students eligible for this grant, administered by the Learning Center, may receive individual tutoring for courses where group tutoring is not available and when effective tutors are available.
- **The Writing Lab** The lab serves as a resource for students at any point in their writing process, from interpreting texts and information to composing, organizing, revising, and editing. The lab offers one-to-one assistance and sometimes small-group sessions and workshops. In addition to addressing content issues, writing assistants help students learn advanced writing technologies, including electronic mail, Internet information resources, and word processing. Most students who use the lab are working on writing in composition (English 20) or in lower level classes, but students from courses across disciplines (non-Writing Intensive courses) seek assistance as well.
- **The Online Writery** This Web site offers a wide range of

writing help including an e-mail discussion list (writing@lists.missouri.edu), a real-time discussion site (ZooMoo at moo.missouri.edu 8888), and numerous links to writing resources. All MU students, local and distant, may ask questions, receive comments on papers they are drafting, consult with cybertutors, and access useful information. The writery is open every day, all day, at http://web.missouri.edu/~writery.

- **Reading and Study Skills Program** This program provides one-to-one instruction in note taking, note handling and text handling strategies, as well as strategies in preparing for and taking different kinds of quizzes and examinations. Instruction in reading comprehension and rate improvement, previewing and reviewing techniques is also available on a one-to-one basis.
- **Learning Strategies for College Students: The First Year Experience (T42)** The Reading and Study Skills Program coordinates this credit-bearing course, which has proven to be very effective in helping freshmen and transfer students make comfortable transitions into their academic and social lives at MU.

**Undergraduate and graduate students who wish to apply to be tutors should complete an application form, available at the Learning Center's main office, 100 Student Success Center, (573) 882-2493.**

**STUDY ABROAD OFFICE** The office staff advises students who plan to study in other countries, coordinates MU-sponsored programs in Europe, Africa, Asia and Latin America, assists with registration and credit transfer, and maintains a resource center with information on more than 2,000 programs throughout the world.
***The office is located in the International Center at N52 Memorial Union (573) 882-6007.***

**WOMEN STUDIES** Students can design an interdisciplinary major and minor in women studies in the College of Arts and Science. Descriptions of women studies courses and degree requirements are included in the Departments and Courses section of this catalog.
***Information on current course offerings and programs is available from the Women Studies Office, 309 Switzler Hall, (573) 882-2703.***

# Student Affairs

The Vice Chancellor for Student Affairs, located in 211 Jesse Hall, provides administrative and educational leadership for the following departments: Campus Dining Services; Career Center; Counseling Center; Recreational Services; Residential Life; Student Life; Student Life Studies and Student and Auxiliary Services.

These departments exist as support units to enhance the teaching, research and service missions of the University. They are dedicated to actively influencing the University environment and contributing to the total education of MU students.

**CAMPUS DINING SERVICES** (CDS) operates several food-service facilities on campus, from residence halls to food courts. Every residential contract includes meal plan services; however, any student may purchase a meal plan. By signing up for the Mizzou Meal Plan Program, students can spend more time studying, being with friends and participating in clubs and athletics, rather than shopping for groceries, preparing meals and doing dishes. Students who sign up for the program can dine at eight convenient locations, including four all-you-can-eat facilities and four takeout facilities. Menu selections include traditional entrees, vegetarian options, pasta bar, salad bar, grilled sandwiches, deli, pizza, desserts and various beverages. Operating hours vary by location, starting as early as 6:50 a.m. and running until 11 p.m.

Other food services operated by CDS include Brady Food Court in Brady Commons, which features well-known eateries such as Burger King, Chick-fil-A, Taco Bell and Pizza Hut. There's also Union Square food court in Memorial Union, featuring three restaurants and the Applause! coffeehouse. Snacks and meals are also available at three convenience stores and three Subway sandwich shops.

Food purchased at the food courts, convenience stores and Subway shops is not included in the Mizzou Meal Plan Program. Students may make purchases at these places with cash, or with their student ID, provided they have an E.Z. Charge or UPfront account activated on their student ID.
***For more information on these services, call (573) 882-3663 or visit http://www.missouri.edu/~mufood.***

**CAREER CENTER** The Career Center provides walk-in services to all students. Through extensive resource information, including resource people, printed materials, assessments and a computer lab dedicated to career development, the Career Center can help struggling students select a major or define their career goals. For students who need job experience, the center can help them find a co-op internship, community service position or part-time job. The center also assists students qualified for work-study. Graduating students can drop by and receive help with their cover letters, resumes and thank-you notes. Networking and job-search skills also are taught.
***For more information, stop by the Career Center, located at 110 Noyes Hall, call (573) 882-6801 or 882-JOBS, or visit our Web site at http://www.missouri.edu/~cpcwww.***

**COUNSELING CENTER,** 119 Parker Hall, provides free, confidential counseling for individuals with personal, educational or vocational concerns. The Counseling Center is open from 8 a.m. to 5 p.m. each weekday. In the fall and winter semesters, the Counseling Center stays open until 6:30 p.m. on Tuesday and Wednesday evenings. Group counseling, testing services, a biofeedback and stress management clinic and a self-help center also are available.
***Call (573) 882-6601 for more information or visit our Web site at http://web.missouri.edu/~councwww.***

**TESTING SERVICES,** housed and administered within the MU Counseling Center, offers graduate and professional admissions tests, placement tests, credit-by-examination tests, the ACT (scores sent to MU only), licensure and credentialing exams, high school equivalency tests and other examinations, both on paper and computer-based. The Computer Based Testing facility at MU is the designated Columbia-area location for students wishing to take the computer-based GRE, GMAT, TOEFL and other tests, which can be scheduled at convenient individual appointment times year-round. Testing Services also administers clinical tests for the Counseling Center.
***Testing Services' main office, located at 205A Parker Hall, can be reached by calling (573) 882-4801. Computer Based Testing, located at 207 Parker Hall, can be reached by calling (573) 884-0911.***

**MISSOURI UNIONS** The Memorial Union and Brady Commons are hubs of student activity. The Memorial Union serves as a meeting and programming center for student and university organizations, conferences and special events, such as graduation parties, weddings and dances. In addition to meeting and event rooms, Memorial Union is home to the Union Square food court, Applause! coffeehouse, a computer lab/computer services outpost, a digital media center, study areas, the International Center, the Asian Affairs Center, University Catering and Jesse Wrench auditorium. The Student Union Programming Board operates out of the union, providing educational, cultural and social programming for students in both Memorial Union and Brady Commons.

Brady Commons serves as the home to many student organizations and University offices, including the Center for Student Involvement (student activities), student government associations, student newspapers, the volunteer center, the Wellness

Resources Center, Office of Student Life, Office of Multicultural Affairs, Disability Services and the Women's Center. In addition to meeting rooms, Brady Commons offers a food court, University Bookstore, Computer Spectrum, a bank, copy center, convenience store, hairstyling salon, student credit union, ATM, craft studio and darkroom, T.A. Brady's Snack, Rack and Bowl, featuring bowling, billiards and video games.
***For more information, call (573) 884-8793 or visit http://www.unions.missouri.edu.***

**RECREATION SERVICES** is a unit of Student Affairs. See page 14 for more information.

**RESIDENTIAL LIFE** is a unit of Student Affairs. See pages 14 and 15 for more information.

**STUDENT LIFE** The Department of Student Life oversees student activities, leadership development and co-curricular learning. Through its diverse units, professional staff and educational programming. Student Life works as a partner with students in an effort to enhance the overall quality of each student's life.
***For more information about involvement with the Department of Student Life, call (573) 882-3621 or visit our Web site at http://web.missouri.edu/~stulife/.***

***Black Culture Center*** The Black Culture Center advocates and supports the educational, social and cultural endeavors of MU's African-American collegians, faculty, staff and community members. We provide students and administration with cultural and social events that are unique and illuminate the particular experiences of African-Americans. We accomplish this by furnishing a miscellany of educational programs and cultural events, which serve as catalysts for intellectual, social and spiritual development.

The new Black Culture Center, located at 813 Virginia Ave., is an 11,000-square-foot facility that has meeting and conference room space that may be reserved for programs that seek to explore and foster cultural awareness. The BBC also houses a 20-terminal computer lab that is available to all students, faculty and staff. The BBC is open Monday through Thursday from 8 a.m. to 9 p.m. and Friday from 8 a.m. to 5 p.m. Saturday and Sunday hours are noon to 6 p.m. The computer lab is also open Monday through Thursday from 7 a.m. to 1 a.m., Friday 7 a.m. to 7 p.m., Saturday 10 a.m. to 7 p.m., and Sunday from 1 p.m. to 1 a.m.
***For more information call (573) 882-2664.***

***Campus Activities*** The Campus Activities Unit, in partnership with the student governments (MSA/GPC), plans entertaining activities, educational events and programs on campus. Student activities range from a film series to major concerts and performances by well-known comedians. Festivals and other free events also are offered, including a tutorial reference service, activities fairs and an off-campus housing list. Recent concerts and events have included Ricky Smiley, Lewis Black, Matchbox 20, and Wyclef Jean, the Mystical Arts of Tibet, and Second City Comedy Improv.
***For more information call (573) 882-3780.***

***Clubs/Organizations and Activities*** The Student Life department hosts a network of more than 350 student-run organizations, including clubs that reach a wide spectrum of interests, from sports clubs to religious and service organizations, to special interest groups and graduate student groups.
***More information on these organizations, along with a searchable index, can be found at Student Organization web site: http://www.students.missouri.edu/~somt/ or at the Center for Student Involvement, A022 Brady Commons, 882-3780.***

***Craft Studio*** The MSA/GPC Craft Studio and Darkroom provide recreational and educational facilities that support and encourage the visual arts by offering a variety of art-related workshops as well as individual access to studio space. The Brady Commons Gallery, 203 Brady Commons, offers gallery exhibitions. The facilities also offer joint programming with University departments.
***For more information call (573) 882-2889.***

***Lesbian/Gay/Bisexual/Transgender (LGBT) Resource Center*** The center, located at 230 Brady Commons provides a safe space for the LGBT community and its allies. The center offers a wide range of resources from books, journal and newspaper articles to videos. These resources are available to anyone for personal, professional or academic use. The center also coordinates educational discussions for classes and other groups and works with the graduate and professional student LGBT organization, as well as with undergraduate and faculty/staff groups and ally organizations.
***For more information, call (573) 884-7750.***

***Greek Life*** MU has a strong Greek tradition with fully 25 percent of the undergraduate student body going Greek. Fraternities and sororities serve as social organizations that provide members with direction and opportunity for productive citizenship. Greek chapters have been founded on three strong traditions, including scholarship, leadership and service. Students will find joining a Greek organization beneficial to their academic careers, as many chapters offer programs such as study and quiet hours and mentoring. Within the Greek community, leadership opportunities abound, with a for-credit leadership class offered to Greek students. Another important facet of Greek life centers around service and philanthropic events. Annually, MU Greeks raise $250,000 and give 15,000 hours to community service. Formal rush for both men and women occurs the week before fall classes begin. There are 46 national social fraternities and sororities on the Columbia campus, six of which are historically African-American. Most fraternities and sororities operate a chapter house that serves as the focus for their organizational activities.
***For more information, call or write the Greek Life office, A016 Brady Commons, (573) 882-8291.***

***Missouri Student Federal Credit Union*** provides convenient, low-cost financial services designed to meet the needs of MU students. It also gives volunteer, student employees the opportunity to gain valuable, career-related experience in banking and finance.
***The credit union is located at 23 Brady Commons, (573) 443-8462.***

***Multicultural Affairs*** This office advises and supports domestic ethnic, religious and gay/lesbian/bisexual/transgender minority students and minority student organizations. It works in conjunction with minority student organizations to develop programs that explore issues of diversity, celebrate minority cultures and develop the fundamental skills necessary to navigate the university environment. The office advocates for minority student concerns and actively works to ensure that the university culture is sensitive to minority student needs. This office coordinates programs that encourage cross-culture communication to further mutual acceptance and positive interaction between minority students and other members of the university community.
***For more information, stop by the office at A037 Brady Commons or call (573) 882-7152.***

***Rape Education Program*** The Rape Education Program, 232 Brady Commons, offers resources on rape and sexual violence for personal, professional or academic use. Books, videos, journal and newspaper articles and educational pamphlets are available, as is referral information for services for survivors. The Peer Rape Education program uses two graduate assistants and approximately 25 highly-trained volunteers each year to present programs and facilitate discussions for classes, living units and other groups and organizations. The Rape Education Program provides the primary leadership for a campuswide rape education effort throughout the year.
***For more information call 882-6638.***

***Student Legal Services*** has been helping students help themselves for more than 25 years by providing free legal consulta-

tions. This professional advice, along with related opportunities for education and involvement, is funded through MSA/GPC student activity fees. ***Call (573) 882-3780 for an appointment.***

***Wellness Resource Center/ADAPT*** The Wellness Resource Center (WRC) and ADAPT (Alcohol and Drug Abuse Prevention Team) provide programs and services that address alcohol and drug abuse issues and other aspects of wellness. The WRC houses a wellness resource library and an extensive peer education program. The WRC also plans proactive outreach programs and services throughout the year. ***The Wellness Resource Center/ADAPT is located at 34 Brady Commons, (573) 882-4634.***

***Women's Center*** The Women's Center offers a variety of services and programs dealing with issues surrounding the changing roles of women and men. Seminars, workshops and discussion groups on topics such as assertive communication, sex-role stereotypes and self-esteem are conducted at the center and for organizations, classes and living units. The center offers groups, workshops and individual counseling for students. The Women's Center maintains a resource collection, including articles, books, periodicals, videos and research relating to women's lives, as well as information about campus and community services. ***The Women's Center is located at 229 Brady Commons, (573) 882-6621.***

**UNIVERSITY STORES** Founded by MU faculty in 1899, the University Stores include **University Bookstore, Computer Spectrum** and the **Health Sciences Bookstore**. Because we are University-owned and operated, one hundred percent of our profits go back to the campus. **University Bookstore** (Brady Commons) offers educational materials and a variety of services to assist students with succeeding in their academic careers. Our Textbook department orders over 10,000 required and recommended titles annually, as well as numerous supplemental materials. We carry over 80,000 General Books titles, including bestsellers, fiction, non-fiction, academic and university press titles. We offer an assortment of school, office, and art and engineering supplies. We stock a variety of clothing and gift items to promote the pride, spirit and tradition of MU. Other services include: Textbook Reservation Program, Buyback, Grad Fair, the Mizzou ID Center, a UMB Bank, US Post Office substation, UPS shipping, Photo/Film finishing, and Special Order programs. *For more information, call (573) 882-7611.*
**Computer Spectrum** (Brady Commons) is a full service computer reseller. Spectrum can assist you in all of your computing needs, including hardware, software, and a wide selection of computing supplies from HP, IBM, Microsoft, Apple, Dell, Compaq, and Gateway. Our Student Financing Program is a convenient and affordable way to purchase the technology package that meets your educational needs. A valid MU ID is necessary to obtain educational pricing. For *more information, call (573) 882-2131.* The **Health Sciences Bookstore** (Blair Hall) serves as an academic resource center for the colleges of Medicine, Nursing and Allied Health. We stock approximately 5,000 medical, nursing, allied health and consumer medicine titles (65,000 additional HRP titles are available through a special order program). We also carry medical software, CD-ROMs, diagnostic equipment and a variety of school and office supplies. For more information call (573) 882-9911.
***For more information about the University Stores, visit http://www.mubookstore.com.***

**STUDENT PARENT CENTER** The Student Parent Center is an infant through preschool child-care facility that provides quality, low-cost care for children of MU students.
***The center, at 602 University Village, is open only when MU classes are in session. For information call (573) 882-4224 or visit our Web site at http://studentparentcenter.missouri.edu.***

**DRUG AND ALCOHOL PREVENTION PROGRAM** Pursuant to the Drug-Free Schools and Communities Act Amendments of 1989, the University is required to establish a drug and alcohol prevention program for its students and employees. The MU program is outlined in this catalog. A biennial review is conducted to determine the program's effectiveness, to implement changes if they are needed and to ensure that the University's disciplinary sanctions described within are consistently enforced.

A reference listing of MU resources for drug and alcohol counseling, referral and educational programs is also included in this catalog. Please feel free to write or call any of the offices listed for more information.
**Standards of Conduct** University regulations prohibit the unlawful possession, use, distribution or sale of alcohol and illicit drugs by university students and employees on university-owned or controlled property and at university-sponsored or supervised activities.
**University Discipline** Violation of these University of Missouri regulations can result in disciplinary action up to and including expulsion for students and discharge for employees.
**Legal Sanctions** Local, state and federal laws also prohibit the unlawful possession, use, distribution or sale of alcohol and illicit drugs. Criminal penalties for violation of such laws range from fines up to $20,000 to imprisonment for terms up to and including life.
**Health Risks** Specific serious health risks are associated with the use of illicit drugs and alcohol. Some of the major risks are listed below.
***Alcohol and other depressants (barbiturates, sedatives and tranquilizers):*** Risks include addiction, accidents as a result of impaired ability and judgment, overdose when used with other depressants, damage to a developing fetus, heart and liver damage.
***Marijuana:*** Risks include panic reaction, impaired short-term memory, impaired driving ability, increased chance of lung cancer and emphysema, particularly in cigarette smokers.
***Cocaine:*** Risks include addiction, heart attack, seizures, lung damage, severe depression, paranoia, psychosis. Similar risks are associated with other stimulants, such as speed and uppers.
***Hallucinogens (acid, LSD, PCP, MDMA, etc.):*** Risks include unpredictable behavior, emotional instability, violent behavior, organic brain damage in heavy users, convulsions, coma.
***Narcotics (heroin, Demerol, morphine, codeine, etc.):*** Risks include addiction, accidental overdose, contraction of hepatitis or AIDS from contaminated needles.
***Inhalants (gas, aerosols, glue, nitrites, etc.):*** Risks include loss of consciousness, suffocation, damage to brain and central nervous system, sudden death, nausea and vomiting, nosebleeds, impaired judgment.
**Resources for Substance Abuse Education, Information and Counseling** A variety of resources exist for drug and alcohol counseling, treatment or rehabilitation programs. For detailed information concerning these resources available from the University and/or community agencies, students may write or call the Counseling Center, 220 Parker hall, (573) 882-6601. Employees may write or call the Employee Assistance Program, 205 Parker Hall, (573) 882-6701. Such referrals will respect individual confidentiality. The following resources are available on the MU campus for educational programs, counseling and referral services:
***ADAPT (Alcohol and Drug Abuse Prevention Team)/Campus Substance Abuse Office*** offers substance abuse programs, wellness resource center, speakers, a resource library and referral services peer education and campuswide prevention efforts including alcohol responsibility month and wellness month. 34 Brady Commons, (573) 882-4634
***Counseling Center*** provides individual counseling, alcohol or drug evaluations and group counseling for adult children of alcoholics. 220 Parker Hall, (573) 882-6601
***Student Health Service*** offers medical services and individual

consultation, presentations to campus groups and printed materials on alcohol and drug abuse. Student Health Service Building, (573) 882-7481

***University Police Prevention Unit*** provides alcohol and drug awareness presentations, printed and video resources. 5 General Services Building, (573) 882-7210

***Employee Assistance Program*** provides screening and referral services for University employees and their families, consultations and printed alcohol awareness materials. 203 Parker Hall, (573) 882-6701

# Organizations and Activities

The Center for Student Involvement, A022 Brady Commons, offers students a number of programs and activities.

***Information on campus student organizations and clubs is available in AO22 Brady Commons, (573) 882-3780.***

**MISSOURI STUDENTS ASSOCIATION** MSA is the undergraduate student government at MU, and every student is a member. MSA sponsors many of the films, concerts and speakers on campus, in addition to many services.

***Students who would like to get involved in MSA should inquire at AO22 Brady Commons or call (573) 882-8386.***

**RECREATION SERVICES & FACILITIES** designs activities, both competitive and noncompetitive, structured and unstructured, for all members of the MU community. Activities include RecSports, with men's, women's, co-rec and faculty/staff divisions for both teams and individuals; open or "drop-in" recreation through a variety of courts and equipment; outdoor recreation through an equipment rental service; lap and recreational swimming at indoor and outdoor pools; Club Aerobix and Leisure University classes, including swing dance and Tai Chi; and a variety of programs for international students and students with disabilities.

Both indoor and outdoor facilities and activities are available. The Student Recreation Center (SRC) houses basketball, volleyball, squash and racquetball courts; weight-training equipment; an elevated indoor track; aerobics and combative rooms; and locker rooms. The Natatorium features both indoor and outdoor pools. MU students and Rec Center members can also use facilities located at the Stankowski Outdoor Recreation Complex, which features three artificial turf playing fields, basketball courts, an outdoor track and fitness area; the College Avenue Tennis Complex; and multiple outdoor fields and parks on campus. A valid MU student ID or SRC facility pass must be presented to enter and use the facilities operated by Recreation Services Facilities.

***For more information, contact the Recreation Services' office at 320 Student Recreation Center, call (573) 882-2066 or visit our Web site at www.missouri.edu/~recwww.***

# Housing

**FRATERNITIES/SORORITIES** There are 45 national social fraternities and sororities on the Columbia campus, including five historically African-American fraternities and sororities, one multicultural sorority and one Asian-American sorority. They offer a variety of social, scholastic, cultural, athletic and leadership opportunities. Most fraternities and sororities also operate chapter houses that serve as the location for organizational activities.

***For more information, call or write the Greek Life office, A016 Brady Commons, (573) 882-8291.***

**RESIDENCE HALLS** On-campus living is an important part of the undergraduate experience, and the residence halls are an integral part of campus life. The aim of the Residential Life staff is to create an atmosphere that is conducive to the intellectual, social, cultural and personal growth of the residents. In an effort to create the best living-learning environment for its residents, the University offers several Learning Community options in the residence halls including: Freshman Interest Groups (FIGS) and residential colleges. In a Learning Community, residents live on the same floor or in the same hall with other students who share their academic, career, or personal interests. Students who choose to join one of the many Learning Communities that are offered in the halls receive some specific benefits: academic and career advisement, strong friendships built around common interests and special hall features. They also have demonstrated higher levels of academic achievement, satisfaction and retention at MU. Learning Communities are developed each year in response to student interests; some of the communities offered are the Agricultural Residence, the Education Learning Community, Women in Engineering, the Fine Arts Residential College, the French and Spanish houses, the Honors Residence, the Life Sciences Learning Community, Men of Engineering, the Natural Science and Mathematics Residential College, the Nursing Residence, Leadership Residential College and International House. With more than 27 Learning Communities from which to choose, every student can find his or her niche at MU. For a complete listing of all the Learning Communities offered at MU, visit our Web site at http://www.prospectivestudents.missouri.edu/Living, or call Residential Life at (573) 882-7275. Students who choose not to participate in one of the Learning Communities have a variety of residence halls and dining amenities from which to choose (co-ed halls, single gender halls, air conditioning, etc.).

Meal plans are included in all housing contracts. All students living in the residence halls select a meal plan that provides either 21, 17, 14, 10 or 7 meals per week. With five meal plans from which to choose, students have the opportunity to select a plan that best meets their personal needs. Students who live off campus may purchase a meal plan also.

A unique student-employee program called Big Deal offers up to $2,100 per year toward a student's university account. Contact Susan Dayton at (573) 882-0869 or DaytonS @missouri.edu for more information about this program.

Students enter into contracts for room and board in the residence halls for the entire academic year. The Department of Residential Life mails housing information and an application for residence hall accommodations to all applicants who apply for admission to MU.

In an effort to enhance each student's success, MU requires all first-time college students who are younger than 20 years of age as of August 15 to reside in University-operated housing or houses operated by fraternities or sororities recognized by the University of Missouri-Columbia.

***For more information contact the Department of Residential Life, 125 Jesse Hall, (573) 882-7275, 1-800-225-6075 (in Missouri or Illinois) or visit our Web site at http://prospectivestudents.missouri.edu/living.***

**APARTMENTS** The University operates approximately 390 conveniently-located efficiency, one- and two-bedroom apartments for students with families, graduate or professional students and students over 21. All are unfurnished except for stoves and refrigerators. Utilities are paid by the residents.

***For more information on University-owned student apartments, contact the Department of Residential Life, 125 Jesse Hall, (573) 882-7275, 1-800-225-6075 (in Missouri or Illinois), or visit our Web site at http://prospectivestudents.missouri.edu/living, or e-mail umcreslife@missouri.edu.***

# Financial Aid

To apply for financial aid, students must complete a Free Application for Federal Student Aid (FAFSA). Students must complete the application by March 1 to receive priority consideration for the following fall term.

High school students can obtain copies of the FAFSA from their guidance counselor. Returning students will be mailed a Renewal FAFSA by mid-January. If students don't receive the Renewal FAFSA they can obtain a FAFSA at the Office of Student Financial Aid, 11 Jesse Hall, Columbia, MO 65211-1600, or by calling (573) 882-7506, or toll free from Missouri and Illinois, 1-800-225-6075. The FAFSA is also available at community colleges and other universities.

Graduating high school seniors may apply for academic scholarships by completing the Scholarship Application for

Entering Freshmen Students by December 1st of the student's senior year. The application is printed in the Application Packet available from the Office of Admissions. Continuing MU students and new transfer students may apply for scholarships by completing the Continuing and Transfer Student Scholarship Application by February 1st of each year. The application is available on-line at www.sfa.missouri.edu. Some MU schools and colleges require supplemental information to be submitted with the scholarship application.

# Fees and Expenses

**UNDERGRADUATE EDUCATIONAL FEE** All students enrolled at the University of Missouri are required to pay the Educational Fee. Courses taken as a hearer (auditing) will be charged at their normal credit value when computing the amount of fees to be paid. Consult the current *Schedule of Courses* for the amount of the Undergraduate Educational Fee.

**NON-RESIDENT EDUCATIONAL FEE** Students who are not residents of Missouri, as defined by the *Residence and Educational Fee Assessment Rules*, will be assessed the Educational Fee at non-resident rates.

It is the duty of each student to register under the proper residence status and pay the proper fees. Consult the current *Schedule of Courses* for the amount of the Undergraduate Non-Resident Educational Fee.

The Office of Admissions at 230 Jesse Hall will furnish, upon request, the brochure *Residence and Educational Fee Assessment Rules*, which details the various policies.

**STUDENT ACTIVITIES FEE** Each student registered for 12 credit hours of resident work in the Fall/Winter semesters or six credit hours of resident work in the summer, in classes taught on the Columbia campus, is required to pay a Student Activities Fee. For less than full-time enrollment, the Student Activities Fee will be calculated per credit hour. No Student Activities Fee will be charged for classes taught off campus.

This fee is allocated to various campus organizations and improvement plans. Consult the current *Schedule of Courses* for the amount and specific allocation of the undergraduate Student Activities Fee.

**INSTRUCTIONAL COMPUTING FEE** An Instructional Computing Fee will be assessed per credit hour for all students enrolled in courses taught on the Columbia campus. No computing fee will be charged for classes taught off campus.

This fee is allocated to the campus computing division, to offset the costs of usage, maintenance and upgrading of the computer facilities and services for students. Consult the current *Schedule of Courses* for the amount of the Instructional Computing Fee.

# Supplemental Fees

**APPLIED MUSIC FEE** This once-per-semester, flat fee is charged to all students enrolled in an applied music course or courses. Consult the current *Schedule of Courses* for the amount of the Applied Music Fee. Contact the Music Department at (573) 882-2604 to determine the usage of this fee.

**COOPERATIVE WORK-STUDY PROGRAM** A processing fee is charged for students registered with the College of Engineering for work experience as part of the degree program. No credit is awarded for the semester enrolled in this program. Consult the current *Schedule of Courses* for the amount of the fee.

**PROFESSIONAL SUPPLEMENTAL FEES** The following fees will be charged to students enrolled in courses within these departments: Engineering and Computer Science, Journalism, and Allied Health taught by Health Related Professions.

These fees are charged per credit hour for courses taught within these departments. Consult the current *Schedule of Courses* for the amounts of the supplementary fees. Contact the department to determine the usage of the fee.

**MUSIC ENSEMBLE FEE** A fee for music ensemble courses will be assessed, but will be offset by a scholarship award.

**STUDY ABROAD FEE** This processing fee is charged once per academic year to all students enrolled in the MU Study Abroad Program. Consult the current *Schedule of Courses* for the amount of the yearly fee.

# Optional Charges

These charges are offered as options for students enrolled at the University of Missouri-Columbia. The availability of options may vary each semester. Contact the Cashiers Office at (573) 882-3097 for more information concerning these options. Consult the current *Schedule of Courses* for cost and availability: All-Sports Pass, MU Alumni Association, MU Parents Association, MU Theater Tickets, Student Museum Assoc., Savitar Yearbook, Major Medical Insurance, Concert Series Student Discount Passport, Student Museum Associate and University Club Membership.

# Miscellaneous Fees & Charges

**LATE REGISTRATION FEE** Any student registering after the close of the regular registration period may be charged a non-refundable fee, equal to the cost of one undergraduate credit hour, in addition to all other fees.

**RESIDENCE HALLS** Residence hall contracts cover the academic year, but the charges are billed on a semester basis. The charges involve three elements: the room rate, the meal plan and a social fee. A payment of $300 is required upon return of the Residential Life contract. The fall semester balance is due in full in July as stipulated on the billing statement, or in five minimum payments scheduled monthly from July to November.

The winter semester balance is due in full in December as stipulated on the billing statement, or in five payments scheduled monthly from December to April. Any balance of charges not paid by the deadline indicated on the billing statement will be assessed a 1 percent monthly interest charge.

Residence hall charges for the summer semester do not include a social fee. The fees for the residence hall for the summer semester are due in full with the submission of the contract.

Housing refunds for students who wish to buy out of their contract are subject to the terms and conditions of the contract. ***For more information on residence hall charges and billing, please contact the Department of Residential Life, 125 Jesse Hall, (573) 882-7275, 1-800-225-6075 (in Missouri or Illinois) or visit http://www.missouri.edu/~reslfwww.***

# Time and Method of Payment

Arrangements for the payment of all University fees must be made at the time of registration as a condition of enrollment. Students who register early must arrange for payment by the announced deadline or the early registration will be cancelled and the student will be required to register again during regular registration. Students who register during regular registration must make payment arrangements at the time of registration. Enrollment is not complete until required payment or proof of financial aid or 3rd party sponsor (see below) is received.

**The following arrangements may be made for payment of fees:**

- Payment in full on or by the deadline date.
- Minimum payment of one-fourth or one-fifth (depending on the date of registration) of the fee balance by the deadline

date. Students who elect the minimum payment plan must pay a 1% monthly finance charge on any unpaid balance.
- Financial aid or third-party sponsor, by which all fees and charges on the student's account will be paid. Students must notify the Cashiers Office in writing of this arrangement by the deadline date each semester. If the financial aid or third-party sponsor will not cover all of the fees and charges on the student's account, the minimum payment must be met by the deadline date.

**The Cashiers Office accepts the following methods of payment for fees:**
- Cashier's checks, money orders and traveler's checks.
- Personal checks. The amount of a personal check may not exceed the amount due by the student. Students whose checks are returned unpaid will incur a $20 service charge per check. A student presenting a check for fees to the University that is returned unpaid and remains unpaid after the close of regular registration shall be considered a late registrant and shall be subject to the late registration fee; the enrollment may also be subject to cancellation.
- VISA, MasterCard and Discover Card, up to the credit limit of the cardholder. The charge amount may not exceed the amount due.

**Students may use the following options when paying fees:**
- Cashiers Lobby, 15 Jesse Hall—for those who wish to make payment in person.
- STARMU—MU's mainframe account system, which can be accessed from any of the campus computer labs or from home, if the student has a modem hook-up with the University's system server. Students must know their registration PIN number. This option is available for credit card payments only.
- TTVR—MU's Touch Tone Voice Response system offers the option to make a credit card payment over the telephone. The number is (573) 884-CASH (2274). Students must know their registration PIN number.
- U.S. Postal Service—a return envelope is provided with every billing statement.

# Releasing of a Transcript

***Note: Transcripts and Diplomas will not be released if your financial obligation to the University is past due.***

# Refund of Fees & Non Resident Fees

Fees subject to refund include the Educational Fee, Student Activities Fee, Instructional Computing Fee and any related miscellaneous fees that may be assessed.

Students who have registered for credit courses, made payment of fees and who subsequently cancel their registration before the first day of classes are eligible for a full refund less a $20 Cancellation Fee. Students whose course work has been reduced by other means, such as the cancellation of a course by the department, shall be entitled to a full refund of fees for that course.

Students who withdraw from the University or reduce course loads after classes have begun are subject to the following refund schedule:

**REFUND PERCENTAGES**

**Full refund:** before classes begin, less $20 Cancellation Fee
**90 percent refund:** 1st through 8th day of classes
**50 percent refund:** 9th through 19th day of classes
**25 percent refund:** 20th through 38th day of classes
**No refund:** after the 38th day of classes

Class days are counted by excluding Saturdays, Sundays and holidays. The current *Schedule of Courses* lists the appropriate dates of the refund percentage periods. For courses that do not run for the full 16 weeks of the semester, the refund percentage periods will be adjusted to be proportionally similar to the regular refund periods. Please see the *Summer Schedule of Courses* for Summer Session refunds.

The dates to be used in determining the amount of the refund shall be the date shown on the add/drop or other applicable form, the postmarked date if the withdrawal is by mail, or the system-generated date if the withdrawal is by telephone or mainframe.

**Refunds are subject to the following conditions:**
- No refund shall exceed the amount of fees paid, less a $20 cancellation fee.
- Refunds based on credit card payments will be electronically refunded to the credit card.
- Financial Aid refunds are either located in the Cashiers Lobby in 15 Jesse Hall pending student signature, or may be direct deposited into the student's bank account. Contact Cashiers for more information concerning direct deposit of refunds, (573) 882-6351 for direct deposit, (573) 882-3697 for financial aid refunds.
- Non-credit card refunds and refunds due to withdrawal from the University are subject to various conditions. Contact Cashiers Third Party/Refunds at (573) 882-3745 for more information.
- Deductions may be made from the refund amount for any amount owed for any other financial obligations to the University of Missouri-Columbia.

In exceptional cases, such as the death of a student, a 100% refund may be authorized at any time during the semester.

A student who believes a greater refund should be authorized than provided for in the established schedule may fill out a refund appeal form in the Office of the University Registrar-MU, 127 Jesse Hall. All appeals of refunds must be submitted within three months of the withdrawal date of the course work in question. A final appeal may be made to the Vice Provost for Enrollment Management within 10 days of receipt of decision. The decision of the Vice Provost for Enrollment Management will be final.

# Return of MU Student Aid Funds

Recipients of MU funded scholarships, grants and loans who withdraw from the University will be required to return the unearned portion of aid received. The unearned percentage of aid will be equal to the refund percentages shown in the Refund of Fees section and applied to individual aid recipients. The calculation of the return of these funds may result in the student owing a balance to the University.

# Return of Federal and State Student Aid Funds

Recipients of federal and state funded grants and loans who withdraw from MU or stop attending classes before 60% of the semester has passed, will be required to return any unearned portion of federal Title IV and state of Missouri student aid received.

Examples of aid programs included in this policy are: Federal Pell Grant, Federal Supplemental Education Opportunity Grant, Federal Perkins Loan, Ford Federal Direct Loan, Federal PLUS Loan, Missouri College Guarantee program, Gallagher Grants, Advantage Missouri Program, etc. The calculation of the return of these funds may result in the student owing a balance to the University, the state of Missouri and/or the federal government. All or a portion of the required repayment may come from a refund of fees. Please refer to the Refund of Fees Policy included in this publication.

For purposes of this section, if a student does not formally withdraw from the University, the official withdrawal date is the midpoint of the semester or the last date the student engaged in an academically related activity, whichever is later. **Therefore, it is extremely important that students who cease attending classes initiate formal withdrawal from the University by filing a withdrawal form available in the office of the dean of the school or college in which he/she is registered.**

***For more information about fees, billing and refunds please contact the Cashiers Office, 15 Jesse Hall, (573) 882-3097, or visit http://web.missouri.edu/~forcash.***

# Graduate Study

Master's degrees have been awarded at MU since 1846. A graduate department was formally organized in 1892, and the first doctor of philosophy degree was awarded in 1899.

The Graduate School enrolls more than 4,000 students and offers more than 90 graduate degree programs. **Students wanting additional information on graduate degree programs should consult the MU Graduate Catalog, write the Graduate School at 210 Jesse Hall, call (573) 882-6311, or visit http://www.missouri.edu/gradschl.**

# Professional Schools

The University of Missouri is the only state-supported institution in Missouri offering professional and doctoral degrees, and many of these are available only on the Columbia campus. Students wishing for additional information on the schools of Medicine or Law or the College of Veterinary Medicine should consult the individual school or college.

**LAW** The school was established in 1872 and has been a powerful force in Missouri and the nation ever since. Graduates have served at the highest levels of national, state and local governments. The majority of Missouri laws that regulate our lives have been written by MU law faculty and alumni. The School of Law educates lawyers who practice not only in Missouri but throughout the world. The law school has a national reputation, especially in dispute resolution. The School's center for the Study of Dispute Resolution has been rated the premier ADR Program in the country for three consecutive years.
***For more information about the School of Law, call (573) 882-6042.***

**THE SCHOOL OF MEDICINE** Established in 1841, the school offers an innovative problem-based-learning curriculum that provides medical students with early exposure to clinical training. The MU medical school is recognized nationally for its primary care and rural health focus. In addition to undergraduate medical education, the school offers a master's degree in health administration and boasts well-established residency and continuing education programs. The Health Sciences Center provides health care for patients from every Missouri county. The School of Health Professions and the School of Nursing are described elsewhere in this catalog.
***For more information about the School of Medicine, call (573) 882-3944.***

**VETERINARY MEDICINE** The college was established in 1946. It offers a four-year program leading to the doctor of veterinary medicine (DVM) degree. The college provides diagnostic and patient-care services for all species of animals. Graduates are qualified for private practice or employment in government, industry, and academic environments.

The college has a national reputation for small class sizes and state-of-the-art facilities. The 140,000-square-foot Veterinary Medical Teaching Hospital, Clydesdale Hall, boasts programs in oncology, cardiology, and community practice. The college is one of the few boasting a veterinary medical CT scanner and linear accelerator to administer radiation therapy. The hospital's equine clinic has a treadmill for the evaluation of lameness in horses and the food animal section sees more in-clinic patients than any other college of veterinary medicine, according to the latest statistics.

The college also offers post-graduate training to interns, residents in various specialties, and graduate students.
***More information about the College of Veterinary Medicine can be found online at http://www.cvm.missouri.edu.***

# Facilities

The 1,340-acre Columbia campus has 280 buildings, including those of the University of Missouri System administration, equine center, Research Park and the health sciences complex. The 18 schools and colleges offer the undergraduate a broad spectrum of resources and research centers.

# Information and Access Technology Services

IAT Services provides and supports the computing and telecommunications infrastructure that empowers the MU community.

Services include several **computing sites** located across campus, which offer a variety of hardware platforms and software programs. All sites are connected to Mizzou TigerNet, the Internet and the World Wide Web.

Other services include automatically issued **e-mail accounts,** which can be accessed anywhere in the world via the Web and allow users to join discussion lists and contact professors and classmates; the **Help Desk** (882-5000) staffed by highly-trained consultants who answer phone calls and help MU faculty, staff and students work through software/hardware problems; and the **Adaptive Computing Technology Center,** which works with MU faculty, staff and students with disabilities to help them gain full access to the technology resources on campus.

For Internet connectivity, IAT Services offers **Mizzou TigerNet,** a high-speed electronic data network that carries traffic at 1,000 megabits-per-second (Mbps). Requiring the use of a network interface card, Mizzou TigerNet allows students living in most MU resident halls Internet connectivity at speeds up to 10 Mbps.

For off-campus students, there's **TigerLink,** offering 56K dial-up access to the Internet and a wide variety of MU-specific resources unattainable from other Internet Service Providers.

Other IAT Services offerings include **Meso,** a Unix-based computing and hosting resource available to all students. Meso services include Web hosting, Unix shell account, data backups and programming languages. Statistical analysis packages also are available. Students automatically have an account and file space—up to 50MB. The primary statistical computing packages at use at MU include **SPSS** and **SAS.** One-on-one instruction on use of these packages is available at the Physics Computing Site, Room 135.

Other services include the **Outpost** (S303 Memorial Union), offering discounted software, hardware repair, installation of network interface cards and internal modems, password resets, easy signup for telephone and Internet access and other services. For hardware repair or advanced consulting services, the **Local Area Network and Desktop Support group (LaDS)** provides repair and diagnostic services.

Access technology services available to students include **long-distance service** to anywhere in the United States at 10 cents per minute, all day, every day, for students living in University-owned residence halls or apartments. Each phone line is equipped with **voice mail.** Also, for students living in University-owned residence halls or apartments, there is **Mizzou Cable** offering over 40 educational, entertainment, news and information channels.

IAT Services also works to do what it takes to support students, faculty and staff in their academic, teaching and research endeavors. This includes no-charge **training** in the form of more than 30 instructor-led and 250 computer-based training courses on topics such as new computer software applications, networking, telephone features and voice mail.

For those seeking IT certification, IAT Services operates the **Information Technology Certification Facility,** located in Hill Hall, which offers certification exams for computer systems and software programs. Call 882-6006 for more information.

Another IAT Services offering includes **Web Course Tools** (WebCT), a course management software package allowing MU faculty to supplement in-class instruction with online

content. Special features create a secure Web site that enables students to learn at a distance. WebCT contains a flexible, full-featured set of tools instructors and students can access from anywhere.

The Mizzou **TigerCard** is the student's key to services and activities available at MU. Use it to purchase meals at locations run by Campus Dining Services, to enter the Student Recreation Center, to purchase tickets at the concert office in Jesse Hall or the MSA ticket window or to charge books at University Bookstore in Brady Commons.

For more information, pick up a copy of the IAT Services' ***Everything Technology Guide.*** The guide is packed with information MU students need to know about computing, cable television, telecommunications and networking at MU. Pick up a copy at the Outpost (S303 Memorial Union) or the Help Desk (Locust Street Building).

***For a complete, up-to-date overview of all IAT Services' offerings, visit http://iatservices.missouri.edu.***

# Libraries

**THE UNIVERSITY LIBRARY SYSTEM** consists of the MU Libraries and the MU Law Library. Included in the MU Libraries are Ellis Library (the main library), the University Archives, and the following seven branch libraries: Columbia Missourian Newspaper Library, engineering, geology, health sciences, journalism, mathematics and veterinary medicine. The collection of the University libraries includes 2.96 million volumes, 6.67 million microforms, and 20,524 journal subscriptions. Students can receive assistance in Ellis Library at the central reference and information center, and Special Collections (including rare books), as well as branch libraries. Other services include the current periodicals reading room, copy services, reserve desk, recorded sound collection, and library services for persons with disabilities.

The staff in Ellis Library and in the branch libraries assists students in using the library resources and services and answers questions on specific research problems. Orientation tours and library instruction classes are available to students.

**MERLIN (Missouri Education and Research Libraries Information Network)** is the online catalog of materials owned by the four campus libraries of the University of Missouri System and Saint Louis University. MERLIN also provides a gateway to resources beyond the library catalog.

The libraries' Web site (http://www.missouri.edu/~elliswww) provides access to all MERLIN databases as well as additional electronic resources. The libraries offer databases from the general to the highly technical, from the obscure to the artful, and from the brief to the encyclopedic. Some, but not all, of the electronic resources are full-text. These resources provide a rich contrast to freely available Web publications. Students can use electronic resources for class projects, homework, and term papers. Instructors can create online reading files for their students as well.

MERLIN terminals are located on the first through third floors in Ellis Library and in all branch libraries. The library catalog is available to anyone via the Web at http://laurel.lso.missouri.edu/ or via Telnet to merlin.missouri.edu. If using Telnet, you will be prompted for a login. Type library (lower case).

Many of the libraries' resources are now available in computer labs, offices, dorms and even off-campus—anywhere in the world with an Internet connection. Nonresidential students may access these resources from home by logging in to the campus proxy server with their e-mail ID and password.

### Special Collections of the MU Libraries

**GOVERNMENT DOCUMENTS** includes a comprehensive collection of historical and contemporary documents published by the federal government and by the State of Missouri. Publications of selected foreign governments and international organizations are also collected.

**MICROFORM COLLECTION** includes financial reports from most U.S. corporations, numerous black studies collections, military intelligence and CIA reports and back files of periodicals including early American periodicals. Virtually all American publications before 1820 and most British publications before 1700 are available.

**NEWSPAPER COLLECTION** contains microfilmed back issues of more than 1,000 newspaper titles, including a large collection of early American titles. A number of current U.S. and foreign-language newspapers are available in the Journalism Library in Walter Williams Hall, and Missouri newspapers are available in the State Historical Society Library.

**RARE BOOK COLLECTION** emphasizes titles important in the history of books and printing and contains outstanding examples of specific types of illustrated books. British religious and political history from the sixteenth through the nineteenth centuries, world literature and the arts are also available.

**COMIC ART COLLECTION** houses original cartoons of V.T. Hamlin ("Alley Oop"), Edgar E. Martin ("Boots and Her Buddies"), and Mort Walker ("Beetle Bailey," "Hi and Lois" and others). Also available are underground comic books, reprints of classic comic strips and graphic novels.

***MU Libraries does not oversee the following units. Information about their collections and services should be obtained directly from them:***

**FREEDOM OF INFORMATION CENTER,** in the School of Journalism, 127 Neff Annex, maintains files on the actions of the government, media and society that affect the movement and content of information. Founded in 1958, and dedicated to the people's right to know, the FOI Center provides reference and referral services.
***Call (573) 882-4856 for more information.***

### Collections in the Law Library

**THE JOHN D. LAWSON LIBRARY OF CRIMINAL LAW AND CRIMINOLOGY** houses about 1,200 books and pamphlets of popular and procedural nature on 19th-century trials.
***Call (573) 882-4597 for more information.***

### Auxiliary Library Collections

**LIBRARY OF THE STATE HISTORICAL SOCIETY,** in Ellis Library, has an extensive collection of Missouriana and early West documents and memorabilia.

The collections of the State Historical Society feature material on Missourians and the Great Plains. These collections are especially rich in travel narrative and contemporary accounts of life among the pioneers.
***Call (573) 882-7083 for more information.***

**WESTERN HISTORICAL MANUSCRIPTS COLLECTION OF THE STATE HISTORICAL SOCIETY** located at 23 Ellis Library, features material relating to the Missouri River and the Great Plains region.
***Call (573) 882-6028 for more information.***

# Museums and Collections

**THE MUSEUM OF ANTHROPOLOGY** permanent exhibit hall focuses on Native American cultures from across North America and Missouri history from 11,200 years ago to the present. Objects from the Grayson archery collection are on display at the Museum Support Center on Rock Quarry Road. Collections are available for study by faculty, students, and other qualified researchers. **Hours: 9 a.m. to 4 p.m., Monday—Friday, 100 Swallow Hall, (573) 882-3573.**

**MUSEUM OF ART AND ARCHAEOLOGY** is the third largest art museum in the state and is accredited by the American Association of Museums. It exhibits a broad collection of works of art from prehistoric times to the present. The well-known ancient collection includes sculpture, pottery and coins from ancient Egypt, Near East, Western Asia, Greece and Rome. The

Byzantine collection is notable for its gold and silver jewelry, many rare decorative objects and Coptic textiles. Painting, sculpture and graphic art from Europe and America represent the main movements in Western art from the 15th century to the present. An important group of South Asian artwork and other objects from China, Japan and Africa, as well as pre-Columbian Central and South America, highlight other world cultures.

As a teaching museum, its more than 14,000 objects provide an excellent opportunity for graduate and undergraduate study. The many artworks and the large amount of material from the university's excavations provide research opportunities for students. A non-circulating library in the museum office is open to the public.

There is a wide range of objects of interest to faculty and students in fields, such as art, art history, archaeology, drama, anthropology, classics, history, political science, Black Studies, Women Studies and Religious Studies. Many university classes routinely visit the museum in order to complete special class projects and assignments. The museum, in collaboration with the Department of Art History and Archaeology, offers courses in museum studies, which are open to upper-class undergraduate students.

Frequently changing temporary exhibitions, drawn from the permanent collection or borrowed from other institutions, are organized to complement the university's educational mission. The museum publishes the annual *MUSE,* which includes articles about objects in the museum written by staff, faculty, graduate students and scholars from outside the university.

Membership in Museum Associates, 600 members strong, is open to students at a reduced rate.

***The museum is located in Pickard Hall on Francis Quadrangle (Ninth Street and University Avenue). For further information, call (573) 882-3591.***

**ENTOMOLOGY MUSEUM** is the largest university insect collection in the world; collections are primarily for research and teaching. Tours are by appointment.
***Call 882-2410 for more information.***

**FISHERY AND WILDLIFE COLLECTIONS** provide teaching and research collections of vertebrate animals of Missouri and surrounding states as well as collections of birds, mammals, waterfowl, and freshwater and saltwater fish.
***Call 882-3436 for more information.***

**DUNN-PALMER HERBARIUM,** located at the Museum Support Center on Rock Quarry Road, includes a general dried-plant collection, primarily of North America, and material from Central and South America, Australia, Asia and Africa.
***Call 882-6519 for more information.***

**LIVE REPTILE AND AMPHIBIAN EXHIBIT,** located in 202 Stewart Hall, is called the "snake room" by the hundreds of schoolchildren who visit each year. The exhibit includes salamanders, turtles, and fish, as well as 12 different species of snakes. The exhibit is an outstanding teaching resource for MU students and an outreach resource for the surrounding community.
***Call 884-7279 for more information.***

# Research Centers and Resources

**AGRICULTURAL EXPERIMENT STATION RESEARCH FARMS** in the Columbia area and throughout the state of Missouri are sites for field and systems management experiments in cooperation with the U.S. Department of Agriculture.

**CAPSULE PIPELINE RESEARCH CENTER** (College of Engineering) began operating in the fall of 1991 and is the only National Science Foundation-created center in Missouri and the only pipeline research center at a U.S. university.

**CENTER FOR RESEARCH IN SOCIAL BEHAVIOR,** a research and training facility operated by behavioral scientists, provides facilities and services for social science field and laboratory investigation and sponsors lectures, seminars and visiting scholars.

**CENTER FOR STUDIES IN ORAL TRADITIONS** provides an international focus for research on oral traditions from the ancient to the modern world; publishes the journal *Oral Tradition* and a companion series of books; maintains international research agreements; and hosts post-doctoral seminars and visiting scholars.

**CENTER FOR SURFACE SCIENCE AND PLASMA TECHNOLOGY** (College of Engineering) is concerned with creating compatible interfaces, or boundaries, between plasma and gases, liquids, or solids.

***THE COLUMBIA MISSOURIAN*** serves as a teaching newspaper and has general circulation throughout mid-Missouri.

**DALTON RESEARCH CENTER** is a facility for cardiovascular research.

**KBIA,** MU's public FM radio station, is an affiliate of National Public Radio, with a 100,000-watt stereo signal enabling it to be heard by over 300,000 people each week.

**KOMU-TV,** the MU television station, is an NBC affiliate.

**LAWS OBSERVATORY** is open to the public and offers special programs during the academic year.

**LOW-LEVEL RADIATION LABORATORY** contains a low-level, whole-body liquid scintillation counter designed to measure natural and induced radioactivity in animals and humans.

**MISSOURI UNIVERSITY RESEARCH REACTOR (MURR)** is the highest powered and most versatile research reactor on a university campus in the United States and offers a broad spectrum of research and educational opportunities in nuclear-related life and materials sciences and engineering.

**PARTICULATE SYSTEMS RESEARCH CENTER** (College of Engineering) focuses on gaining the understanding of how small dust-like particles evolve and move, which is critical to combustion, acid rain, atmospheric sciences, nuclear reactor safety, materials manufacturing and environmental quality.

**SINCLAIR COMPARATIVE MEDICINE RESEARCH FARM** is a 560-acre farm where animal models are used for the study of chronic diseases and aging of humans.

**THOMAS S. BASKETT WILDLIFE, RESEARCH AND EDUCATION CENTER** is a 2,200-acre tract dominated by oak-hickory communities used for research in a deciduous forest ecosystem.

**UNIVERSITY FOREST,** located 14 miles north of Poplar Bluff, Mo., comprises 7,310 acres of upland hardwood and shortleaf pine, which is the major portion of land now owned by Missouri Department of Conservation and MU. Faculty and students have access to the forest for teaching and research.

**VETERINARY EQUINE CENTER**, on a 288-acre farm, offers instructional courses in equine medicine and surgery.

# Health Center

Healthy students are more successful in pursuing their academic objectives and contributing to the scholarly activities of the

campus. The University of Missouri-Columbia offers convenient access to quality medical care through the Student Health Center.

**MU IMMUNIZATION POLICY** To reduce the potential for measles outbreaks, the MU campus has adopted the Centers for Disease Control (CDC) and Missouri Department of Health recommendation that all newly enrolled college students born after 1956 provide documentation of two doses of measles vaccine to demonstrate adequate measles immunity. At least one dose must be the combination measles, mumps and rubella (MMR) vaccine. Examples of acceptable documents include:

Copies of personal immunization records ("baby book")
Copies of physician immunization records
Copies of school immunization records

Those entering who do not comply with this policy will not be allowed to register the following semester. This policy excludes students matriculating only in off-campus or continuing education/extension courses. Upon presentation of supportive evidence, a waiver for religious or medical reasons may be granted by the Student Health Center. For further information, contact the Student Health Center at 882-7481.

**TB SCREENING POLICY** Students who have lived more than two months in a country where TB is endemic are required to receive a TB skin test. Those with positive tests will need to obtain a chest X-ray. Treatment is available at SHC without charge.

**MEDICAL INFORMATION** All students enrolling in MU for the first time are required to submit documentation of adequate immunizations.

**FACILITIES** The Student Health Center is located between the Francis Quadrangle and South Sixth Street just north of the Engineering Complex. Clinic hours during the fall and winter semesters are Monday, Tuesday, Thursday, 8 a.m. to 6 p.m.; Wednesday, 9 a.m. to 6 p.m.; Friday, 8 a.m. to 5 p.m.; Saturday and Sunday, 9 a.m. to 1 p.m. Summer hours are Monday through Friday, 8 a.m. to 5 p.m., and Wednesday, 9 a.m. to 5 p.m. After hours a registered nurse is available to help assess urgent needs by dialing 882-7481.

**SERVICES** All enrolled students may use the Student Health Center. Appointments are suggested. Services available include primary and urgent care, women's health, psychiatry, sports medicine, physical therapy, psychology, health education, allergy desensitization, immunizations, pharmacy, laboratory and X-ray. All full-time students are covered by their prepaid health fee for the following services: routine primary care, urgent care, on-site laboratory services and routine immunizations. Services not covered by the fee may be charged to the student's University account, paid by check, Visa, MasterCard, or Discover card or submitted to insurance carriers. Part-time students may opt to pay the health fee.

**REFERRALS** When problems arise that cannot be adequately managed by the Student Health staff, students will be directed to the appropriate campus service or medical facility.

**INSURANCE** All students are urged to have some type of medical hospitalization insurance. The prepaid student health fee applies only to services rendered by the Student Health Center. A major medical, hospitalization and emergency-care insurance policy is available through the University. Student Health provides insurance claim filing assistance if needed. For further information contact the Student Health Center at (573) 882-9107.

**CLASS EXCUSE POLICY** SHC providers do not write excuses for classes or exams missed due to illness. Class attendance is an administrative matter between the student and the faculty member. If a student misses class while in the Center, a receipt may be used as proof of the visit by asking the cashier to ring the receipt through the register, documenting the departure time from the clinic.

# Identification Card

The student ID card can be used for a number of student activities and discounts. These include admittance to the Student Recreation Center and Natatorium and purchase of tickets for athletic events, Missouri Students Association programs and concerts and University-sponsored concerts and plays. The ID card serves as a library card and also enables students to use the student health services and the campus computing labs, rent equipment at Wilderness Adventures and cash checks and charge purchases at the University Bookstore. Students may also use their ID cards to pay for copying services. For students living in residence halls, the ID card serves as the meal ticket and allows them to eat at any of the 15 cafeterias and snack bars on campus, and to charge the costs of doing their laundry. Off-campus students can also sign up for a variety of meal plans available through Campus Dining Services.

***Questions about the use of ID cards should be directed to the coordinator of ID cards in the University Bookstore, (573) 882-1871.***

# Police Department

The University of Missouri Police Department provides a full range of law-enforcement services 24 hours a day, seven days a week to assist in providing students, faculty and staff with a safe and secure environment. Police services can be accessed by calling the Police Communications Center at 882-7201 or contacting any officer on foot or in vehicles during their patrols. Use of the emergency red phones, placed at strategic places throughout the campus, will bring an immediate response.

The MU Police Department also provides education and awareness training for members of the University community to help them avoid becoming a victim of crime. A statistical report concerning the amount and intensity of crime at the University is readily available from the department.

The University Lost and Found Department is located in the MU Police Department and can be reached at 882-7207.

For information on the Jeanne Clery Act contact Sgt. Brian Weimer at (573) 882-5923.

***The telephone number is (573) 882-7201 or visit http://www.missouri.edu/~mupdwww.***

# Academic Regulations

## Rules and Regulations

The academic rules and regulations of the University of Missouri-Columbia are published in the *Rules and Regulations of the University of Missouri* and the *MU Faculty Council Academic Regulations*. The following summaries are intended as a guide for students. Students needing additional information on academic regulations in specific colleges and schools may obtain this information from their deans' offices.

**ABSENCES** Students are expected to attend all scheduled class sessions. A student who does not complete assigned academic work because of absence from class is responsible for making up that work in accordance with instructions provided by the faculty member consistent with any policy established by the faculty of the respective department, school or college. A school or college faculty, a department faculty, a course director or an individual instructor may establish attendance standards and will determine whether a student will be permitted to make up work missed as a result of absence(s). There will be no dean's excuse or official absence.

**ACADEMIC DISHONESTY** Academic honesty is essential to the intellectual life of the University. Thus, academic dishonesty, such as cheating and plagiarism, is a basis for disciplinary action. In all cases of academic dishonesty, the faculty member makes an academic judgment about the student's grade on that work and in that course and reports all incidents to the provost for disciplinary action.

## Academic Standing and Satisfactory Progress

1. **Definitions.**
   - A. Term. The word term as used in these regulations applies to any semester or summer session.
   - B. Academic standing. Academic standing refers to the level of the student's academic performance. There are three levels of academic standing: regular, academic probation, and ineligible to re-enroll.
   - C. Satisfactory progress. Satisfactory progress refers to the time progression in meeting the requirements of the student's established educational objective. Typically, the student's educational objective is the completion of a degree program.
   - D. Graded course. Graded course is a course in which a student receives credit if successfully completed. A course in which the student is enrolled as a Hearer is not regarded as a graded course for that student.
   - E. Completion of a course. A course is completed if the student earns a grade of A, B, C, D, and the "+" or "-" sign if appropriate or S for the course. For the purposes of this Article, a course in which the student receives a grade of W, F, U, or I is not considered a completed course. However, in certain instances a course in which a graduate student receives a grade of I will be considered a completed course as specified below.
   - F. Full-time undergraduate student. A full-time undergraduate student is enrolled in at least 12 semester hours during the Fall and Winter semesters or an equivalent number of hours during Summer session.
   - G. A 3/4-time undergraduate student. A 3/4-time undergraduate student is enrolled in at least nine semester hours during the Fall and Winter semesters or an equivalent number of hours during Summer session.
   - H. A 1/2-time undergraduate student. A 1/2-time undergraduate student is enrolled in at least six semester hours during the Fall and Winter semesters or an equivalent number of hours during Summer session.
   - I. A full-time graduate student is enrolled in at least nine semester hours during the Fall and Winter semesters or an equivalent number of hours during Summer session.
   - J. A 3/4-time graduate student is enrolled in at least six semester hours during the Fall and Winter semesters or an equivalent number of hours during Summer session.
   - K. A 1/2-time graduate student is enrolled in at least four semester hours during the Fall and Winter semesters or an equivalent number of hours during Summer session.
2. **Academic Standing and Progress.**
   - A. Any beginning student admitted to MU who does not meet the minimum admission standards as specified in Article II (Admission, Advanced Standing, and Classification) will be entered on academic probation.
   - B. In the application of regulations in this Article, the faculty of the division concerned will determine how the grade of I in a course and a grade in a repeated course will be considered in determining a student's academic standing. **However, for financial aid purposes the grade of I is not considered a completed course and a repeated course will be counted as additional credit hours attempted.**
   - C. Regulations in this Article are the prescribed minimum standards but do not limit the authority of the faculty of any division to adopt and enforce additional regulations affecting students enrolled therein. In the event that a division adopts standards higher than set forth in this Article, the divisional standards will take precedence over the relevant portions of this Article.
   - D. The Dean of the relevant division may, after consulting with relevant faculty, waive any of the regulations in this Article governing a student's eligibility to re-enroll. However, the Financial Aid Advisory Committee shall have authority concerning a student's satisfactory progress toward his/her educational objective and eligibility to receive federal, state and institutional student financial aid.

Note: Satisfactory progress is based on two concepts (a) minimum number of credit hours completed expressed as a percentage of total credit hours attempted and (b) a maximum time to complete the degree as expressed by a total number of credit hours attempted.

3. **Academic Standing - Undergraduate Students.**
   - A. A student whose term and cumulative grade point averages are 2.0 or higher is in regular academic standing.
   - B. A student in regular standing whose term grade point average subsequently falls below 2.0 but is 1.0 or above is placed on academic probation.
   - C. A student whose term grade point average falls below 1.0 is ineligible to re-enroll.
   - D. A student on academic probation must establish a 2.0 cumulative grade point average within two successive terms of enrollment; otherwise, he/she is ineligible to re-enroll.
   - E. **A student who has attempted at least 60 semester hours will not be making satisfactory progress for financial aid purposes if the student's cumulative grade point average is less than 1.67.**
   - F. A student who has been ineligible to re-enroll for a period of one year may be readmitted only upon the approval of the dean of the division in which the student desires to enroll. As a condition of readmission, the Dean may set forth stipulations with regard to minimum standards of academic work that must be maintained by the student. If the student after readmission again becomes ineligible to enroll, his/her ineligibility to re-enroll is normally considered permanent.
4. **Academic Standing - Graduate Students.**
   The GPA in the Graduate School is based on the student's entire graduate record in courses numbered 200 and above taken at MU. To remain in regular standing, a graduate must maintain a cumulative GPA of 3.0 or higher. At the end of any semester, a graduate student with a GPA below 3.0 is placed on academic probation. If at the end of the following semester the cumulative GPA is 3.0 or better, probation status is removed. A

student on probation failing to raise the cumulative GPA to 3.0 may, on the recommendation of the department or area, be allowed a second and final probationary semester. A student is subject to dismissal upon failure to raise the cumulative GPA by the end of the second probationary semester or at any time that the semester or cumulative GPA falls below 2.0.

5. **Academic Standing - Advanced Professional Students.** Regulations regarding academic standing of advanced professional students are determined by the faculty of the respective advanced professional schools (Law, Medicine, and Veterinary Medicine).
6. **Satisfactory Progress - Undergraduate Students.** Each undergraduate student is expected to make satisfactory progress toward achieving his/her educational objective. Standards for satisfactory academic progress are as follows:
   A. An undergraduate student is considered to be making satisfactory academic progress if he/she completes at least 75% of all credit hours of graded coursework attempted.
   B. An undergraduate student shall not be considered to be making academic progress if he/she have attempted more than 180 semester hours of graded coursework. These hours may have been attempted at MU or at another institution and transferred to MU.
   C. An undergraduate must be enrolled in an academic program that leads to a degree in order to be eligible for federal, state and institutional financial aid.
   D. During the student's freshman year only, the Dean of the division in which the student is enrolled may authorize a student to engage in credit or non-credit prerequisite or remedial programs or courses and apply the time spent on remedial work to the minimum semester hour requirement specified in 1.F, 1.G, and 1.H above.
7. **Satisfactory Progress - Graduate Students.** **The Graduate Faculty determines satisfactory progress and the maximum time limit for completion of a graduate degree for graduate students.**
8. **Satisfactory Progress - Advanced Professional Students.** Regulations regarding satisfactory progress and the maximum time limit for completion of a degree of advanced professional students are determined by the faculty of the respective advanced professional schools (Law, Medicine and Veterinary Medicine).
9. **Additional Information.** The regulations in the Article represent the internal policies of the University. In addition, these regulations are to be used as standards for making certifications to external agencies regarding a student's academic standing and progress toward his/her educational objective. Typically, such certifications to external agencies have to do with the student's eligibility for financial aid. Athletic grants-in-aid have their own prescribed policy concerning academic standing and satisfactory progress and are not covered under this article.

   An academic year shall be defined for the purposes of this policy to be a "12-month period of enrollment" that begins with the Summer term. The Financial Aid Office will review students' compliance with this policy once each academic year at the end of the Winter semester.

   In order to be making satisfactory academic progress for financial aid purposes a student must meet both the qualitative and quantitative provisions of this policy. A student who is deemed not to be making satisfactory academic progress for financial aid eligibility may appeal this decision to the director of the Financial Aid Office. A student will also retain the right to further appeal any decision to the Financial Aid Advisory Committee.

# Add/Drop

To add or drop a course a student may begin in the dean's office of the school or college in which the student is registered. If a student has no registration holds they may add/drop by using telephone or terminal self-registration. No course, other than Problems, Special Readings or Research, may be added after the expiration of one week of classes in a regular session or the equivalent thereof in a shorter session. Add/drop forms that are processed in 205 Brady Commons are good for 24 hours. After the 25th day of the semester or an equivalent period of time in a summer session, the signature of the instructor is required on the add/drop form; a student will be informed at that time of the grade (W or F), which will be submitted to the registrar's office at the end of the semester. Following the approval, the student must process the form at Brady Commons Registration Center, 205 Brady Commons. Please consult "refunds" for amount refunded at different times, and "withdraw" for withdrawal procedures.

# Section Changes

Section changes are within the same course and do not require a form. Section changes are initiated by the student at 205 Brady Commons or by telephone or terminal self-registration. No student will be permitted to section change in any course after the expiration of one week of classes in a regular session or the equivalent thereof in a shorter session.

# Auditors (Hearers)

With the consent of the dean of the school or college in which the student is registered and of the instructor concerned, a student may enroll in a course as a hearer. Normally, a hearer will attend the course on a regular basis; either the department or an individual instructor will stipulate the requirements for enrollment in a course as a hearer. At the request of the instructor, a hearer may be dropped from a course for failure to comply with stipulated requirements. An instructor may request the registrar to backdate a hearer's disenrollment for a course so that no notation of the student's enrollment will appear on the student's permanent record. A hearer will receive no credit toward a degree. Once a student has elected to enroll in a course as a hearer, he or she may not change his or her status to that of a regular student after the tenth day of class; nor can a student who is enrolled for credit change his or her status to hearer after the tenth day of class.

# Change of Grade

Guidelines for grade changes are as follows:

- A student who believes he or she has been graded unfairly should see the course instructor.
- If still dissatisfied, the student may appeal to the chair of the department. (If the course has a large number of sections, such as Math 10, it may have a course director. If so, the student should see the director before appealing the grade to the department chair.)
- The chairman will conduct an investigation. The chair is not allowed to substitute his or her judgment for that of the instructor in regard to the quality of the student's work.
- If the instructor of the course also is the department chair, the dean of the school or college will handle grade appeals.
- No one may substitute personal judgment for that of the instructor in regard to the quality of the student's work. However, mathematical or mechanical errors that may have been made in scoring examinations may be corrected.

No grade shall be otherwise changed unless there is clear, convincing and unequivocal evidence that it was a direct result of arbitrary and capricious conduct on the part of the instructor.

# Classification

Students are assigned to a particular class on the basis of the following credit hour requirements:

**FRESHMAN** 0 to 29 semester hours of credit
**SOPHOMORE** 30 to 59 semester hours of credit
**JUNIOR** 60 to 89 semester hours of credit
**SENIOR** 90 or more semester hours of credit

An undergraduate student pursuing a degree program in an institution other than MU who enrolls at MU is a visiting student and will be enrolled as a non-degree student and not in a school or college. This applies to students who enroll under agreements with the Mid-Missouri Associated Colleges and Universities as well as those from other colleges and universities.

**COMBINING UNDERGRADUATE AND GRADUATE ENROLLMENT** With the approval of the school or college and graduate deans, final-semester seniors in the upper half of

their classes and within 15 hours of completing graduation requirements may enroll dually for up to six hours of graduate credit in their undergraduate division and the Graduate School for courses sufficient to make a full program. Specific circumstances exist in which exceptions to this rule are made; college and school rules should be consulted. Dual enrollment must be completed in the graduate office within one month after the start of the fall and winter semesters and within three weeks of the start of the summer session.

Students who graduate with excess credit without registering in the Graduate School will not receive graduate credit for that work.

This program also is available to seniors in other Missouri colleges. Additional information may be obtained from the Graduate School dean's office.

# Credit by Examination

MU offers the opportunity for advanced credit by examination to any student with less than 90 semester hours of college credit. Credit may be awarded, but no grades or honors points are recorded. General eligibility to receive advanced standing at MU does not guarantee its applicability to a degree program. The official credit-by-examination policy of each MU school and college is available from the appropriate dean's office.

A brochure, Credit by Examination, available from the admissions office, provides additional information.

The following programs are used to award credit by examination:

- **ADVANCED PLACEMENT PROGRAM** The Advanced Placement Program of the College Board is accepted by MU. The examinations are prepared and graded by national committees, and the results are furnished to MU on request of the student. Students who receive a sufficiently high score are eligible for college credit. Contact your dean's office if you have questions.
- **COLLEGE LEVEL EXAMINATION PROGRAM** The College Level Examination Programs of the College Board provide general examinations and subject examinations. Credit may be awarded for CLEP subject exams only. Credit must be applicable in a student's program of study. (Refer to the appropriate section in this catalog for the school or college, or contact the dean's office to ascertain the specific limitations for CLEP examinations.)
  **Subject examinations** are limited to students with fewer than 90 semester hours of credit. The subject examinations are generally accepted by most schools and colleges but may not be considered for credit in all degree programs.
- **DEPARTMENTAL EXAMINATIONS** Departmental examinations are limited to students with fewer than 90 semester hours of college credit and with no official record of previous enrollment in the course(s) in which credit is to be received. Departmental examinations are comparable to final examinations given in the various courses offered on campus. The examinations are objective or essay formats and are prepared and graded by the faculty of the department concerned and MU Testing Services.
  Arrangements for departmental examinations should be made through Testing Services.
- **INTERNATIONAL BACCALAUREATE** MU recognizes the International Baccalaureate Program. Students may receive credit and/or advanced standing for proficiency on the higher-level subject examinations. No credit is granted for subsidiary-level examinations.
- **ADDITIONAL COLLEGE COURSE WORK** MU recognizes college course work completed before high school graduation if the college attended provides an official transcript of the course work.
- **FRESHMAN PLACEMENT TESTS** Placement in English is based on ACT score in English. Math placement is based on ACT math score.

# Writing Requirement

All entering MU undergraduates are required to pass English 20, Exposition and Argumentation, with a grade in the C-range or better. English 20 is a three-hour, freshman course that stresses writing as a process, with due attention given to critical reading and thinking skills applicable to all college classes. Invention, outlining, revising, and rewriting are also stressed.

Students who score 20 or above on the ACT-English Usage or a 34 or above on the Test of Standard Written English (TSWE) will be placed in English 20. Those students with an ACT-English Usage score of 19 or below or a TSWE score of 33 and below will be required to take special sections of English 20.

In addition, all undergraduates are required to complete two writing-intensive courses with grades in the C-range or better before graduation (one upper-division in the major). Writing-intensive courses are offered in a wide variety of disciplines and are taught in a way that improves higher-order reading, writing, and critical thinking skills. English 20 is the prerequisite for writing-intensive courses.

# Emphasis Area or Area of Concentration

At MU, a student's degree program is comparable to a major at other institutions. The degree programs and emphasis areas offered at MU are listed in the University section of this catalog.

# Examinations

Semester and final examinations may be held only during the date and time printed in the examination schedule and approved by the director of admissions and registrar.

Examinations in courses numbered 400 and above may be conducted at any time agreeable to both the teacher and students. Examination of individual students may be held at the discretion of the instructor. This particular regulation cannot be interpreted to mean that individual students constitute an entire class. No student may be re-examined for the purpose of changing a grade after a final grade has been reported to the registrar.

# Maximum and Minimum Enrollment

The MU Faculty Council has established 12 semester hours as the minimum number of hours in which a full-time undergraduate student may be enrolled during a regular semester. Normal course load is 15 to 16 hours. Part-time enrollment (less than 12 hours) requires the permission of the dean of the college or school in which the student is enrolled. Students wishing to drop below 12 hours after enrollment should contact their dean's office.

# Probation

**(See Academic Standing of Undergraduate Students.)**

# Bachelor Degree Requirements

The requirements for an approved degree are established and monitored by the faculty of the school or college responsible for recommending candidates for the degree. A student may be granted two baccalaureate degrees if all requirements for both degrees have been met and the student has completed at least 12 semester hours of course work beyond that required for the first degree.

# Required Work in Residence

Candidates seeking undergraduate degrees from the University of Missouri-Columbia must be in residence on the Columbia campus during the senior year as defined by the school or college involved.

# Student Academic Records

Official academic records including credit, grades and degrees granted by the University of Missouri-Columbia are kept in the Office of the University Registrar-MU. The University does not

permit access to, or release of, educational records or personally identifiable information contained in such records (other than directory information) without the written consent of the student.

# Student Responsibility

Faculty advisers and academic advisers are available to provide guidance, but students are responsible for checking with their dean's office to ascertain if they are progressing satisfactorily toward a degree. Upperclassmen who are candidates for degrees should check with the dean's office no later than the end of the junior year to ascertain if their records are in accord with those maintained in the dean's office.

# Plus-Minus Grading System

The purpose of the grading system is to provide a framework in which the faculty can report evaluation of student performance and achievement. For the internal purposes of such school or college, the faculty of such school or college may adopt a variant of the campus grading system.

The **A±, B±, C±, D±, F, W** grading system is appropriate for those subjects and situations that allow discrimination in quality of achievement and performance. The **S/U** grading system is more appropriate for students wishing to take elective courses in a subject matter field in which they will be competing with majors, for mastery learning situations, and for courses graded primarily on the basis of attendance.

There is no **D±** grade for graduate students. **S/U** grades are possible only in specially approved courses in which there is no other option.

Grades carrying credit are: **A±, B±, C±, D±,** and **S.** Grades calculated in the grade point average are **A+** (4.00), **A** (4.00), **A-** (3.7), **B+** (3.3), **B** (3.00), **B-** (2.7), **C+** (2.3), **C** (2.00), **C-** (1.7), **D+** (1.3), **D** (1.00), **D-** (0.7), **F** or (0). The grades of **S, U,** and **W** are not incorporated in the grade point average.

Students must have a cumulative GPA of 2.00 to remain in good academic standing.

All regulations currently applicable on a course-by-course basis and tied to a specific letter grade would be interpreted to mean a specific letter grade range. Hence, if a student must achieve a "**C**" in one course in order to proceed to another course, under the plus-minus grading system, that student would have to achieve a grade in the "**C** range" which would include the grade of "**C-**".

All regulations currently tied to a specific grade average are interpreted to mean the numerical average currently associated with that specific grade. Hence, the required "**C** average or better" on all courses is a "2.00 average or better."

The grade of "**S**" (on a **S/U** basis) is defined as equivalent to the letter grade of "**C-**" or higher.

Students seeking Missouri teacher certification must receive a **C** (2.0) or better in written and oral communication and mathematics in each of the courses required in these areas within the general education requirements of the College of Education. Students also must obtain a **C** (2.0) or better in the professional education courses required. Students should contact the Associate Dean in the College of Education for further information.

# Course Repeat Policy

When a grade is received in an initial attempt, for an undergraduate course at University of Missouri-Columbia, is a "C-", "D+", "D", "D-", or "F", the grade will be replaced in the calculation of the GPA by the grade received in any second attempt of the same course at the University of Missouri-Columbia (unless the repeat grade is an "I" or "W"). All grades received in second and subsequent attempts will be included in GPA calculations. No more than three courses or 15 semester hours (whichever is greater) will be dropped from the calculations of the student's GPA. All attempts of a given course will appear on the official transcript with the grade(s) earned. The transcript will have an explanation which will identify that the GPA is calculated using all grades earned in a course except the initial attempt when a course has been repeated. *This policy is effective with course work completed Fall Semester 2000 or after.*

Any course being repeated may not be taken on an S/U basis.

This policy does not imply a guarantee that openings will be available in course(s) if and when students wish to retake them and that instructors will not ordinarily know whether a student is enrolled in a course for the second time. When a course is repeated all applicable fees apply.

Degree credit may be earned only once for a particular course unless a department or division has, in other policies allowed, for multiple-credit from that course.

Students are strongly encouraged to visit with an adviser to determine whether reenrollment is advisable (certain department or divisional policies may be important in this connection) and whether doing so will contribute to increased student acceptability of consequences of choices, decisions, etc. Further, students should be aware that repeating a course may have an impact on financial aid, insurance, entrance to professional schools, participation in athletics, immigration status, and other non-academic matters.

The academic status of a student in a given semester will not change as a result of repeating a course.

This policy is applicable to undergraduate students only.

Copies of the formalized Course Repeat Policy and Request for GPA Adjustment Forms can be picked up at the Student's Dean's Office.

# Satisfactory/Unsatisfactory Grading System

Students may elect to take courses under the S/U (pass/fail) grading system in several of the MU colleges and schools. Before electing to take a course on a pass/fail basis, the student should evaluate the advantages and disadvantages of the S/U grading system. S/U status is indicated in the appropriate column on the registration or add/drop form. Students may change to or from the S/U status only through the tenth day of classes in a semester.

In general, the teacher of a course does not know which students, if any, are enrolled on the S/U system, and a grade of A±, B±, C±, D± or F for each student is reported to the Office of the University Registrar-MU. The Office of the University Registrar-MU staff members ascertain which students are enrolled on the S/U system and assigns a grade of U to those reported for grades of D± or F, and a grade of S for those reported A±, B± or C±. Grades of S and U are not included in the computing of grade point averages. Enrollment in courses under the S/U system is subject to the following University faculty's restrictions:

- Beginning freshmen (students who have completed fewer than 12 semester hours) are not eligible.
- Students on scholastic probation are not eligible.
- Only one course per semester or summer session may be elected under the S/U grading system.
- Courses completed with a grade of S may constitute no more than 20 percent of the total hours for the baccalaureate degree.
- Courses completed with a grade of S may be accepted in an area of concentration only with the prior approval of the area adviser.
- Students who complete courses in the final 60 hours S/U ordinarily lose the chance to be considered for graduation with Latin honors.

# Incomplete Grades

Whenever a student cannot be assigned a grade at the end of a course because his/her work is incomplete, the instructor may report to the Office of the University Registrar-MU the fact that such student's grade is incomplete (I). An I grade may be assigned only when (1) the completed portion of the student's work in the course is passing quality and, (2) there is such evidence of hardship as to make it unjust to hold the student to the time limits previously fixed for the completion of his work.

The time allowed for the removal of an I grade is one calendar year from the date of its recording (assuming that the student is in continuous enrollment during the time period). When the incomplete work is accomplished, proper notification of the grade will be provided to the Office of the University Registrar-MU and to the student.

# Transfer from one MU College or School to Another

Students may transfer from one MU school or college to another

in accordance with college and school policies as noted below and in the college and school sections of the catalog. Currently enrolled students may obtain a transfer of division form from their dean's office. Signatures are needed from the deans of the colleges or schools the student is entering and leaving.

# Transfer of Credit

Each fall, approximately 25 percent of the new undergraduates enrolled at MU are students who have transferred credit from other colleges and universities. Because requirements for degrees vary among institutions and since each MU school or college determines which transfer credits meet the requirements for their degrees, a student planning to transfer to MU should write or call the dean's office of the school or college offering study in the student's area of interest. Because of limited enrollment and/or higher minimum standards, general acceptance as a student at MU does not guarantee acceptance to specialized or professional programs.

Course work completed at an accredited institution of higher education and oriented toward a baccalaureate degree normally will be accepted at MU if the grade is **C** or better. However, not all credits transferred to MU fulfill specific requirements for a particular degree.

Official transcripts from each college or university attended must be mailed to the Office of Admissions, 230 Jesse Hall, Columbia, Mo. 65211. Students seeking admission to the College of Arts and Science or the School of Journalism also must submit a high school transcript. All credentials submitted for admission will be retained by MU.

**TRANSFER FROM AN ACCREDITED MISSOURI COLLEGE** An associate of arts degree (AA) is a two-year program that indicates the completion of a student's lower-division education. It also is a specific transfer degree for entry, at the junior level, into the general range of baccalaureate degree programs offered by the University. Students transferring to MU from an accredited Missouri college or university with an associate of arts degree and a certified 2.0 average will be accepted as: (1) having junior standing, and (2) having completed lower-division general education requirements if the AA degree consisted of at least 60 semester hours of college-level work. These 60 hours must include completion of an institutionally approved general education program of not fewer than 39 semester hours. Students holding the AA degree are admissible to MU, but not necessarily to specific programs. Some of the specific programs with specialized lower-division requirements are the colleges of Business, Education, Human Environmental Sciences and the schools of Health Professions, Journalism, Nursing and Social Work. The transfer requirements for these schools may be found in their respective sections of this catalog.

An associate of science degree (AS) is a specialized degree that is intended for transfer into a preprofessional program. It should result from careful planning and agreement between the specific two-year and four-year institutions. Junior standing is guaranteed to the transfer student only if curricular details have been agreed on by the sending institution and the receiving institution, and junior standing can be guaranteed only if the student has received the appropriate AS degree. Students who receive a specialized AS degree do not automatically qualify for junior standing in any other program. If such students enroll in any other degree program, they may have to take additional general education courses. In evaluating the students' transcripts, MU will make every attempt to avoid duplication of effort and the imposition of unnecessary burdens on the student.

Students transferring without the AA degree must meet regular MU transfer admission standards.

The College of Arts and Science does not accept credit from a junior college or community college once a student has attempted 64 hours of college-level work. The College of Human Environmental Sciences does not accept credit from a two-year institution once a student has earned 64 hours of college-level work.

**TRANSFER WITHIN THE UM SYSTEM** For students transferring between campuses within the University of Missouri System, the following UM System policy is applicable: "Any course that leads to an undergraduate degree on any campus of the University of Missouri System shall be accepted in transfer toward the same degree on each campus of the University offering said degree."

**APPEAL** The University of Missouri-Columbia provides an appeal process for transfer students who wish to appeal decisions on admission and transfer of credits.
***Appeals are heard by a faculty committee and the Admissions Review Committee. Appeals may be initiated by writing to the Director of Admissions, 230 Jesse Hall, Columbia, Mo., 65211.***

# Transfer Student Admission

Transfer students will be admitted based on their past academic performance and probability of success in MU course work. Admission to the University does not assure admission to a specific program which may have more stringent requirements. It is the responsibility of the transfer student to check with the school, college, department or program concerning more specific requirements.

# Withdrawal from a Course

Students who wish to withdraw from any course in which they are officially enrolled must do so no later than two-thirds of the way through the semester, including exam week. A student may normally withdraw from courses as long as the total enrollment does not fall below the 12 hours minimum requirement. Withdrawal from a course may require the approval of the student's adviser and dean. Add/drop forms are available in the appropriate dean's office.

Before the sixth week of the semester (26th day), a student may withdraw from a course with no notation of enrollment in that course on the transcript. A student who withdraws from a course after the five-week period receives a grade of W if making a grade of D- or higher in the course. If the grade is F, a grade of F is recorded and is counted as an F in the term grade point average.

# Withdrawal from MU

Students who wish to withdraw from the University initiate the withdrawal in the office of the dean of the school or college in which they are enrolled. A withdrawal may not be dated after the last scheduled day of course work.

# Withdrawal — Active Duty

Students who are called to active duty as part of a Reserve or National Guard unit call-up during an academic term and are unable to complete their work have three options:

- They may choose to withdraw from school, in which case they shall be given a 100 percent refund of all academic fees including the Educational Fee, Student Facility and Activity Fee and any instruction-related miscellaneous fees which may have been assessed. In such cases, no course numbers, titles or grades will appear on the student's academic record. All that will appear on the record will be the date of the withdrawal (date orders require the individual to report for active duty) with an explanatory statement.
- A student and instructor can consider the use of the "I" grade under appropriate circumstances. The time such students spend on active duty shall not be included in the time allowed for the removal of an "I" grade (i.e. one calendar year from the date of its recording).
- The student and instructor may choose for the student to complete or have completed all of the course work and receive a grade prior to the date to report for active duty. This arrangement may work if the students are called-up near the end of an academic term and is subject to the approval of the professor.

This policy is implemented to assure that students called to active duty prior to the end of the semester (or summer term) will receive fair and just treatment, both financially and academically.

# MU's General Education Program Requirements

In May of 1991 the MU faculty approved the "General Education Architecture," designed to improve the quality of undergraduate education through greater attention to breadth, depth, coherence, and interdisciplinary linkage in the general curriculum. The program, which won the 1997 THEODORE M. HESBURGH award for excellence in undergraduate education, calls for the progressive incorporation of seven components into the courses of study of **all** MU undergraduates: (1) Advanced Writing Skills, (2) Math Reasoning Proficiency, (3) Computer and Informational Proficiency, (4) an Undergraduate Seminar, (5) Distribution of Content, (6) a Science Laboratory, and (7) a Capstone Experience. These elements of what is now called the General Education Program are being put into place in stages in order to minimize confusion in course planning and student registration. Students are responsible for satisfying the requirements of all components in place when they enter the University. At present, all components have been implemented except the Undergraduate Seminar.

Students are required to complete the following requirements satisfactorily:

- **Two courses beyond English 20 certified by the Campus Writing Board as "Writing Intensive" (WI).** This requirement stipulates that all MU students must complete with a "C–" or better two Writing Intensive courses after completing English 20. At least one of the Writing Intensive courses must (1) be numbered 100 or above, (2) be considered an upper-division course in the major, and (3) be reflective of the vocabulary and methodology appropriate to the student's degree program. Writing Intensive courses are designated "WI" in the *Schedule of Courses*.

- **Math/Reasoning Proficiency.** Students need to demonstrate competency in College Algebra (Math 10) and will be required to pass one additional course that builds on the math and reasoning skills developed in Math 10 or its equivalent. Such courses are certified as Math Reasoning Proficiency courses by an official faculty review panel and are designated in the *Schedule of Courses* as "MP" courses.

- All students are required to complete a state-mandated course in **American History** or **Government.**

Those enrolling in college for the first time in the fall of 1996 or later will need to complete the following **additional** requirements satisfactorily:

- **Distribution of Content/Laboratory Science.** All students must take 18 credit hours, equally divided between the two areas outside of their major area. The areas designated by the General Education Program (GEP) are (1) Social and Behavioral Sciences, (2) Physical and Biological Sciences and Mathematics, (3) Humanities and Fine Arts. Students take nine hours in each of the two areas outside of their major area, and in one of these nine-hour blocks, one course must be upper division. Also, at least two disciplines must be represented in each of the outside areas. Non-science majors must take a science course with a lab.

- **Computer and Information Proficiency.** Either by approved course work or through proficiency testing, students must demonstrate competency with computers and information technology. A broad spectrum of courses designated CIP are available each semester to enable students to satisfy this requirement.

- **Capstone Experience.** Within the last 45 hours of credit but usually in the senior year, students must take a course or be involved in a project that qualifies as a Capstone Experience, that is, an academic activity that integrates general knowledge with the specialized knowledge each student has developed in the major area and, when appropriate, the related field (often called a "minor"). Possibilities are a senior seminar that requires a major project, an undergraduate thesis, a semester experiment that culminates in a paper or presentation or similar end product, an internship that results in an extensive report, or a performance, exhibition, or recital appropriate to the discipline. Close interaction between ranked faculty and students is essential, and classes are small (typically 20 or fewer students). All majors offer capstones.

*Components that remain to be implemented:*

- **Undergraduate Seminar.** This component, taken within the first 60 hours of credit, will emphasize critical thinking and oral and written communication in a small class (20 students or fewer) taught by a ranked faculty member working closely with students individually and in small groups.

- **Foreign Language Proficiency.** Although the College of Arts and Science and the School of Journalism are the only divisions that require study in a foreign language, the Committee on Undergraduate Education (CUE), the steering committee for the GEP, strongly urges students to pursue proficiency in a foreign language.

Questions about these requirements should be directed to divisional associate deans, academic advisors, or the director of the General Education Program in the Conley House, 602 Sanford.

# Honors College

The Honors College is a community of motivated, high-ability students from all of MU's undergraduate colleges designed to offer an enriched academic experience and personal support. The Honors College gives students maximum flexibility in order to serve their individual interests. Honors courses, taught by many of the University's best professors, encourage interaction between students and faculty and allow students to experience a small-college atmosphere within a large university.

Opportunities include: **Honors Courses** Limited to honors-eligible students, honors courses fall into three categories: 1) honors sections of regularly offered courses; 2) departmental honors and research courses; 3) special Honors College courses. All courses are listed in *Laurels,* the Honors College newsletter.

Specific courses offered through the Honors College:

The four-semester *Humanities Sequence,* an academic centerpiece of the college, provides an integrated approach to literature, philosophy, art history and music.

The two-semester *Social and Behavioral Science Sequence* is designed to engage students in the seminal insights of the social and behavioral sciences as they are embedded in the historical experiences of the American people.

The two-semester *Science Sequence* is a hands-on laboratory science course for non-science majors designed to introduce students to the methods and range of scientific knowledge.

*Freshman Colloquia* Small, informal discussion groups for first-year students.

The *Honors College Community Involvement Program* A service-learning outreach program designed to assist members of the community and offer students problem-solving and leadership experiences. Service projects include mentoring at-risk adolescents, working with low-income preschool children, and investigating and providing service for local public health agencies. Students perform community service, participate in a seminar, and complete research projects.

*Independent Study* One-on-one study under the direction of a faculty member.

*Honors Preceptorship* The Honors College helps arrange special research relationships between talented students and professors.

*Learning by Contract* Honors students who are interested in taking a non-honors course for honors credit may do so through Learning by Contract. The student enters into a contract with the professor to complete work beyond the course requirements. Forms are available at the Honors College.

*Honors Certificate* Students who complete 20 hours of honors courses and have a 3.3 cumulative GPA are eligible for an Honors Certificate, which is noted on their permanent transcript.

**Advising** The Honors College offers one-on-one academic advising for all honors students on a drop-in basis. Students planning a career in medicine or other health professions (such as dentistry, optometry, podiatry, or pharmacology) can discuss requirements and different options for graduate study with the pre-health professions adviser. This adviser will also arrange an interview session for aspiring health professions candidates and write a composite letter for each student.

**Honors Housing** The Honors Learning Community brings together honors students of various academic orientations into one intellectually and socially stimulating setting.

***Laurels*** This newsletter, published electronically, keeps honors students abreast of current Honors College events and opportunities such as Scholar in Residence and Honors College scholarships. Before registration each semester, a special print issue of the *Laurels* provides descriptions of classes offered and brief biographies of the professors.

**HUMANITIES SCHOLARSHIPS** The faculty of the Humanities Sequence nominates students for two annual scholarships:

**The Harry J. and Richard A. Hocks Scholarship in the Humanities Sequence** was created by Dr. Richard Hocks, a professor in the Humanities Sequence, in memory of his father, and is presented to a student who has sustained a record of excellence in two or more courses in the Humanities Sequence.

**The Charles M. Hudson Scholarship in the Humanities Sequence** is awarded to a student who has financial need and who has excelled in two or more courses in the sequence.

**OTHER SCHOLARSHIPS** Applications for the following scholarships are available at the Honors College during the winter semester. Watch *Laurels* for scholarships deadlines.

**The Philip L. Blazer Memorial Scholarship** is awarded annually to a student in the College of Arts and Science or the School of Journalism. The recipient must be a Missouri resident, a worthy graduate of a Missouri high school, and an outstanding scholar in need of financial assistance.

**The Rhodes Clay Scholarship,** established by Green Clay in memory of his son, is awarded to a freshman on the basis of scholarship, deportment, and general worthiness, including moral character and physical constitution.

**The W. Alton Jones Memorial Scholarship,** established by Nettie Marie Jones in memory of her husband, is awarded annually to an unmarried freshman or sophomore selected on the basis of scholastic excellence, high moral character, financial need and an interest in the arts and humanities.

**ADMISSION REQUIREMENTS** Interested students must apply for admission to the Honors College after they have been accepted to the University. Applications are available at 211 Lowry Hall. The following students are eligible for admission:

- Incoming freshmen who graduated in the top 10 percent of their class and earned a composite score of at least a 29 on the ACT (or a 1300 SAT score).
- Incoming students who believe they would profit from the Honors College but who are not automatically eligible are encouraged to write an introductory essay in addition to completing the standard application. Once accepted into the Honors College, students must maintain a 3.0 cumulative GPA to remain honors eligible.
- Currently enrolled students who have a 3.5 cumulative GPA and at least 30 credit hours.

Transfer students will be evaluated on the strengths of their previous college records.

***For additional information, students should contact the Honors College, 211 Lowry Hall, (573) 882-3893.***

# College of Agriculture, Food & Natural Resources

## Administration

**Thomas L. Payne,** dean/director, MO Agriculture Experiment Station
**Paul Vaughn,** associate dean, Academic Programs
**Michael Chippendale,** acting associate director, Agricultural Experiment Station
**John Gardner,** associate dean, Agriculture Extension
**Dave Baker,** assistant director, Agriculture Extension
**Jim Spain,** assistant dean
**Dana Brown,** director, Career Services
**Kenneth C. Schneeberger,** director, Advancement

## Units and School

**Animal Sciences Unit**
**Biochemistry Unit**
**Food Sciences and Engineering Unit**
- **Agricultural Systems Management**
- **Food Science**
- **Hotel and Restaurant Management**

**Plant Sciences Unit**
- **Agronomy**
- **Entomology**
- **Horticulture**
- **Plant Pathology**

**Social Sciences Unit**
- **Agribusiness Management**
- **Agricultural Economics**
- **Agricultural Education**
- **Agricultural Journalism**
- **Rural Sociology**

**The School of Natural Resources**
- **Fisheries and Wildlife**
- **Forestry**
- **Parks, Recreation and Tourism**
- **Soil and Atmospheric Science**

The College of Agriculture, Food and Natural Resources was established at the University of Missouri-Columbia in 1870 as the state's land-grant University in response to the need for agricultural teaching and research in Missouri. The four major divisions in the college, the Agricultural Experiment Station, Academic Programs, Agricultural Extension and International Programs, have had great influence on Missouri. Agriculture, a basic and applied field of study, is concerned with the production and utilization of food, feed and fiber as well as of natural resources, human and animal environments and life sciences. There is a strong demand for well-trained personnel in the food and life sciences and natural resource management.

MU's College of Agriculture, Food and Natural Resources, one of the largest in the country, has excellent and extensive facilities for instruction, from outlying research centers to highly specialized laboratories. Personalized instruction is a trademark of the college, which has proven itself a leader in the state of Missouri in providing high-quality, individualized advisement and counseling by faculty members who are familiar with a student's area of expertise.

The College of Agriculture, Food and Natural Resources is organized into six administrative units including the School of Natural Resources. Challenging careers are available to students in hotel, restaurant, agribusiness and farm management. There are opportunities for students in such fast-growing areas of science as biotechnology, environmental studies, nutrition, food safety, meteorology, genetic engineering and agricultural or food engineering. A person interested in medical science, wildlife and forests or any living organism — from insects to domesticated plants and animals — can find a place to pursue those interests here. Preprofessional study in law, veterinary medicine and medicine may be completed in the College of Agriculture, Food and Natural Resources.

Goals of the college include providing students with relevant scientific knowledge and practice in its application to the food, environmental and agricultural sciences. Skills in solving interdisciplinary problems are cultivated along with instilling the desire and capacity to pursue lifelong learning. Accomplishment of these goals allows students to adapt to future technological and sociological changes. Student development is stressed by focusing on leadership, innovation, co-curricular and entrepreneurial activities coupled with growth in communication skills.

Preparation for a successful career during and after college can be enhanced by selected extracurricular experiences designed for personal and leadership development. These activities include FFA, 4-H FBLA and a range of other experiences that encourage individuals to set goals, apply their course work and develop leadership skills.

A university education takes place inside and outside the classroom. Faculty and students share expectations about education in terms of processes, competencies and outcomes. Through faculty-student involvement, these expectations are personalized for the individual and the discipline.

Basic competencies are expected of all graduates. These include the following:

- The ability for critical, detailed inquiry and abstract and logical thought
- The possession of literacy and facile communication ability encompassing writing, reading, speaking and listening
- The ability to understand numerical data
- The ability to understand and interpret scientific concepts
- An appreciation of international and multicultural influences
- The ability to pursue in-depth study

**ADMISSION** Students admitted to the University of Missouri-Columbia are encouraged to enter the College of Agriculture, Food and Natural Resources and the School of Natural Resources as freshmen.

**TRANSFER STUDENTS** Students transferring to MU from other accredited institutions of higher education or other schools and colleges within the University of Missouri-Columbia are subject to the regulations established by the MU Faculty Council concerning transfer of credit. Transfer of credit is described in the Academic Regulations section of this catalog.
***For more information on transfer guidelines, call (573) 882-4459.***

## Student Services

**ADVISEMENT** When entering the college, each student is assigned a faculty adviser to assist in defining career goals, planning courses, and in fulfilling a program of study that leads to graduation. The academic adviser also serves as a resource person for the student in a variety of academic and personal situations.

One of a student's first priorities is to meet and become acquainted with the academic adviser early in the semester. The student should consult with the academic adviser when planning or changing the academic program because the adviser must approve and sign the program of study for graduation.
***Questions dealing with advisement should be directed to the associate dean, 2-64 Agriculture Building, (573) 882-8301.***

**CAREER SERVICES OFFICE** The college's Career Services Office (CSO) provides a variety of services to students and college alumni. The staff helps people analyze their skills and encourages them to explore employment opportunities in a variety of career areas.

Career development services include Career Days, one-on-one help sessions, workshops, resume writing, mock interviews, job-seeking tactics, instructional videotapes and periodical files. For students or alumni interested in employment services, the college offers information on prospective employers and job listings.

Each year, the CSO schedules on-campus interviews for graduating seniors to enable representatives from local and national businesses and state and national government agencies to meet prospective employees. The office also assists alumni involved in career changes and undergraduates looking for part-time and summer employment.

***For more information on the Career Services Office, write or call the director, 2-64 Agriculture Building, (573) 882-0088.***

**STUDENT ACTIVITIES** The College of Agriculture, Food and Natural Resources offers a variety of extracurricular student activities that contribute to a student's education and professional development. Clubs and organizations sponsor activities related to professional interests as well as social events. Involvement in extracurricular activities encourages students to meet people and gain experience in working with organizations and fosters leadership development. Involvement in activities outside the classroom also may prove beneficial when applying for scholarships or jobs. Many organizations and companies look favorably on a student who has received good grades while being involved in clubs and other University organizations.

Each class and club elects a representative to the Agricultural Division Student Council. Honorary organizations such as Alpha Zeta and Gamma Sigma Delta promote the ideals of scholarship and leadership and recognize outstanding achievements by students in the college.

# Required Work in Residence

The last 30 hours must be completed on the MU campus.

# Scholarships

### Undergraduate Scholarships and Awards

The College of Agriculture, Food and Natural Resources (CAFNR) has an extensive scholarship program for entering freshmen and upperclass students; more than $650,000 is awarded annually.

Scholarships described in this section of the catalog are for students enrolled in a CAFNR degree program and with a career interest in agriculture, food science, and natural resources.

Freshman scholarships are based on high school rank, standardized college-entrance test scores (ACT or SAT) and extracurricular involvement. Freshmen should complete the application in the MU Scholarship catalog and submit it by December 1 of the year before they seek to be admitted. Approximately $300,000 is awarded to entering freshmen each year.

Remaining scholarships are awarded to qualified upperclass students who must complete a separate college application by February 1.

***For more information, write or call the Academic Programs Office, 2-64 Agriculture Building, (573) 882-0089.***

**Ag Alumni** One or more scholarships are to be awarded to a sophomore or junior who has demonstrated exceptional leadership skills and organization involvement with a minimum 2.75 grade point average.

**Agricultural Engineering Alumni Scholarship** This award is given to Missouri high school graduates majoring in agricultural engineering. Selection is based on grades, character, need and interest in the field. Recipients are selected by the Department of Agricultural Engineering.

**Agriculture Journalism Endowment Fund** One or more annual awards shall be granted to entering freshmen students who are majoring in Agricultural Journalism, in the top ten percent of their high school class. Preference shall be given to students who come from a farm background. Essay required.

**Alpha Gamma Sigma/Ron Lemonds Scholarship** One or more annual awards to upperclass students who are members of Alpha Gamma Sigma fraternity and have a sincere interest in agriculture.

**American Hotel Foundation Minority Scholarship** Scholarships of $1,000 or more for minority students who are U.S. citizens, have a GPA of 3.0 or higher, and are currently working in the hotel industry.

**American Hotel Foundation Scholarships** Scholarships are awarded to students majoring in hotel and restaurant management. Selection is made by the Department of Food Science and Nutrition.

**American Hotel and Motel Association** Two $1,000 scholarships for juniors or seniors interested in hotel management. One minority scholarship of $1,000.

**Anheuser-Busch Fellowship Award** This is awarded to students enrolled in food science and nutrition. Recipient must have demonstrated academic achievement, the potential to contribute to the private enterprise sector of the scientific community and financial need. The Department of Food Science and Nutrition makes selection.

**Wendell S. Arbuckle Ice Cream Endowment** Scholarships are awarded to undergraduate and graduate students enrolled in food science and nutrition who are planning careers in ice cream research and education. Selection is made by the Department of Food Science and Nutrition.

**H. Victor Arnaud Family Farm Scholarship** This scholarship is awarded to students enrolled in the college who were reared on a family farm, or who intend to live on and operate a family farm after graduation. Financial need is the primary consideration.

**Emma Jean Ballew Agricultural Scholarship Fund** One or more annual awards for students in the College of Agriculture, Food and Natural Resources.

**Bank of America Farm Management Scholarship** Junior, Ag Econ/Ag Business majors with interest in the farm management field are eligible to apply for this scholarship. Recipients must have good academic standing and must have taken an introductory farm management course. Scholarship is applied to senior year educational fee.

**Barry D. Bargfrede Scholarship Fund** One or more annual awards to freshmen students who are members of Alpha Gamma Sigma fraternity and have a sincere interest in agriculture. Scholarship is to be used in their sophomore year.

**R.P. Beasley Memorial Scholarship** This scholarship is awarded to one or more sophomores majoring in agricultural engineering or agricultural mechanization. Recipients are selected by the Department of Agricultural Engineering on the basis of academic performance during the freshman year, character, participation in school activities and financial need.

**Paul H. Bebermeyer Scholarship Fund** Awarded to third- or fourth-year undergraduate agricultural economics students. Recipients are selected by the Department of Agricultural Economics.

**Beck Flavors Scholarship** Scholarships to freshmen or sophomores majoring in food science and nutrition. Recipients are selected by the Department of Food Science and Nutrition.

**Mom Beger Scholarship Award** Sophomore, junior or senior members of Alpha Gamma Sigma fraternity are eligible to apply for this award. Selection is based on good scholastic standing, leadership potential, good character and financial need. The fraternity makes recommendations.

**Birkenholz Leadership Award** One or more annual awards shall be made to juniors or seniors enrolled in the Agricultural Education degree program. Recipients must possess outstanding leadership skills, be a current or former member of FFA and have a cumulative grade point average above 2.75.

**Richard A. Bloomfield Scholarship** Recipient must be an undergraduate student majoring in an area which relates chemistry to agriculture.

**William C. Boney Memorial Scholarship Fund** Awarded to full-time students working toward an agricultural degree, with preference given to graduates of Windsor High School. Secondary preference goes to graduates of high schools in Henry, Benton and Randolph counties. Awards may be renewed with satisfactory academic progress.

**Boone County Farm Bureau Memorial Scholarship** One or more awards to full-time student(s) who are in good academic standing in the college and whose parents are members of Boone County Farm Bureau.

**August and Gladys Braksick Scholarship in Agriculture** One or more annual awards with preference to graduates from any high school in Lafayette County, Missouri, who have exhibited leadership skills and have been involved in forensics, debate or public speaking.

**Jason E. Bredahl Memorial Fellowship** Awards made to fund activities promoting a foreign experience for an undergraduate or graduate student in Agricultural Economics.

**Harold F. Breimyer Scholarship and Loan Fund** Awarded to juniors majoring in agricultural economics. Preference will be given to qualified students working part-time to help meet educational expenses. Selection is made by the Department of Agricultural Economics.

**Clyde and Mina Ruth Brown Memorial Scholarship Fund** Third- and fourth-year students are eligible to apply for this award. Preference is given to applicants from Audrain County who are majoring in agronomy or agricultural economics, have a financial need, have participated in University and community affairs, and have demonstrated academic achievement.

**John E. Brown Scholars** John E. Brown Scholars are upperclass students in good academic standing with interest in agribusiness management. Stipend covers expenses incurred during a five-day internship with leading agribusinesses in the St. Louis area. The selection committee, appointed by the director of resident instruction, chooses 16 or more students.

**John K. Bryan Scholarship** Students majoring in hotel and restaurant management are encouraged to apply for this scholarship. The number and amount of scholarships are determined by the Missouri Hotel and Motel Association.

**Jim Burch Scholarship Fund** Awarded to students pursuing a degree in agriculture and related studies with at least a 2.5 grade point average and financial need. Must demonstrate leadership and meritorious behavior.

**Damon V. Catron Scholarship** This scholarship is awarded to a senior majoring in food science and nutrition. Recipients are selected by Department of Food Science and Nutrition.

**Club Managers Association of America — Mid-America Chapter** Awarded to students majoring in hotel and restaurant management.

**Henry I. Cohn Memorial Agricultural Scholarship** Endowment provides scholarships for entering freshmen and upperclass students enrolled in the college who have demonstrated outstanding academic ability and potential.

**Norman Jay Colman Scholarship** Available for students who demonstrated academic excellence, leadership and citizenship while in high school.

**Carl C. Cornett Scholarships** One or more annual awards to students in agriculture, food and natural resources.

**Owen J. Cotterill Educational Fund** Endowment provides scholarships and support for conferences, short courses or field experience. Students majoring in food science and nutrition are eligible to apply. The Department of Food Science and Nutrition selects the recipients.

**Charles L. Counts Memorial Agriculture Scholarship** One or more annual awards. Preference to graduates of Steelville R-3 School District high schools. Additional preference to animal science majors and graduates of any Crawford County high school. Must have minimum 2.5 grade point average.

**Grace Hirst Creed Scholarship** Three awards per year are made to upperclass students who have shown need, have made an effort to meet that need by working while attending the University, and are not receiving financial assistance through scholarships, grants, or loans.

**Curators Interscholastic Events Scholars** One-year scholarships are awarded to students who receive a high rating in state FFA contests, and who rank in the upper third of their graduating class. Special applications are made to the Department of Agricultural Education. The department recommends recipients.

**Clark E. Dehaven Scholarship** A $1,500 scholarship offered by the National Association of College and University Food Services for sophomores, juniors and seniors; must have a GPA of 2.75 or higher and be a U.S. or Canadian citizen.

**John W. Dickey Memorial Fund** This scholarship is awarded to animal sciences majors with preference given to students interested in poultry science. Aid may be in forms of scholarships or work-study awards.

**Joe G. Dillard Family and Friends Scholarship** One or more annual awards to junior or senior students with financial need with preference to students in the fields of Fisheries, Natural Resource Stewardship and/or Agriculture Communications.

**Paul N. Doll Scholarship** Scholarships are awarded to sophomores majoring in agricultural engineering or agricultural mechanization. Recipients are selected by the Department of Agricultural Engineering.

**John B. Dorsey Scholarship** One or more annual awards with preference to students who are graduates of Stet, Missouri, R-15 School District; second preference to students who are graduates of any high school in Ray or Carroll counties, Missouri.

**J. E. Edmondson Educational Fund** The endowment provides funding for scholarships and other projects having a direct relationship to the education of undergraduate students enrolled in food science and nutrition.

**Mr. and Mrs. Jacob Ensminger Scholarship** Awarded to a junior, senior, or graduate student majoring in agriculture. Consideration will be given to academic achievement, leadership, extracurricular activities, character and financial need.

**Federated Garden Clubs of Missouri Scholarship** Upperclass and graduate students majoring in any aspect of horticulture. Selection criteria include scholarship and financial need. Several awarded each year.

**John A. Ficken Memorial Scholarship** This scholarship is awarded to a junior or senior majoring in animal sciences with an interest in swine production. Recommendations come from the Department of Animal Science in consultation with the Missouri Pork Producers Association.

**Stockton Fountain Scholarship** These unrestricted scholarships are awarded to entering freshmen and upperclass students.

**John Franz Book Award** Awarded to a biochemistry student for the purchase of books. Selected recipient shall have the highest combined grades in the first two biochemistry courses.

**Bud Frew Family Scholarship** One or more annual awards to students in the college who have a direct interest in agriculture with demonstrated leadership skills.

**Burdette Frew MFA Incorporated Scholarship** Awarded to sophomore or above with preference to Missouri residents with a minimum GPA of 3.0 and financial need.

**Gamma Sigma Delta Sophomore Award** Awarded to the highest ranking sophomore in the college.

**Gateway NAMA Scholarship in Agricultural Communications/Agrimarketing** Award is based on academic excellence and potential for a career in agricultural communications/agrimarketing. Awards also support travel expenses to attend NAMA chapter or national events. Recipients are selected by the agricultural journalism and agricultural economics faculty.

**David S. Geddis Jr. Memorial Scholarship Fund** A scholar-

ship is awarded to a sophomore, junior or senior majoring in horticulture, with an emphasis on floriculture.

**Ruby and Mary Green Scholarship** Awarded to students in good academic standing who plan to be full-time farmers upon receipt of a degree. Preference given to students from Adair, Putnam, Schuyler and Sullivan counties in Missouri.

**Harry W. Guengerich Scholarship** One or more annual awards shall be made to undergraduate students in the horticulture/plant sciences. Preference shall be given to incoming freshmen students with a 3.0 grade point average and financial need.

**J. W. Hackamack Scholarship** Preference for this scholarship is given to students who have been members of FFA while in high school, those who have taken courses in communication skills beyond what is normally required by the college, and students who plan to return to the farm or go into farm management.

**Howard R. Hackler Memorial Scholarship** This award goes to students studying agriculture, food science or veterinary medicine who have a farm background and an interest in Aberdeen Angus cattle.

**Larry S. and Jean Baker Harper Endowed Scholarship for International Agricultural Studies** Annual award to provide support for students in the College of Agriculture, Food and Natural Resources who are enhancing their education while studying and traveling abroad.

**Charles M. Harrold Institute of Food Technology (IFT) Award** This award is made to a junior majoring in food science and nutrition. The recipient is selected by the Department of Food Science and Nutrition.

**E.H. Harvey Award** This award goes to an outstanding senior with professional interest in food sciences.

**Hatchery Section, Missouri State Poultry Association Scholarships** Students majoring in animal sciences with an interest in poultry science are eligible to apply for this award. Selection is made by the Department of Animal Sciences.

**Delmar E. Hatesohl Travel Scholarship Fund** This fund supports travel expenses for students majoring in agricultural journalism/communications, so that they may attend professional meetings. Scholarships also may be awarded from this fund. Recipients are selected by the agricultural journalism faculty.

**Robert L. Hawkins Scholarship** Preference for this scholarship is given to students from southwest Missouri who are studying to be secondary-education agriculture teachers.

**Kenneth Ray Heath Memorial Scholarship** One or more awards are presented to freshmen who have graduated from a high school in Missouri's Bootheel and have a high school cumulative grade point average of not less than 3.0 (B average). Recommendations for recipients are made by the college to the Office of Student Financial Aid.

**George and Eliza Hechler Scholarships** Scholarships are awarded to seniors in the colleges of: Agriculture, Food and Natural Resources, Engineering, Human Environmental Sciences, or Veterinary Medicine. Recipients must be preparing to be vocational teachers and majoring in any of the above-mentioned colleges or schools, even though they are enrolled in the College of Education. Recipients must be graduates of a Chariton County high school or have been Chariton County residents at the time of graduation from a high school located in any other Missouri county.

**W. R. Hechler Scholarship** This award is granted to juniors, with the same criteria for selection as those of the George and Eliza Hechler Scholarship.

**Don Heil Government Studies Internship Fund** An annual award to support undergraduate students who are participating in internship programs in Washington, D.C., or other approved locations.

**Georgia Hellberg Memorial Fund** Awarded to student with financial need pursuing a degree in agriculture, food and natural resources.

**George W. Hensley Scholarship** Academic achievement and financial need are the criteria used to select recipients of this scholarship, awarded to full-time students studying agriculture or food science.

**Bill Hires Scholarship** One or more annual awards to students who are studying Agricultural Systems Management, with an emphasis and special interest in power and machinery. Preference shall be given to incoming freshmen.

**James R. Houx Education Fund** This fund provides on-campus internships for undergraduate and graduate students. Preference is given to students from Johnson County.

**Carl M. Humphrey Recognition Scholarship** This scholarship is awarded to students actively participating in the agricultural education program who intend to become secondary-education agriculture teachers. Recipients are chosen by the Department of Agricultural Education.

**Institute of Food Technology Freshman Award** Awarded to the outstanding freshman with professional interest in food science.

**International Association of Conference Centers** A $2,500 scholarship for individuals who plan to pursue a career in meeting planning and have worked in this phase of the industry.

**Jack L. and Wes Isaacs Memorial Scholarship** This scholarship is awarded to a graduating senior of the Stet R-15 School District to be used in the recipient's sophomore year in the college. Recipient must have met specified goals in the Stet FFA Program and be enrolled in a four-year degree program in an agriculture-related field. Recipient is chosen by the Stet R-15 agriculture teacher or FFA adviser and approved by the college's Scholarships and Awards Committee.

**C. R. Johnston-Farm Bureau Scholarship in Animal Sciences** The scholarship is awarded to animal sciences majors whose parents are members of Missouri Farm Bureau Federation.

**William Holland Johnson Memorial Dairy Scholarship** Annual awards shall be made to junior or senior students with an emphasis in dairy marketing or dairy production. Preference shall be given to students with a minimum 2.5 grade point average who are from families that are members of Dairy Farmers of America.

**M. M. Jones Freshman Scholarship** Awards are given to freshmen majoring in agricultural engineering or agricultural mechanization. Selection is made by the Department of Agricultural Engineering.

**Weldon and Winnie Jones Undergraduate Research Scholarship in Biotechnology** One or more awards shall be granted to a sophomore, junior or senior enrolled in the general area of biotechnology. The award is for an on-campus research project.

**KABA/Select Sires Scholarship** An animal sciences major with interest in dairy science receives this award. Selection is based on leadership, service orientation, character and scholarship excellence. Recipient is nominated by the Animal Sciences Department.

**Greater Kansas City Hotel and Motel Association Scholarship** This scholarship is awarded to high school students and college undergraduates from the Kansas City area.

**Robert L. Keeney Scholarship** This endowment provides a scholarship to a junior or first-semester senior majoring in hotel and restaurant management. Applications are obtained through the Department of Food Science and Nutrition. Selection is made by the Missouri Restaurant Association.

**Harry L. and Essie Heyle Kempster Memorial Scholarship** Undergraduate or graduate students are selected by the poultry science faculty for this award on the basis of scholastic excellence and financial need.

**Elmer R. Kiehl Scholarship** This scholarship is awarded to a freshman. Selection is based on leadership, scholarship potential and extracurricular activities in high school. Recommendations from Alpha Gamma Sigma fraternity are provided to the Scholarships and Awards Committee.

**Charles Kiepe Scholarship** These unrestricted scholarships are awarded to undergraduate students with any agriculture major.

**Arnold W. and Lois McCanse Klemme Scholarship** Preference is given to applicants from Lawrence and Franklin counties.

**Geraldine and Clarence Klingner Scholarship** This award is provided for students majoring in agricultural economics

with emphasis on the study of the impact of public policy on American agriculture.

**Kollar-Brock Scholarship Fund** One or more annual awards to freshmen or sophomore students with preference to students from DeKalb, Davies, Adair, Schuyler or Scotland counties in Missouri.

**Nancy Brady Kratchman** One or more awards to students from Northwest Missouri, with preference given to students from Buchanan County, who are planning a career in production agriculture.

**Sam J. Lewis Memorial Scholarship** Awarded to junior students pursuing degrees in agriculture banking.

**Jerry L. Litton Memorial Fund** Students with leadership potential, active participation in FFA activities and/or an interest in agricultural journalism are eligible to apply for this scholarship. Recommendations are made by the agricultural education and agricultural journalism faculty.

**Longwell Leadership Award** Awarded to students enrolled in the college who have demonstrated academic and leadership potential.

**Richard V. Lott Scholarship** Horticulture majors demonstrating financial need are eligible to apply for this scholarship. Recipients are selected by the Department of Horticulture.

**William Leslie Magruder Memorial Fund for Agriculture** A scholarship is provided to students studying to become secondary-education agriculture teachers. Recipients are evaluated on the basis of academic excellence, leadership, dedication and professional promise in the field. Recommendations are made by the Department of Agricultural Education.

**Marketing of Dairy Products** Awarded to outstanding students pursuing undergraduate degree in agricultural economics with a business option.

**James O. Martin** One or more awards to upperclass students majoring in some aspect of food production or the production of agricultural products.

**Mr. and Mrs. E.S. Matteson Scholarship Fund** One or more annual awards to animal sciences majors.

**James O. Mavis Award** This is awarded to a freshman demonstrating superior scholarship and exceptional interest in professional employment in the food industry.

**Margaret V. "Babe" McCarty Scholarship** These are unrestricted scholarships awarded to undergraduate students enrolled in the college.

**Ray C. McClure Scholarship** This fund provides a scholarship to a freshman who has been an active member of FFA while in high school. It may also provide scholarship to an agricultural education major during a student-teaching semester.

**Kenneth L. McFate — National Food and Energy Council Electrification Scholarship** Freshmen interested in distribution of electrical power. Selection by the agricultural engineering scholarship committee.

**J. Keith Melvin Scholarship** Scholarships are provided for juniors or seniors majoring in agricultural mechanization or agricultural engineering. Selection is based on academic performance and leadership.

**Merchants Exchange of St. Louis Scholarship** This scholarship is awarded to a junior or senior with career interest in agribusiness. Selection is based primarily on leadership.

**MFA Foundation Scholarship** Awarded to residents of Missouri pursuing a course of study in agriculture, food and natural resources that affects rural life. Students must be in need of financial aid.

**Frederick B. Miller Trust Scholarships** Scholarships are available for undergraduate and graduate students studying animal sciences. Recipients are selected by the Department of Animal Sciences.

**J. C. (Jack) Miller Scholarship in Animal Science** This scholarship is awarded to junior or senior students majoring in animal sciences. Selection is based on scholarship performance, leadership and financial need.

**Lowell Miller Fund Scholarship** This endowment provides scholarships and on-campus internships for students majoring in biochemistry. Leadership, financial need and academic potential are the primary considerations for selection.

# Agriculture, Food and Natural Resources

*• In 2000 more than $650,000 in scholarships were awarded to students in the college. The average award amount was $1,076.*

**M. F. Miller Alpha Zeta Alumni Award** This award goes to a sophomore on the basis of scholastic excellence.

**Miller-Morse Student Fund Scholarships** This scholarship is awarded to students, preferably from farm families.

**Missouri Association of Meat Processors Scholarship** This goes to an undergraduate majoring in agriculture with interest in the meat industry.

**Missouri Farm Bureau Scholarship** One annual award goes to a sophomore, junior or senior pursuing a degree in agriculture in any area with the exception of animal sciences. Student or parents must be members of Missouri Farm Bureau Federation. Academic achievements, leadership abilities and financial need are also criteria for selection.

**Missouri Milk, Food and Environmental Health Association Scholarship** This is awarded to an outstanding student enrolled in fields related to food science. Applications can be obtained from the Department of Food Science and Nutrition.

**Missouri Polled Hereford Association Scholarship** This is awarded to a sophomore, junior or senior with a good academic record who has an interest in Polled Hereford breed of cattle.

**Missouri Seedman's Association Scholarship** This award is presented to an upperclass student studying field crops. Recommendations are made by the Department of Agronomy. Selection is based on scholastic record and college activities.

**Roger Mitchell Scholarship** One or more annual scholarships to provide funds to pay for up to 15 hours per semester shall be made to a student with a minimum grade point average of 3.0 and leadership ability.

**Mizzou Alumni Scholarship** The Mizzou Alumni Scholarship is funded by the sale of tickets for the Ag Day BBQ luncheon ($1 from each ticket goes toward this scholarship). The MU Alumni Office matches the amount collected from ticket sales.

**Stanley A. Morrow Memorial Endowment Fund Scholarship** This is awarded to a freshman or sophomore on basis of scholastic excellence, character, financial need and an interest in agriculture or agribusiness.

**Merle E. Muhrer Fund** Funds shall be used to support undergraduate internships or similar learning experiences to allow students to conduct research under the supervision of a faculty member(s) in biochemistry.

**National Restaurant Association Scholarship** Awarded to students majoring in hotel or restaurant management.

**Eugene V. Nay Scholarship** This recognizes students who have a professional interest in food science. Selection is made by the Department of Food Science and Nutrition.

**Michael and Paula Nolan International Studies Scholarship** One or more annual scholarships shall be made to allow undergraduate students to have a significant international experience.

**Virginia Norris Scholarship** Awarded to full-time students from Shelby County or who have attended a Shelby County school.

**Orscheln Farm and Home Supply Inc. Scholarship** This is awarded to entering freshmen who have been members of FFA for four years, have demonstrated outstanding leadership ability and have excelled scholastically. Selection is made by the Department of Agricultural Education.

**Dr. Homer and Maxine Patrick Memorial Scholarship in Poultry Science** One or more work-study awards shall be granted to junior or senior students who have an emphasis of study in poultry science. A brief proposal of skills to be gained through this work is required.

**J. Leonard Peerman Scholarship** Preference for this award is

given to students in agricultural journalism with good academic records.

**MU Poultry Science Club Scholarship** This is awarded to students majoring in animal sciences with a poultry science emphasis area.

**William A. Powell Scholarship** This scholarship is awarded to sophomores, juniors or seniors. Recipient must be the son or daughter of a member or employee of Dairy Farmers of America.

**Producers and Texas Livestock Marketing Association of Kansas City Student Scholarship and Enrichment Fund** Awarded to undergraduate Missouri residents with rural backgrounds majoring in animal science or meat science in the amount of one-half of in-state educational fees.

**Vincent A. Raaf Memorial Scholarship Fund** This is awarded to a sophomore, junior or senior majoring in animal sciences or agronomy. Recipients must be residents of Osage, Callaway, Cole or Moniteau counties.

**A. C. Ragsdale Scholarship in Dairy Science** This award is given to a senior with an interest in dairy science. Selection is based on scholarship, leadership and participation in extracurricular activities.

**Thomas Ragsdale Scholarship** Awarded to freshmen and upperclass students pursuing degrees in agriculture, food and natural resources.

**Thomas J. and Mary M. Ream Scholarship Fund** Scholarships are awarded to freshmen with first priority given to students from Clearwater High School or Pettis County. High school grades and financial need are primary selection criteria.

**Red Roof Inn Scholarship** Awarded to a sophomore and junior in hotel and restaurant management.

**W. H. E. Reid Scholarship in Dairy Technology** The memorial endowment provides awards to students majoring in food science and nutrition. Recommendations are made by the Department of Food Science and Nutrition.

**Resident Wives Club Endowment Fund** An annual $500 award for undergraduate or graduate student.

**Nova and Maxine Richardson Scholarship** Awarded to upperclass students who are graduates of Unionville Senior High School in Unionville, Mo.

**Julia Rocheford Scholarship** Preference given to students with financial need and to students working at the Rocheford Turkey Research Farm.

**Rochester Cheese Scholarship** A scholarship is awarded to freshmen with academic interest in the food or dairy field. Preference is given to Missouri residents. Selection is made by the Department of Food Science and Nutrition.

**Eric G. Rowe Scholarship** Awarded to undergraduates from Audrain County, Missouri.

**G. Andy Runge Memorial Scholarship** This goes to an entering freshman or upperclassman pursuing a degree in agriculture, food and natural resources.

**Elyzabeth H. Schell Scholarships** Awarded to students who are the sons or daughters of Missouri landowning farmers or stockmen. Selection is based on academic achievement, leadership and extracurricular activities. Some Schell scholarships continue from year to year provided grade requirements are met.

**Schroeder Apprenticeship** Awarded to sophomore, junior or senior majoring in horticulture who is highly motivated with potential for career success. The student serves as apprentice to faculty member within department.

**Sam B. Shirky Centennial Scholarship** An upperclass student, selected on the basis of high school and college academic performance, is chosen for this award.

**George E. Smith** Scholarship awarded to agronomy students majoring in the area of soil fertility and/or soil conservation.

**Glen Thomas Smith and Beatrice Grant Smith Agricultural Scholarship** Annual award for student with rural background and financial need. Preference to Sullivan and Adair counties in Missouri.

**Granville M. Smith, Jr., Trust Scholarships** Established to assist worthy graduate or undergraduate students, with preference given those from Adair and Sullivan counties.

**Lewis A. Smith Memorial Scholarship** Awarded to students in the College of Agriculture, Food and Natural Resources. First preference is given to graduates of Slater (Mo.) High School; second preference given to graduates of any high school in Saline County, Mo.

**Special Talent Scholarships** Awarded to two entering freshmen who demonstrate exceptional talent in agriculture.

**Spiese Fund in Agriculture** This is awarded to full-time undergraduates with preference given to high school graduates from Missouri's Bootheel.

**Staplcotn Annual Scholarships** Awards made to Missouri residents, with preference given to students who are from families either farming cotton or connected to the cotton industry.

**St. Louis Agribusiness Club** Awarded to an upperclass student who has demonstrated an interest in agribusiness. Leadership ability, co-curricular activities and/or work-related activities are also part of the selection criteria.

**St. Louis Section Institute of Food Technology (IFT) Sophomore Award** This award is presented to sophomores who have demonstrated superior scholarship and exceptional interest in professional employment in the food industry. Selection is made by the Department of Food Science and Nutrition.

**Lawrence and Louise Stark Student Aid Fund** This is an internship and/or work-study for students majoring in animal sciences. Consideration shall be given to students with financial need who are making satisfactory academic progress.

**State Officer Leadership Awards** The award, granted one time only, recognizes state officers of FFA, 4-H and FBLA.

**Frank Stonner Memorial Scholarship** The unrestricted scholarship is awarded to entering freshman and upperclass agriculture majors.

**Thomas T. Strange Scholarship** These scholarships or fellowships are granted to promising upperclass students in the field of ecology.

**William C. Stringer Scholarship** One or more annual awards shall be made to students with a minimum grade point average of 2.5 and financial need.

**Stroeter Scholarship in Memory of William J. Stroeter and Dora Johnston Stroeter** Scholarship funds summer intern employment at the college research centers.

**William L. and Cleo Y. Tayloe Memorial Fund** The award goes to worthy entering freshmen and upperclass students.

**Cordell W. Tindall Agricultural Journalism Scholarships** Awarded to upperclass students from Missouri majoring in agricultural journalism. Leadership potential, scholarship and promise for an agricultural journalism career are criteria for selection. Selection is made by the Department of Extension and Ag Information.

**University of Missouri Women's Extension Club Scholarship** The scholarship recognizes good academic record, outstanding character, leadership and record of service to others. Sophomores, juniors or seniors are eligible to apply. Preference is given to former 4-H members. Financial need may be a factor.

**Charles L. and Thelma F. Van Buren Scholarships** These scholarships are awarded to juniors or seniors who have a special interest in farm management, agronomy, soil conservation, livestock production or human environmental sciences. Financial need is primary determinant in the selection. Character, leadership and scholarship also are considered.

**Eric D. Vandeloecht Scholarship** The scholarship awards an outstanding entering freshman or upperclass student majoring in agricultural mechanization. The student must be a Missouri resident and have at least a 3.2 grade point average. Financial need is an important selection factor. Selection is made by the Department of Agricultural Engineering.

**Paul M. Vandiver Scholarship** Awarded to students majoring in animal sciences.

**Joyce Walls Scholarship** Undergraduate students majoring in hotel and restaurant management are eligible to apply. Selection is made by the Department of Food Science and Nutrition.

**Henry Jackson Waters Scholarship** This scholarship is awarded to a junior majoring in animal nutrition. Selection

is based on good scholarship and interest in research and nutrition.

**Floyd A. Watkins Memorial Scholarship** The award is presented to entering freshmen and upperclass students who are residents of Polk County, Mo.

**Elizabeth Wilhelm Weeks Scholarship** The award goes to juniors and seniors enrolled in food science and nutrition. Selection criteria includes employment while attending the University, extracurricular activities, volunteer work and participation in social organizations. Special attention is given to any personal obstacles the student has overcome. Recipients are selected by the Department of Food Science and Nutrition.

**Prudy Weidenheimer Memorial Scholarship** The scholarship is awarded to a senior majoring in animal sciences who has a primary interest in horses. Selection is based on academic performance, outstanding character, leadership potential and demonstrated service to fellow citizens.

**Ronald R. Wenneker Memorial Fund** Awarded to full-time students from Marion County, Mo., who demonstrate both scholarship and leadership abilities. Preference given to seniors majoring in agricultural economics or agribusiness.

**Jerry West Memorial Scholarship Fund** One or more annual awards to upperclass students majoring in Agricultural Economics.

**Western Seedmen's Association Scholarship** The award recognizes outstanding scholarship and service by students studying agronomy. Recipients are selected by the Department of Agronomy.

**Curtis Ross Weston Scholarship** Awarded to undergraduate students majoring in agricultural education with emphasis area in agricultural mechanics.

**Robert S. Wheeler** Awarded to rural students majoring in Ag Economics from the counties of Johnson, Pettis, or Benton in Missouri.

**Stephen F. Whitted Scholarship** Awards are given to juniors or seniors majoring in agricultural economics. Recipients are selected by the Department of Agricultural Economics.

**Robert E. Wiegand Memorial Scholarship** Awarded to entering freshman from Randolph, Macon or Chariton counties majoring in animal sciences with a production agriculture farm background.

**Randy Williams Memorial Scholarship** The award goes to freshmen or sophomore students. Recipients must have been members of FFA, have financial need, be Missouri residents and have an interest in animal sciences.

**John Sam Williamson Family Scholarships** Upperclass students majoring in agronomy and animal sciences receive these scholarships.

**George P. and Suzanne Wilson Scholarship** This is an undergraduate scholarship based on academic performance: 3.5 grade point average for incoming freshman and 3.2 grade point average for continuing students.

**Maurice N. Witt Scholarship in Agriculture** This scholarship is awarded to a junior or senior who has demonstrated academic excellence.

**Marian Hoshor Wood Scholarship** One or more annual awards are given to students who are graduates of Savannah (Mo.) High School.

**Ernest M. & Marie M. Woods Scholarship Endowment in Memory of E. A. Trowbridge** Awarded to sophomore, junior, senior or graduate students majoring in animal science. Selection based on academic achievement and financial need.

**J.C. Wooley Freshman Scholarship** This award is presented to entering freshmen majoring in agricultural engineering or agricultural mechanization. Selection is made by the Department of Agricultural Engineering.

**Wurdack Scholarship Fund** This is an unrestricted scholarship for entering freshmen and upperclass students enrolled in the college.

**Freeda Thomas Yeo Agriculture Endowment Fund** First priority for award is to give students from developing countries the opportunity to learn about better farming methods and practices.

**Raymond A. Young Agribusiness Scholarship** Scholarship awarded to junior students with an agribusiness emphasis. Additional preference shall be given to students from rural Missouri. Selected recipients shall demonstrate both scholarship and leadership abilities. Recommendations are made by Department of Ag Economics with final approval by the CAFNR Scholarship and Awards Committee.

### Graduate/Undergraduate Scholarships and Awards

**Lloyd E. Adams Scholarship in Entomology** The annual award is presented to a doctoral student in entomology. Department chair selects recipients from recommendations.

**Anheuser-Busch Fellowship** The fellowship assists full-time students in food science and nutrition who show potential to contribute to the private enterprise sector of the scientific community. Graduate students are given preference.

**Dr. Daniel E. Brady Graduate Student Fund** One or more annual awards shall be made to students with a minimum grade point average of 2.8 who are studying the application of science to live animals, its components or products. Preference shall be given to meat science students.

**George Washington Carver Graduate Fellowship** A $1,000 stipend, in addition to master's or doctoral assistantship stipend, is granted to a graduate student in the College of Agriculture, Food and Natural Resources. Consideration is given to a promising minority student (U.S. citizenship required). Award is for a two-year period.

**Harold P. Dugdale Scholarship** The award goes to deserving graduate students majoring in food science with an interest in meat technology. Selection is made by the Food Science and Nutrition Scholarship Committee.

**Mr. and Mrs. Jacob Ensminger Scholarship Fund** Funds from this scholarship aid a junior, senior or graduate student majoring in agriculture. Consideration is given to academic achievement, leadership, extracurricular activities and financial need.

**Dr. Richard Epley Assistantship in Food Science** An annual renewable assistantship award shall be made to a graduate student in the Department of Food Science with a preference to a student in meat science. Recipient must maintain a minimum grade point average of 2.75.

**Dr. Charles W. Gehrke Jr. Memorial Scholarship** The scholarship provides $500 for a senior or graduate student in biochemistry with an interest in analytical biochemistry. High scholastic standing, character, leadership potential and research-orientation are selection criteria. Recipient is selected by the Department of Biochemistry.

**Gilbreath-McLorn Fund in Entomology** The fund assists graduates or undergraduates by means of scholarships, fellowships or aid to research in the field of entomology. Preference is given to students showing interest in the control of insects detrimental to shade trees, ornamental shrubs and plants.

**Gregory Scholarship Fund** This scholarship provides assistance to students in the fields of sociology, extension service, home economics and/or communications. These areas of study may be combined with each other or different areas. Preference is given to graduate students and consideration is given to financial need.

**Albert R. Hagan Award** This award recognizes notable achievements and contributions in the fields of farm management and/or agricultural finance. Persons to be considered for the award must be: (a) undergraduates who have distinguished themselves both in the classroom and in extracurricular activities or field-training problems courses, (b) graduate students involved in an outstanding research effort or (c) professionals in the area who return to the University for further study. Selection is made by the Department of Agricultural Economics.

**Leonard and Elosia Haseman Memorial Scholarship in Entomology** The scholarship is awarded to a graduate or undergraduate student in entomology. Selection is based on high scholarship and participation in departmental and professional activities. Recipient is recommended by the faculty of the Department of Entomology. With faculty recommendation, scholarship recipient may receive the award for more than one year.

**International Agricultural Development Program** The program assists graduate students in financing foreign travel and costs involved in teaching, research and extension in international development and trade. Selection is made by special committee. Information may be obtained from the associate dean, International Agriculture Programs, 2-69 Agriculture Building.

**E. P. Meiners Memorial Scholarship in Entomology** A scholarship is awarded annually to a graduate or undergraduate student majoring in entomology.

**Frank Miller Graduate Fellowship** The fellowship is awarded to an agricultural economics major with an outstanding scholastic record and potential for graduate school. Recipient is selected by the Department of Agricultural Economics faculty committee.

**Association of Missouri Production Credit Associations** Awarded to graduate student doing research in field of farm credit.

**George E. Smith Scholarship** Funds from this scholarship aid a senior or graduate student in agronomy with an interest in soil conservation and/or fertility. The Scholarships and Awards Committee selects recipients from nominees provided by the Department of Agronomy.

**Granville M. Smith Jr. Trust Scholarships** These scholarships assist worthy graduate or undergraduate students. Preference is given to those from Adair and Sullivan counties.

**Philip C. Stone Scholarship in Entomology** The award goes to upperclass and graduate students majoring in entomology. It is awarded on the basis of scholarship as determined by the Department of Entomology chair, with the concurrence of the entomology faculty. Recipient may receive this scholarship only once.

**Dr. C. W. Turner Graduate Scholarship in Lactation Endocrinology** Income from this endowment provides scholarships for graduate students studying lactation endocrinology in the Animal Sciences Department.

**Curtis Weston Scholarship** Annual award given to an agricultural education graduate student with an emphasis area in Agricultural Systems Management.

### Loan Funds

Friends, alumni and organizations of the college have provided funds to be used for loans to students. Loan funds may be directed toward special purposes such as funding international travel for students or may be used to help finance the education of undergraduate students enrolled in the College of Agriculture, Food and Natural Resources. These funds are only available to undergraduate students who are in good academic standing and are pursuing a degree in the College of Agriculture, Food and Natural Resources.

***For more information about the loan funds, please write or call: Director of Student Affairs, 2-64 Agriculture Building, University of Missouri, Columbia, MO 65211, (573) 882-8301.***

### Sources of CAFNR loan funds include:

**College of Agriculture Foundation Student Loan-Work Fund** Income from this account may be used for loans or work-study funding for students enrolled in the college.

**J. W. Burch Loan and Fellowship Fund** First preference is given to employees of the extension service who are continuing their training, and juniors and seniors majoring in animal sciences.

**B.H. Frame Agricultural Economics Statistics Memorial Loan Fund** Provide loans to worthy and needy students in agricultural economics statistics.

**Jewett M. and Carolyn E. Fulkerson Loan Fund** The fund, established by Mr. and Mrs. Fulkerson, provides loans to students enrolled in the college.

**Helen W. Gordon and Marshel O. Gordon Student Loan Fund** This fund provides loans to students enrolled in the colleges of Agriculture, Food and Natural Resources, Home Economics and Veterinary Medicine who are graduates of high schools in Boone and Callaway counties in Missouri. Scholarships and work-study grants also are planned to come from this fund in the future.

**Gordon B. Nance Loan Fund** Bequeathed by Gordon B. Nance, the loan aids students enrolled in the college. Income from the fund may be used to finance the college's course trips or to help meet other educational expenses.

**Thomas W. Ragsdale Memorial Loan and Scholarship Fund** Native Missouri residents studying agriculture, human environmental sciences or social and community services are eligible to apply for this fund.

**Charles L. Timmons Loan Fund** Income from the fund provides loans to undergraduate and graduate students in the college. Primary consideration is given to financial need.

# Special Programs

**ON-CAMPUS INTERNSHIPS** On-campus internships provide students with professional growth experiences and close associations with faculty members as they work together on projects approved by an internship selection committee. Students are able to increase their communication skills, problem-solving abilities and technical expertise through an individualized internship experience that takes place on campus. Students complete their regular classwork in addition to their participation in this internship. In addition, students may receive a stipend of $500 for one semester or a $1,000 stipend over two semesters.

Sponsors of on-campus internships include:
**College of Agriculture Foundation**
**Burch Agricultural Internship Program**
**DowElanco**
**Fertilizer and Ag Lime Research Council**
**James R. Houx Education Fund**
**Mr. and Mrs. Jack Krumme**
**Lowell Miller Fund in Biochemistry**
**J. Wendell and Ruhamah McKinsey International Endowment Fund**
**Missouri Pork Producers Association**
**Missouri Soybean Merchandising Council**
**Weldon & Winnie Jones Undergraduate Research in Biotechnology**

**INTERNATIONAL AGRICULTURE AND INTERNATIONAL COMMUNITY DEVELOPMENT** The College of Agriculture, Food and Natural Resources, in cooperation with the College of Arts and Science, offers an emphasis area in International Agriculture/Community Development under the AB degree in International Studies. Each program of study consists of a maximum of 30 hours of specified course work, selected in consultation with an academic adviser.

Additional information on area and degree requirements may be obtained from Special Degree Programs, 308 Read Hall, or the dean's office of the College of Arts and Science in Lowry Hall.

**INTERNSHIPS/CO-OPS** To gain on-site work experience in a career, students may participate in one of the several internship or co-op programs offered in the College of Agriculture, Food and Natural Resources. These programs are with college-approved government agencies, employers or organizations that furnish the facilities and instruction needed for students to increase their knowledge and strengthen leadership and communication skills.

A co-op is a full-time, repeated work experience with the same employer, normally beginning in the sophomore year. Work periods may alternate with semesters enrolled in the college.

An internship is an experience in the student's major area of

study and is typically completed in the junior or senior year after some course work in the major is finished.

Students eligible for internships and co-ops must be in good academic standing in a degree program with adequate prerequisite qualification.

***For more information on internships and co-ops, write or call the Career Services Office, 2-64 Agriculture Building, (573) 882-7774.***

**HONORS PROGRAM** The honors program is designed for high-ability students who are motivated to seek an individualized learning experience. Often, cross-disciplinary and higher-level courses are more helpful in preparing for a career than the standard degree requirements. The honors program provides a distinction that will be recognized on the diploma and transcript; it may help in seeking employment or entering graduate or professional school.

One of the most distinct advantages of the honors program is that it allows a more flexible program of study than what may be available within the usual departmental major. Other advantages are the more extensive contact with faculty and the opportunity to conduct a research project.

Students are eligible to enter the honors program when they have obtained a cumulative grade point average of 3.3 or above based on 30 credits earned at the University of Missouri-Columbia. Transfer students are eligible after completing 15 credits at MU with a cumulative grade point average of 3.3 or higher.

Students must be admitted to the honors program prior to the first day of classes of the last semester they are enrolled in residence in the College of Agriculture, Food and Natural Resources. No student shall be admitted retroactively. The student is officially admitted to the program when the dean approves the application form, which must be accompanied by a program of study.

Students must fulfill the General Education requirements of the College and degree requirements of their major.

Eligible students should complete an application as early in their undergraduate degree program as possible. The Honors Program Application should be signed by at least two faculty members and the Undergraduate Adviser Chair before it can be approved. The faculty members co-signing the application will comprise the Honor Student's Advisory Committee.

An Honors Thesis Project (HTP) is required and should be planned by the student and approved by the Honor Student's Advisory Committee. The Honors Thesis Project should involve a significant research effort by the Honors student, culminating in a written and oral presentation of the results. Departmental HTP requirements must be approved by the CAFNR Honors Program Oversight Committee.

The B.S. Degree in the CAFNR Honors Program requires 128 semester credit hours. However, students may apply for dual enrollment with the Graduate School during their final semester and receive graduate credit for up to six semester credit hours.

The Honors Student's Program of Study must be signed by a member of the Honor Student's Advisory Committee, the Undergraduate Adviser Chair, and be submitted to the CAFNR Associate Dean's Office (2-64 Agriculture) before the close of the semester in which the Honors Program Application was approved.

Students are officially admitted to the CAFNR Honors Program when the application has been approved and signed by the CAFNR Associate Dean of Academic Programs. To remain in "good standing" in the CAFNR Honors Program a student must maintain a cumulative GPA of 3.30 or more. If a student's GPA falls below 3.30, they will be allowed a two-semester grace period to raise their GPA to the 3.30 level.

Changes in the Program of Study must be signed by the student, each advisory committee member, the Undergraduate Adviser Chair and Associate Dean before they are officially approved.

**SERVICES FOR SPONSORED INTERNATIONAL STUDENTS** The mission of the International Agricultural Programs Office is to provide guidance and support for international students sponsored by agencies requiring specialized handling of students and their programs. This office provides thorough monitoring of students' programs to ensure that they achieve individual educational objectives and adhere to the expressed international project needs and requirements of the sponsoring agency.

***For more information on the management fee and the services included, write or call the International Programs Office, 215 Gentry Hall, (573) 882-7740.***

**AGRICULTURAL EXPERIMENT STATION** The University of Missouri-Columbia is a land-grant institution with missions of research, teaching and extension. When the University was founded, little agricultural research had been conducted and there was little material to teach. Recognizing this, the U. S. Congress formally supported the acquisition of research by passing the Hatch Act in 1887. The act, sponsored by Congressman William Henry Hatch of Missouri, provided federal funds for each state to establish an agricultural experiment station. The Agricultural Experiment Station, in conjunction with the U. S. Department of Agriculture, coordinates and conducts research that supports the food and agricultural sciences.

With few exceptions, faculty who teach in the College of Agriculture, Food and Natural Resources are also Missouri Agricultural Experiment Station staff and have responsibilities for agricultural research as well as teaching. These joint research-teaching appointments help faculty present state-of-the-art information to students. Because of their research expertise, many faculty are nationally and internationally renowned scientists. Their expertise enables students to receive an outstanding education.

**UNIVERSITY EXTENSION** In addition to resident instruction and research, a third function of the land-grant university is extension. This educational outreach program extends the research and knowledge base of the University to citizens throughout Missouri. Extension publications and educational programs are developed in the areas of expertise represented by the college faculty. Faculty members are involved in direct teaching to students throughout Missouri through short courses, tours, demonstrations, conferences, lectures, workshops and satellite broadcasts. Extension focuses programs on agricultural profitability, agricultural alternatives, management of natural resources, nutrition, revitalization of rural Missouri and water quality, among others. Also, faculty members with extension responsibilities are frequent guest lecturers in courses offered to students on campus. Students on campus have ready access to state extension specialists and publications through the respective departments.

***For additional information and assistance, students may come to the Agricultural Extension Office, 2-28 Agriculture Building, (573) 882-6385.***

# Professional Opportunities

Career opportunities in the food and agricultural sciences are strong. There is a great demand for MU College of Agriculture, Food and Natural Resources graduates.

Graduates find rewarding careers in private industry and with state and federal agencies. Many own their own businesses. Some graduates enter production agriculture while many others enter professions that develop, support or market agriculture products and technologies.

The college's Career Services Office provides students with current information on career areas that are expanding and offer outstanding potential. Students graduating from the college with a BS degree report starting salaries ranging from $24,000 to $36,000 a year.

**DEGREE OPTIONS** In many majors, students are allowed to tailor their program of study to their own professional goals. Students may choose courses that will provide them with strong technical expertise or select those that will provide business expertise. Others who are preparing for graduate or professional schools may be interested in a strong science education. All of these options are available within the majors.

**GENERAL REQUIREMENTS FOR THE BS IN AGRICULTURE**

Minimum Credit Hours Required

**Communications:** nine credit hours
English 20: Exposition and Argumentation (3)
Commun 75: Introduction to Speech Communication (3)
**Elective to be chosen from:**
English 162: Professional Writing (3)
Ag Education 220: Communicating in Agriculture (3)
Ag J 210: Fundamentals of Communication (3)
Ag J 130: Spoken and Written Communication in the Workplace
Commun 241: Nonverbal Communication (3)
Commun 272: Argument and Advocacy (3)
Commun 275: Business and Professional Communication (3)
Commun 276: Persuasive Speaking (3)
Theatr 44: Acting for Non-Majors (3)
Foreign Language
Rural Sociology 225
Communication Science and Disorders 11 (3)
Agriculture 191 (Intensive Spanish)

**Mathematics:** six credit hours
Math 10: College Algebra or higher-level math course (3)
Statistics or an additional math course (3)

**Physical and Biological Sciences:** 11 credit hours minimum
Biology 1 and 2, 12 (5) or 42 (5)
Chemistry: 6 credits with one course including a lab, i.e., Chemistry 15, 32, Biochemistry 100, 105 or higher

**Social and Behavioral Sciences:** nine credit hours
Ag Econ 40 or Econ 5 (macro)
Ag Econ 41 or Econ 4 (micro)
Elective selected from: Agricultural Economics, Anthropology, Black Studies, Economics, Educational Psychology, Geography, History, Human Development and Family Studies, Peace Studies, Political Science, Psychology, Rural Sociology, Women Studies.

**Humanistic Studies and Fine Arts:** nine credit hours
Courses to be selected from: Art, Art History, Civilization or Cultures courses, Classical Studies, Communications, Environmental Design, Foreign Language, Literature, Music, Philosophy, Religious Studies, Theater.

**One course that meets State Law Requirements** (Hist 3, 4 or 20 or Poli Sci 1, 11 or 102).

**Departmental Requirements and Supporting Classes** A minimum of 51 hours is required. Courses are selected from among those determined to satisfy the major by the department faculty. Detailed information may be found under individual departments in this catalog.

**Electives** The number of electives will vary by degree program.

**Total Credit Hours Required**: 128

*Additional Requirements:*

- A minimum of 50 credit hours in the total program of 128 must be in courses numbered 100 or above. A minimum of 24 of the 50 hours must be in courses numbered 200 or above.
- A minimum of two writing-intensive (WI) courses, in addition to the courses required in the communications area, are required with at least one writing-intensive course being in the College of Agriculture, Food and Natural Resources.
- A minimum of 32 hours in the College of Agriculture, Food and Natural Resources are required for graduation.
- One math reasoning proficiency (MP) course is required.
- Capstone experience approved by campus General Education Committee (may be part of departmental requirements).
- Computer and Information Proficiency (CP) course meeting campus general education requirements.
- At least one general education sequence must be completed by all students.
- Of the credit hours taken during the **last year** for a **BS degree in CAFNR,** a **maximum of nine (9) credit hours** can be taken at another accredited institution. These nine hours are to be *electives only*. Approval of adviser and associate dean required.
- A 2.0 minimum MU cumulative GPA.

**MINORS** Minors provide students a means of diversifying their educational experiences. Because expertise in areas related to a major may be beneficial, students are encouraged to consider broadening their course of study through the pursuit of a minor.

Most academic units in the college offer minors. Minors also are available in other divisions, such as arts and science. A minor requires completion of at least 15 hours of course work independent of those required for a major. Nine (9) of the 15 hours must be numbered 200 or above. Individual departments or the dean's office may be contacted for specific requirements. Declaration of a minor is optional; students are not required to complete a minor to graduate.

The college offers an interdisciplinary minor in International Agriculture. This unique offering is an excellent addition to any major. It provides insight into the ever-increasing interconnectedness of world communities.

**PRE-VETERINARY MEDICAL PROGRAM** Students wishing to prepare for application to the College of Veterinary Medicine may enroll in the College of Agriculture, Food and Natural Resources under the science emphasis programs, often animal sciences. In satisfying the requirements of the science program, the requirements for entering veterinary medicine also may be satisfied. However, before applying to the College of Veterinary Medicine, a student should make certain that the following requirements have been satisfied. A minimum of 60 semester hours is required for admission to the College of Veterinary Medicine.

The following courses are required for those entering the college.

**English or Communications:** six hours
**Mathematics:** three hours
Math 10: College Algebra or more advanced courses
**Inorganic Chemistry:** eight hours
Chem 31: General Chemistry I; 32: General Chemistry II; 33: General Chemistry III
**Organic Chemistry (including laboratory):** five hours
**Biochemistry:** three hours
Biochem 193 or 270
**Physics:** five hours
Physics 21 and 22: Elementary College Physics or more advanced courses
**Biological Science:** 10 hours
Required biological science courses must be taken in either the area of biology or zoology.
**Social Science or humanistic studies:** 10 hours
**Electives:** 10 hours
**Minimum Total:** 60 hours
**Questions concerning required admission credits should be directed to the College of Veterinary Medicine.**

**PRE-MEDICAL PROGRAM** Students interested in a medical career may choose from a variety of science-based majors to prepare for medical school. The most common choice of students is biochemistry because it is a common program between

the College of Agriculture, Food and Natural Resources and the School of Medicine. The following course work is required:
English composition (may include writing-intensive courses): 2 semesters
College-level mathematics (or calculus eligibility): one semester
General biology, including laboratory: eight hours
Inorganic chemistry, including laboratory: eight hours
Organic chemistry, including laboratory: eight hours
General physics, including laboratory: eight hours
**Questions concerning required admission credits should be directed to the School of Medicine.**

# Natural Resources

## Administration

**A.R. Vogt,** director
**William B. Kurtz,** director of undergraduate studies

**DEPARTMENTS**
Forestry
Fisheries & Wildlife
Parks, Recreation & Tourism
Soil and Atmospheric Sciences

The School of Natural Resources is Missouri's and the Midwest's only school with a comprehensive natural resources program, encompassing atmospheric sciences, fisheries, forestry, parks, recreation, soils, tourism and wildlife. The school is based on an integrated, scientific approach to natural resources management. The school is housed in the Anheuser-Busch Natural Resources Building containing state-of-the-art teaching, research and outreach-extension facilities.

The Department of Forestry was established at MU in 1947 and elevated to the School of Forestry in 1957. The fisheries and wildlife program, which was established in 1937 in the College of Arts and Science, became part of the school in 1973. The Department of Parks, Recreation and Tourism was added in 1988. The School of Natural Resources was formed through a name change in 1989. A Department of Soils was formed at MU in 1914 and a Department of Atmospheric Science was formed in 1966. Faculties in Soil Science and Atmospheric Science joined the School of Natural Resources in 1990 and 1991, respectively, and were merged into the Department of Soil and Atmospheric Sciences in 1992. With about 500 undergraduates and 50 faculty, the school is noted for excellent education, strong professional orientation, active student organizations and outstanding advisement and counseling.
***For more information on undergraduate programs, write or call the Undergraduate Studies Office, The School of Natural Resources, 124 Anheuser-Busch Natural Resources Building, (573) 882-7045.***

## Professional Opportunities

Over 90 percent of the recent forestry graduates have been successful in finding professional employment. Most graduates obtained employment in the private sector, but a significant number have joined metropolitan, state and federal agencies.

Professional opportunities for fishery and wildlife graduates include wildlife or fishery management and research, water-quality management, conservation education and conservation law enforcement. Approximately 80 to 90 percent of the opportunities are with state and federal resource management agencies. About 30 percent of the graduates remained in school to pursue the MS degree. With an advanced degree, 90 to 95 percent of the graduates are assured of employment.

Professional opportunities for parks, recreation, and tourism graduates include serving as coordinators of youth-serving agencies managing recreation and leisure services for industry, agencies, and private enterprises as well as many tourism and hospitality businesses.

Atmospheric science graduates are employed by the National Weather Service and other government agencies, consulting firms and industry. Graduates in soil science have professional opportunities with various service agencies, government and private research institutions plus various agricultural service and environmental consulting firms.

Salaries for SNR graduates range from $25,000 to $40,000.

**EMPHASIS AREAS** The BS degree in forestry requires the successful completion of 125 hours. Four emphasis areas are offered in forestry at the undergraduate level: forest resource management, urban forestry, industrial forestry and individualized studies in forestry.

A minor in forestry requires 15 hours of courses listed in that major.

The BS in fisheries and wildlife requires 125 hours. Through the selection of electives, the fisheries and wildlife degree can be modified to emphasize fishery science, fishery management, wildlife science, wildlife management, limnology and water quality, multiple resource management and conservation information and education.

The BS in parks, recreation and tourism requires 132 hours. Four areas of concentration are offered in parks, recreation and tourism at the undergraduate level: leisure service management, parks programs and operations, therapeutic recreation and travel and tourism.

The BS in atmospheric science requires 128 hours with emphasis on the fundamental physical sciences. The BS degree in soil science requires 128 hours. The flexibility within the soil science BS degree allows a student the opportunity for emphasis areas in allied disciplines. A geological/soil sciences BS dual degree requires 132 hours. A minor in atmospheric science or soil science requires a minimum of 15 hours of courses listed in that respective major.

A minor in natural resources also is available. The student is required to complete a minimum of 15 hours of courses in School of Natural Resources courses, six hours in courses numbered below 200 and nine hours in courses numbered 200 and above.
***For more information, see School of Natural Resources in the Departments and Courses section of the catalog.***

**ADMISSION** Students admitted to the University of Missouri-Columbia may enter The School of Natural Resources as beginning freshmen or as transfer students.

Students transferring to the University of Missouri-Columbia from accredited colleges or universities are subject to regulations established by the University of Missouri-Columbia Faculty Council concerning transfer of credit. These regulations are described in the Academic Regulations section of this catalog.

Previous college work is carefully evaluated by The School of Natural Resources. Courses are readily accepted if they are satisfactory substitutes for required University of Missouri-Columbia courses. Lists of acceptable substitute courses offered at many other institutions are maintained and are available to prospective transfer students on request.

**FORESTRY FIELD STUDIES** Students enrolled in the forest resource management, industrial forestry and individualized studies in forestry curricula are required to attend a specialized, six-week, summer field session in southeast Missouri. This session includes five courses for six credit hours and is recommended between the sophomore and junior years.

# Student Services

**ADVISEMENT AND COUNSELING** Personalized advisement and counseling is available from the school's well-qualified faculty members. An open-door policy by advisers is emphasized, and the school is noted for excellent student/faculty relations.

**EMPLOYMENT ASSISTANCE** Students in the School of Natural Resources are provided various types of employment assistance through the College of Agriculture, Food and Natural Resources Placement Office. Resource materials on potential employers are available for student use. Instructions regarding federal, state and industrial employment procedures and assistance in the preparation of resumes and applications also are available. Notices of available positions are posted, and interviews are arranged with visiting organizations. Employment assistance also is given to alumni of the school on request.

# Required Work in Residence

For all curricula in natural resources, the last 45 credit hours must be completed in residence. The faculty may grant an exception under unusual circumstances.

# Scholarships

***Applications and additional information can be obtained at the Student Services Office, 124 Anheuser-Busch Natural Resources Building.***

**H. Wilbur Allen Memorial Scholarships** These scholarships are provided from an endowment fund and are designated for fisheries and wildlife majors or high school students entering that major. Selection of recipients is based on high academic ability.

**James W. Bagby Loan Fund** Established by Dr. George L. Hawkins Jr. in honor of Dr. James W. Bagby, this fund provides loans to undergraduate and graduate fisheries and wildlife students who are in need of financial assistance.

**Beta Forestry Summer Camp Scholarship Fund** Established by David and Faye Berry to support forestry students attending summer camp.

**Osal B. and Juanita V. Capps Scholarships** These are awarded to undergraduate forestry students with respectable academic standing, good character, good potential for a successful career and financial need.

**Conservation Federation of Missouri Scholarship** Established by Conservation Federation of Missouri to support outstanding natural resources students.

**Grant Darkow Scholarship** Established by the UMC Meteorology Club in honor of Grant Darkow's contributions to UMC Atmospheric Science students.

**Wayne Decker Scholarship** Established in honor of Wayne Decker by the UMC Meteorology Club.

**Donald P. Duncan Scholarships** These awards are designated for freshmen entering forestry or fisheries and wildlife with unusual potential for professional service in renewable natural resources management.

**Lee C. Fine Memorial Loan Fund** Established by Leo A. Drey and Mrs. Lee C. Fine in memory of the late Lee C. Fine, this fund provides loans to qualified forestry students.

**Forestry Alumni Memorial Work Study Fund** One or more annual awards shall be made to students majoring in forestry.

**School of Forestry Class of 1964 Memorial Scholarships** Recipients shall have respectable academic standing, possess good professional potential and show evidence of good character and financial need.

**Richard M. Graham Scholarship** This fisheries and wildlife scholarship, provided by an endowment fund established by the parents of Richard M. Graham, is awarded annually to a sophomore student with a satisfactory academic record who exhibits financial need.

**David and Gertrude Gwinner Scholarships** These forestry scholarships are provided by an endowment fund established by Mr. and Mrs. G. Myron Gwinner in memory of Mr. Gwinner's parents.

**George L. Hawkins Sr. Student Aid Fund** Established by Dr. George L. Hawkins Jr. in memory of his father, this fund provides loans to undergraduate and graduate forestry students who are in need of financial assistance.

**Charles H. Kirk Memorial Scholarship** Provided by an endowment fund established by friends of the former forest manager of Pioneer Forest, these awards of varying amounts are made to students in the forest management area.

**William G. Kohner Scholarships** These forestry scholarships varying in amounts were established through the will of W. G. Kohner, a 1918 MU forestry graduate.

**Charles Edmund Marshall Scholarship** Established by Dr. and Mrs. C. E. Marshall for outstanding Soil and Environmental Science students.

**L.E. McCormick Memorial Scholarship** This forestry scholarship is provided by an endowment fund established in memory of a former MU extension forester.

**Lee K. and Lois Paulsell Endowment** Established by the Forestry Club in honor of their longtime adviser and his wife, this scholarship is awarded annually to an upperclass forestry student.

**Jerry J. Presley Conservation Endowed Scholarship Program** Established by Jerry Presley and Albert Vogt for outstanding students in natural resources.

**Keith B. Roys Sr. Scholarship** Established by friends and family of Keith Roys for outstanding Parks, Recreation and Tourism students.

**Charles W. Schwartz and Elizabeth R. Schwartz Scholarship in Wildlife Art** Provided through an endowment fund and awarded annually to a student studying or specializing in wildlife art.

**Elizabeth R. Schwartz and Charles W. Schwartz Scholarship in Wildlife** Provided through an endowment fund and awarded annually to a promising student studying or specializing in wildlife.

**Roger Dustin Shaw Memorial Forestry Scholarship Fund** This fund is designed for undergraduate or graduate students majoring in forestry from one of the following counties in Missouri: Oregon, Howell, Shannon or Ripley.

**University of Missouri-Columbia Forestry Club Memorial Scholarships** A number of scholarships are awarded annually to forestry students through funds from an endowment established by the Forestry Club and by annual contributions from the club.

**R. H. Westveld Forestry Fund** Established by friends and associates of R. H. Westveld at the time of his retirement, the annual earned income provides scholarships of varying amounts and the Westveld Prize in forestry.

**General Federation of Women's Clubs of Missouri Forestry Scholarships** This scholarship carries a stipend of $250.

**Ed Woods Memorial Scholarship** Established by friends of the former forest manager of Pioneer Forest, the earned income from a perpetual fund is awarded annually to forestry students who have a satisfactory academic record and a substantial financial need.

# Student Organizations

Several active student organizations provide a variety of experiences and opportunities for students to assume leadership roles. **The Forestry Club** is well-known for many projects, including its Christmas Tree Sale and Foresters' Conclave. The MU student chapters of **The Wildlife Society** and the **Fisheries and Aquatic Sciences Society** sponsor social, educational and service activities. Biweekly meetings, field trips and participation in the Midwest Student Wildlife Conclave provide valuable learning opportunities. Juniors and seniors with high scholastic achievement and leadership qualities are eligible for membership in **Xi Sigma Pi,** the national honorary forestry society.

**The Student Chapter of the Society of American Foresters** provides students with the opportunity to interact with members of the national professional organization and to learn how they might benefit from its programs and objectives.

Students with an interest in parks, recreation and tourism benefit through the opportunity for professional interaction and service offered by the **Students Parks, Recreation and Tourism Association.** Rho Phi Lambda is a national honor society which recognizes superior performance of Parks, Recreation and Tourism students. Members have an active philanthropic commitment.

Students in atmospheric science are members of the **University of Missouri Chapter of the American Meteorological Society.** Students may participate in a wide range of activities which contribute to their professional development. The chapter funds its annual activities with proceeds generated by the sale of weather calendars for mid-Missouri and Kansas City.

Students with an interest in soil and water conservation have an opportunity to join the **Student Chapter of the Soil and Water Conservation Society.** Monthly meetings provide valuable learning opportunities as well as interaction with working professionals.

The elected **Student Council** provides the opportunity for participation in school and campus government activities. A **Student Ambassador** group represents the School of Natural Resources through public relations events, recruitment activities and peer advisement.

# Academic Policies

- The final 45 hours of study must be completed in residence at MU; the faculty may grant an exception on request.
- At least two courses taken at MU must be designated as writing intensive.
- A total of 21 hours of CLEP (College Level Entrance Program) credits is accepted in the following areas: English, mathematics, social sciences and humanities. The school does not accept natural science CLEP credit.
- If admission scores require the student to take either Math 5 or English 10, these credits will not be counted toward the total credit hours required for graduation, but they will be used to calculate the student's grade point average.
- A maximum of 18 hours in ROTC courses (Army, Navy or Air Force) can be counted as elective credit toward the degree; three of these credits can be substituted for social science electives.
- Four hours in physical education courses can be used in calculating the grade point average and toward credit for graduation.
- A 2.0 cumulative grade point average is required for graduation.

# College of Arts & Science

## Administration

**Richard Schwartz,** dean
**Michael J. O'Brien,** associate dean
**Theodore A. Tarkow,** associate dean

## Departments

**Aerospace Studies**
**Anthropology**
**Art**
**Art History and Archaeology**
**Biological Sciences**
**Chemistry**
**Classical Studies**
**Communication**
**Economics**
**English**
**Geography**
**Geological Sciences**
**German and Russian Studies**
**History**
**Mathematics**
**Military Science**
**Music**
**Philosophy**
**Physics and Astronomy**
**Political Science**
**Psychological Sciences**
**Religious Studies**
**Romance Languages**
**Sociology**
**Special Degree Programs**
**Statistics**
**Theatre**

The College of Arts and Science, established in 1841, is the oldest and largest academic division in the University. The majority of MU undergraduates are enrolled in the College of Arts and Science. The college provides a wide range of high-quality undergraduate and graduate programs in humanities, fine and performing arts, social, behavioral and natural sciences. It also offers a solid foundation in basic studies for students in professional and specialized programs in other colleges.

The School of Fine Arts, consisting of the departments of Art, Music and Theater, is in the College of Arts and Science.

The college serves a variety of educational functions:

- To provide an education that will allow students to participate more effectively in their society
- To furnish, within the framework of that education, the opportunities for intellectual and social growth that come through close daily contact with faculty and other students
- To provide students with preprofessional education

The college offers a liberal education that is a foundation of study in many disciplines and is designed to enable students to serve any of several roles in society — whether in business, government or social service — or to continue their education with advanced academic study. To these ends, the college encourages excellence in teaching and scholarship among its faculty, seeks to provide traditional and innovative undergraduate curricula of the highest quality and allows flexibility in individual courses of study, which enables its students to take the best possible advantage of the many resources at their disposal.

Many students who enroll in the college during their first two years at the University have not yet decided what their major field of study will be. The structure of the college is such that students need not commit themselves to a major until the beginning of the junior year. This allows students time to explore various possibilities, and to consider their likes and dislikes and personal and professional objectives.

## Admissions

Incoming students who have met the admission requirements of the University may enroll in the college. Freshman and sophomore students constitute more than 60 percent of the college's total enrollment. Some departments of the college have special admission requirements; these are indicated in the Departments and Courses section of the catalog.

Students planning to enter the schools of Journalism, Law, Medicine or Veterinary Medicine usually spend their first two or four years in the College of Arts and Science in preparation for professional training. Most students, realizing the increased necessity for a broad background in the liberal arts for all professions, earn an undergraduate degree in the college prior to enrolling in the schools of Law or Medicine. Preprofessional study for veterinary medicine may be completed either in the College of Agriculture, Food and Natural Resources or the College of Arts and Science.

**CREDIT BY EXAMINATION** Students planning to enter the college as freshmen may apply to take advanced-standing examinations in several subject-matter fields. Those who pass the examinations with sufficient scores receive credit toward the bachelor's degree and may apply it toward fulfillment of specific requirements for graduation or toward admission to any of the professional schools on the Columbia campus except the School of Law.

Examinations accepted for advanced placement include the following:

- Specified departmental advanced-standing examinations
- Selected advanced-placement examinations given by the College Entrance Examination Board of Princeton, N.J.
- Selected International Baccalaureate examinations

Advanced-placement examinations are designed for entering freshmen; credit may be earned up to a point where a student has 30 hours of credit applicable towards a baccalaureate degree. Students who have completed any previous college work are not eligible.

The College of Arts and Science does not award credit for the successful completion of the College Level Entrance Program (CLEP) General Examinations. However, the college does accept selected CLEP subject-matter examinations.

**UNIVERSITY EXAMINATIONS** Advanced-placement examinations must be taken before enrollment in a college class in the same subject. Applications normally are made to the departments indicated; however, during the summer preregistration period, some examinations can be taken at the MU Testing Service Office without formal application to the respective departments. In addition, the examinations administered by the Test Administration Service may be taken anytime during the academic year.

- **Chemistry** Apply to the Department of Chemistry, 123 Chemistry Building, for an examination to earn credit hours in chemistry.
- **French** Apply to the Department of Romance Languages, 143 Arts and Science Building, for an examination for three credit hours equivalent to the completion of Elementary French III. Upon successful completion of this test, a student will be awarded 10 hours of advanced standing for French I

and II in addition to the three hours indicated. This option does not apply to students whose native language is French.

- **Geology** Apply to the Department of Geological Sciences, 101 Geology Building, for an examination for four credit hours in Geol 1: Principles of Geology.
- **German** Apply to the Department of German and Russian Studies, 448 General Classroom Building, for an examination to earn three credit hours in each of the following courses: Ger 3: Elementary German III; Ger 106: German Conversation and Composition; Ger 203: Advanced German Reading. Upon successful completion of one of these tests, a student will be awarded 10 hours of advanced standing for German I and II in addition to the three hours indicated.
- **Italian** Apply to the Department of Romance Languages, 143 Arts and Science Building.
- **Latin** Apply to the Department of Classical Studies, 420 General Classroom Building.
- **Mathematics** Apply to the Department of Mathematics, 202 Math Sciences Building, for an examination to earn three credit hours in each of the following courses: College Algebra and Calculus III. Five credit hours can be earned in Analytic Geometry and Calculus I and II.
- **Music** Apply to the Department of Music, 140 Fine Arts Building, for credit for theory courses by examination and various applied music courses by audition.
- **Political Science** Contact the group testing program in the Testing Services Office for information on the three-credit group test.
- **Russian** Apply to the Department of German and Russian Studies, 448 General Classroom Building, for an examination to earn three credit hours in Elementary Russian and Russian Composition and Conversation. Upon successful completion of one of these two tests, a student will be awarded 10 hours of advanced standing for Russian I and II in addition to the three hours indicated.
- **Spanish** Apply to the Department of Romance Languages, 143 Arts and Science Building, for an examination to earn three credit hours equivalent to the completion of Elementary Spanish III. Upon successful completion of this test, a student will be awarded 10 hours of advanced standing for Spanish I and II in addition to the three hours indicated.
- **Statistics** Apply to the Department of Statistics, 222 Math Science Building, for an examination to earn three credit hours for Stat 31: Elementary Statistics.

**CREDIT AWARDED IN TRANSFER** The college adheres to the Missouri Articulation Agreement, which pertains to the acceptability and transferability of credit earned at other Missouri institutions. A student may not receive community college credit once he or she has completed a total of 90 credit hours toward an undergraduate degree.

**CEEB EXAMINATIONS** College Entrance Examination Board Advanced Placement Examinations in the following subjects have been approved as a basis for advanced credit at the University. Applications to take CEEB examinations and inquiries about the material covered should be addressed to College Board Advanced Placement Examinations, P.O. Box 592, Princeton, NJ 08543.

Credit through the International Baccalaureate (IB), Advanced Placement Program (AP), and College-Level Examination Program (CLEP Subject Examinations) has been approved in some of the subjects. Brochures are available in the MU Office of Admissions, 230 Jesse Hall, Columbia, MO 65211.

**CREDIT BY EXAMINATION RESTRICTIONS** A student who has a record of enrollment in a course will not be eligible later for credit on the basis of an examination covering the same subject matter area, nor will a student who has received credit on the basis of an examination be eligible later for credit on the basis of either a course or a different examination covering the same subject.

Credit by examination and advanced standing will not be granted on the basis of a repeated examination. Credit will not be awarded within the last 30 hours needed for a degree.

# Maximum and Minimum Enrollment

With the consent of the dean, students with superior scholastic records may be allowed to register for more than 18 hours. During the summer sessions, a student may not ordinarily be enrolled for more than nine hours during the combined two four-week sessions and/or the eight-week session.

The College of Arts and Science also requires that all students complete a minimum of four semesters of full-time enrollment (i.e., 12 hours) as a requirement for graduation.

# Student Services

**ADVISING** Students who have declared a major area of study are assigned an adviser by the department or the dean's office.

Freshmen and transfer students who have not yet decided on a field of study are assigned to professional advisers and to faculty advisers.

**PLACEMENT** The Career Center is described in the University section of this catalog.

# Required Work in Residence

The last 30 hours must be completed in course work on the MU campus. Students who are candidates for dual degrees in Law or Medicine must complete their junior year in residence at MU. *Students are not ordinarily permitted to be enrolled at MU and another institution simultaneously, with the approved exception of MMACU.*

# Student Organizations

**The Arts and Science Student Government** provides services and academic advocacy programs for arts and science students. Services include a speakers program, film series, a faculty lecture program, a public forum series, finals week study hall and joint programs with the Honors College and the Career Center and Arts and Science Week. ***The Arts and Science Newsletter*** keeps students informed about events in the college. Other publications are distributed to new students during summer orientation. The Student Government also coordinates the A&S Ambassadors.

Advocacy activities include appointing arts and science students to student/faculty committees, proposing curriculum and regulation changes designed to improve the teaching assistant and undergraduate advising programs, and working with Academic Council, MSA and other campus groups to improve the academic environment on campus.

Students interested in representing arts and science students in the **Student Council** (A022 Brady Commons) should present to the council a petition with the signatures of 10 arts and science students.

Most of the arts and science organizations are honorary societies sponsored by the various departments. The most important honorary, to which students are elected in the senior year, is **Phi Beta Kappa.** MU is one of three universities in Missouri with a chapter of Phi Beta Kappa. Dedicated to the ideal of liberal learning, the society annually elects to membership the most outstanding seniors primarily in, but not restricted to, the College of Arts and Science whose records demonstrate outstanding scholarly achievement in the liberal arts and sciences.

# Scholarships

Recipients of all scholarships are selected by a department's scholarship committee or by the Arts and Science Undergraduate Scholarship Committee.

**Horace Allen and Ruth Melcher Allen Scholarship** Family and friends of the late H.E. Allen, MD, established an endowment to provide an annual scholarship in music for an undergraduate or graduate student of wind instruments, strings or piano. Selection is based on high scholastic ability, character and contribution to the activities of the music

department. It was established in recognition of Dr. Allen's lifetime interest and participation in music activities at MU.

**Applied Music Scholarships** Thirty need- and talent-based scholarships, each carrying a stipend equal to applied music fees for a semester, are available. The scholarship was established by the Board of Curators and is awarded on recommendation of the music department.

**Arts and Science Quadrangle Scholarships** Annual awards are presented to upperclass students. The number and amount of the awards varies each year.

**Helen M. Barrett Scholarships** These scholarships are awarded to outstanding students majoring in mathematics who graduated from Mehlville High School. Applications are made to the Director of Undergraduate Studies in Mathematics.

**Meryl Michelle Bartlett** These scholarships are awarded to outstanding students majoring in mathematics. Applications are made to the Director of Undergraduate Studies in Mathematics.

**Jan Blankenship Memorial Scholarship in Piano** An endowment established by family and friends of the deceased, it provides an annual scholarship for a piano major in the Music Department. Selection is made by music faculty.

**Philip L. Blazer Memorial Scholarship** Endowment income is awarded annually to a student in the College of Arts and Science or the School of Journalism. The recipient must be a Missouri resident, a worthy graduate of a Missouri high school with outstanding scholarship, and in need of financial assistance. It is available to an entering freshman and renewable for three additional years of undergraduate study as long as the recipient meets the qualifications and high standards. For applications, contact the Honors College.

**William L. Bradshaw Memorial Scholarship** The family and friends of W.L. Bradshaw, former professor of political science and former dean of the College of Business and Public Administration, established an endowment in his memory. The fund's income provides scholarships for juniors who have an interest in some aspect of state, county or municipal government. Stipends range from $300 to $600. Recipients shall be Missouri residents. Selection is based on academic excellence (grade point average of 3.4 or better), and recipients are recommended by a committee from the Department of Political Science.

**T. A. Brady Scholarship in Ancient History** A scholarship is awarded each spring to a history student with special consideration given to students specializing in ancient history.

**E. B. Branson Memorial Fund** A scholarship is awarded each spring to a student majoring in geological sciences.

**Helen and Paul Burcham Scholarships** These scholarships are awarded to outstanding juniors majoring in mathematics. Applications are made to the Director of Undergraduate Studies in Mathematics.

**Rhodes Clay Scholarship** This stipend, established by Green Clay in memory of his son, is awarded to a freshman on the basis of "scholarship, deportment and general worthiness, including moral character and physical constitution." The recipient must spend the following year pursuing work at MU. For applications, contact the Honors College.

**Columbia Art League Scholarship** The Columbia Art League presents this award to a graduate or undergraduate student recommended by the Department of Art. Final selection is made by the MU Scholarship Committee.

**Hardin Craig Scholarship in English Literature** Established in memory of Professor Craig, this scholarship is for students majoring in English literature.

**Curators Scholars in Communication** Recipients are selected from a pool of undergraduate, declared communication majors who have indicated an interest in the scholarship by filing an application in the communication department office. Selection is based on scholastic excellence and demonstrated involvement in the area of communication. Selected are made by the communication faculty.

**Curators Scholars in Music** Scholars receive a waiver of the incidental fee for two semesters. It is awarded to undergraduates majoring in music or participating in musical activities. Recipients are recommended by music department faculty on the basis of musical ability, scholastic standing and financial need. All applicants audition.

**Curators Scholars in Orchestra** Eighteen scholars receive a waiver of incidental fees for two semesters. Selection is by application, audition based on talent, performance and on music department recommendations. Students selected for the University Concert Orchestra are eligible to apply.

**Winterton Conway Curtis Scholarship** This is awarded to students majoring in biological sciences.

**Michael Deppe Phi Mu Alpha Memorial Scholarship** An award will be made to a music major in the area of performance, music history, theory, composition or education for outstanding service to the Department of Music. The recipient must be an undergraduate of a least sophomore standing with a GPA of 2.5 or higher. Selection is made by committee.

**Development Scholarships in Band and Orchestra** The Development and Alumni office offers several yearly scholarships to encourage talented students to participate in the band and orchestra. Recipients and the amount of the stipend are recommended by the music department. Apply to the Scholarship Committee, Department of Music.

**Freshman Prose Prizes** A first and second prize are offered for the best English papers, of whatever character, submitted as regular assignments by any student enrolled in the freshman course in composition.

**Friends of Music Scholarship** Scholarships averaging $800 are awarded each year through contributions provided by the Friends of Music.

**Geology Scholarship Awards** Established by the Department of Geological Sciences, royalties from the sale of the Geology Laboratory Manual provide awards for scholarship excellence to students selected by the department; achievement and character also are considered.

**Hazel S. Grabosch Scholarships** These scholarships are awarded to outstanding juniors majoring in mathematics. Applications are made to the Director of Undergraduate Studies in Mathematics.

**A. P. Green Scholarship** This is awarded each spring to a student majoring in geological sciences.

**J. G. Heinberg Award** Established by family and friends of Mr. Heinberg, a former political science professor, this award is given to an undergraduate or graduate student of political theory. Scholarships of approximately $750 are usually awarded for academic excellence (GPA of 3.4 or better).

**William B. Ittner Sr. Fine Arts Prize** Awarded for meritorious work in music or art, this prize was established by Mr. Ittner, a fellow of the American Institute of Architects of St. Louis.

**Eldon L. Jones Memorial Award** This stipend, given on the recommendation of the music department, was established by former students of Mr. Jones, who was known at MU for assisting other students, conducting musical groups and making musical arrangements.

**W. Alton Jones Memorial Scholarship** This endowment, established by Nettie Marie Jones in memory of her husband, is awarded annually to an unmarried freshman or sophomore selected on the basis of "scholastic excellence, high moral character, financial need and an interest in the arts and humanities." Students training to be teachers in these fields are considered qualified applicants. For applications, contact the Honors College.

**Harvey A. Kantor Memorial Scholarship** This award was established by contributions from various donors to assist undergraduates majoring in American history. Recipients are recommended by the chairman of the history department.

**Michael A. Kinney Scholarship Fund** A gift from the many friends of Mr. Kinney, known as the dean of Missouri's Senate, in recognition of his long years of service in the

Missouri legislature. It provides scholarships for worthy students in political science.

**Paulina Kuntz Music Award** Two equal awards consisting of books, parchment or cash are given to a man and a woman, candidates for degrees in music, who during the year have done exceptional work in the field of original musical composition. It was established by Harriet C. Hulick in memory of Paulina Kuntz.

**Friedel C. Maasdorf Foreign Language Education Scholarship** A scholarship is awarded each spring to a student of at least junior standing who is pursuing an undergraduate degree that will lead to a career in foreign language education.

**Mahan Prizes** This prize was established by George A. Mahan in memory of his wife, Ida B. Mahan. First and second prizes are offered in each of three divisions (original short stories, non-fiction articles and original poetry) for work written and submitted by a resident student.

**Paul and Gertrude Mathews Scholarship in Music Education** Funds established by the will of Paul W. Mathews, former MU music professor, provide a scholarship for a junior, senior or graduate student majoring in music education. The recipient shall possess outstanding teaching potential and, after graduation, teach music education in a public or private school or college for at least two years. Recipients are recommended by the music department to the Scholarship Committee on Aids and Awards.

**McAnally Medal** Established by David R. McAnally Jr., the award is presented annually for the best essay submitted as a regular assignment by any resident student enrolled in an upperclass course in English.

**Mary Margaret McCarty Scholarship** Endowment provides stipends for students studying biology. Recipients are selected on the basis of academic standing and financial need. Recommendations are made by the biological sciences division.

**Fred McKinney Family Scholarship** This trust fund provides stipends for students selected by a committee in the Department of Psychology.

**Maurice G. Mehl Scholarship** This is awarded each spring to a student majoring in geological sciences.

**L. Milgram Band Scholarship** Annual awards averaging $400 are awarded each year to participants in the band program.

**Missouri Federation of Women's Clubs, Pearl Boucher Matthews Scholarship in Music** An annual scholarship, preferably for a junior or senior who is a serious student of music or who would make a contribution to the music world through performance, composition or teaching. The scholarship is named for a past president of the donor organization.

**James G. Mitchell Memorial Fund in Geological Sciences** This scholarship is awarded every even-numbered year to a junior in geological sciences, based on academic excellence without regard to financial need. It was established by the widow and friends of Mr. Mitchell.

**Elsa Nagel Memorial Fund** A scholarship is awarded each spring to an undergraduate majoring in German or Russian.

**Ernest J. Palmer Memorial Scholarship Fund** Scholarships are available annually from an endowment established by Mrs. Elizabeth MacDougall Palmer, E. MacDougall Palmer, Grace E. Palmer and Theodore W. Palmer in memory of the husband and father of the donors. Recipients are recommended by the Department of Geological Sciences and the biological sciences division from among graduate or undergraduate students interested in paleontology and systematic botany who need financial help to complete their studies. Recipients are encouraged to spend time cataloging and caring for the collections of rocks and minerals at MU.

**R. G. Peck Prize** A scholarship is awarded periodically to a student majoring in geological sciences.

**Phi Beta Kappa Scholarship** The Alpha Chapter of the University of Missouri awards an annual scholarship to an outstanding junior. Selection is based on academic performance in a course of studies adhering to the principles of liberal education, i.e. breadth in languages, the fine arts, the social and physical sciences and mathematics.

**Pi Mu Epsilon Awards in Mathematics** Awards for excellence in math are given annually to a member of the junior and senior classes majoring in math who, in the judgment of the officers of Pi Mu Epsilon and the mathematics staff, have demonstrated exceptional ability and accomplishment in math.

**Sibyl Pommer Poetry Award** Income from an endowment in Ms. Pommer's will provides an annual award to a student of worthy character who does the best work in versification during the freshman year.

**William and Stella Pommer Scholarships** Annual income from an endowment in Sibyl Pommer's will provides a scholarship, established in memory of her parents, for a student in music enrolled in the first two years at MU. William Pommer was a music professor at MU.

**James S. Rollins Scholarships** Two scholarships established by Mr. Rollins are awarded annually in recognition of merit and character to students in the College of Arts and Science.

**Georges and Genevieve Saab Memorial Scholarships** These scholarships are awarded to outstanding seniors majoring in mathematics. Applications are made to the Director of Undergraduate Studies in Mathematics.

**James E. Schaperkotter Memorial Scholarship in Political Science** This is awarded during the second semester of the school year to a junior or senior majoring in political science with the intention of pursuing the study of law. Academic excellence is the sole criterion for selection. The recipient is selected by a committee composed of the law school dean, political science department chairman and the student financial aid director. Parents and friends established the scholarship in memory of Mr. Schaperkotter.

**Herbert W. Schooling Scholarship in Art History and Archaeology** An endowment established by friends and other donors, the income provides an award to students enrolled in the Department of Art History and Archaeology. Only outstanding students with a strong commitment to the field of art history or classical archaeology will be considered. Recommendations are made by the department.

**Robert J. Schwegman University Singers Scholarship** Gift provides stipends for students in University Singers who are worthy in character, have financial need and show intentions of remaining members of the singers. Selection is made by the director of University Singers.

**Sigma Alpha Iota Scholarship** Established by St. Louis alumnae of Sigma Alpha Iota, this is awarded on the basis of ability, talent and financial need to a female member of the Iota Lambda Chapter.

**Weldon H. "Pete" Steiner Memorial Scholarship** Family members and friends established an endowment in memory of Mr. Steiner. The income will provide scholarships for entering freshmen from Van-Far R-1 High School in Vandalia, Mo., who have demonstrated scholarship and leadership during high school. Preference shall be given to students entering the College of Arts and Science with a major in journalism. If there is not a qualified journalism student, preference is given to a music student. If no qualified music student is available, any qualified student from Van-Far R-1 is eligible for the award. It is renewable each year.

**O.M. Stewart Prize** This is awarded annually to a senior majoring in physics whose grades and personal excellence meet standards set by the O.M. Stewart Fund Committee.

**O.M. Stewart Scholarships** Stipends are awarded to undergraduates majoring or intending to major or minor in physics. Applications are made to the chairman of the physics department. The scholarship was established by the will of Dr. Stewart, a physics professor at MU from 1901 to 1944.

**W. A. Tarr Memorial Scholarship in Geology** An endowment was established by the estate of Dr. Tarr in his memory, recognizing his many years as a MU geology professor. The fund provides an annual stipend for an outstanding student in mineralogy or economic geology. The recipient is recommended by the Department of Geological Sciences.

**Norman MacIaren Trenholme History Scholarship** The will of Louis I. Stephens provides scholarships for juniors, seniors or graduate history students chosen by a committee from the history department appointed by the chairman.

**Ella Ferguson Turner Memorial Piano Scholarship** The

income from an endowment provides scholarships for students studying piano in the Department of Music. Recommendations are made by a committee of that department.

**University Band Scholarships** A stipend is awarded to each member of the University Band who participates in the program throughout the year. Members are chosen by audition and may or may not be enrolled for credit in Music 41: University Concert Band. The band organization serves athletic, military and concert functions. Scholarships are established by the Board of Curators.

**University Essay Prizes** A first and a second prize are offered for the best original essays written and submitted by any resident student.

**University Singers Voice Scholarship** Members of the staff and others interested in vocal music contribute to a fund to provide scholarships for students participating in vocal music. Applications are made to the Department of Music.

**J. Warshaw Scholarship in Spanish** A scholarship is awarded each spring to a junior or senior specializing in Spanish.

**A. F. Yanders Arts and Science Scholarship** A scholarship is awarded each fall to a junior in arts and science. Application materials are available at the Honors College.

# Dual Degrees

**LAW, MEDICINE AND VETERINARY MEDICINE** The College of Arts and Science has dual-degree programs with the schools of Law, Medicine and Veterinary Medicine. To enroll in these programs, the student must have completed all of the specific course requirements for the bachelor's degree prior to admission to one of these professional schools and also must have completed the junior year in residence in the College of Arts and Science at MU. In addition, under certain circumstances arts and science undergraduates may be assured admission to MU's schools of Law or Medicine.

**OTHER DUAL ENROLLMENTS** An increasing number of candidates enrolled in undergraduate professional schools enhance their career opportunities by qualifying for both a professional-school degree and an arts and science bachelor's degree.

In order to receive two bachelor's degrees, a student must complete a minimum of 132 semester hours and complete all of the specific requirements for both degrees. Normally, a minimum of one additional semester is required for both degrees. Each candidate for a dual degree is assigned advisers as appropriate. A candidate in the dual-enrollment program in the College of Arts and Science and in the College of Engineering should note that if the area of concentration in arts and science is centered in a department other than chemistry, statistics, math or physics, additional hours may be required to obtain both degrees.

**GRADUATE SCHOOL** A final-semester senior who needs fewer than 15 hours for completion of the bachelor's degree and who ranks in the upper half of the class may dually enroll in the College of Arts and Science and the Graduate School with permission of the deans of both divisions. This enables the student to complete some graduate course work prior to receiving the bachelor's degree.

***Application forms for dual enrollment in these two schools may be obtained from the Graduate School dean in 210 Jesse Hall.***

**TEACHING CERTIFICATE** A student who plans to receive a degree from the College of Arts and Science and who also wishes to receive a teaching certificate awarded by the Missouri Department of Elementary and Secondary Education should consult the College of Education section of this catalog for more information on admission, certification and graduation requirements.

**SECOND UNDERGRADUATE DEGREE** The faculty of the college has approved the following guidelines for students wishing to obtain a second undergraduate degree:

- Unless students earn both degrees in successive semesters at MU, students pursuing a second undergraduate degree will ordinarily be required to complete a minimum of 30 hours in residence in the College of Arts and Science after completion of the first undergraduate degree.
- A student will be expected to complete any college, general education, or department requirements that are unique to the new degree program; requirements that are in effect at the time a student begins work towards the second degree will be deemed applicable.
- Students applying for second degree status will only be considered if they have completed (with grades in the C range) English 20 and Math 10 (or equivalents) and have term and cumulative GPAs no less than 2.0.
- Before the dean's office will approve a request from the student to enroll as a candidate for a second degree, the student will be expected to submit an area of concentration form in consultation with an adviser in an appropriate department or program.
- The college rarely approves applications for the second undergraduate degree to be in General Studies, Interdisciplinary Studies, or International Studies.
- Once enrolled for a second degree, a student is committed to enrolling in course work required for completion of that degree. Students will not be allowed to continue as a second undergraduate degree candidate if they do not enroll in courses required for the second bachelor's degree.

# Preprofessional Study

*The majority of professional schools do not require completion of a particular major for admission. Consequently there are no formal preprofessional majors within the College of Arts and Science. Professional schools increasingly recognize the value of a liberal arts education.*

Students are encouraged to consider and prepare for alternative careers based on their interests and abilities, should circumstances prevent them from pursuing a professional degree.

**PRELAW** students entering law school must have completed at least 90 hours in residence of approved college work acceptable for a bachelor's degree; must have completed the area of concentration, including all basic skills and general education courses; must present a grade point average meeting the existing law school requirements; and must have received a satisfactory score on the Law School Admissions Test, which should be taken in the fall semester of the last undergraduate year. If the number of qualified applicants exceeds the number of places to be filled, only the most qualified applicants will be accepted for admission to law school.

Admission to the MU School of Law is based on the criteria given above regardless of the applicant's enrollment in a prelaw program, dual-degree program or other area of concentration. Applicants from other schools, colleges and universities are given equal consideration. MU undergraduates may be guaranteed admission to the School of Law under conditions outlined in the School of Law Catalog.

Students entering without a bachelor's degree must receive an undergraduate degree before or concurrently with graduation from law school.

The following courses may not be used to satisfy the 90-hour admission requirement: correspondence courses, non-theory courses in ROTC, hygiene, domestic arts, physical education, vocal and instrumental music, practice teaching, teaching methods and techniques and similar non-theory courses.

Prelaw students should emphasize English and other courses that require written papers. Facility of expression is prerequisite to successful work in law schools. A course in logic is highly recommended.

Prelaw students should be aware that a bachelor's degree is required for admission to some law schools, and a few states (but not Missouri) do not recognize the dual-degree program for bar admission purposes.
***Prelaw students are invited to discuss any questions concerning prelaw programs of study or admission and obtain the School of Law Catalog and application forms for the Law School Admissions Test at the School of Law.***

**PREMEDICAL** Because medical schools recognize the value of general education, premedical students may choose an area of concentration in any department, provided they also fulfill admission requirements for medical schools. An area of concentration in the natural sciences should be chosen only because of interest. Those who concentrate in the sciences are strongly encouraged to elect additional courses in the humanities, behavioral sciences and social sciences.

Students planning to study medicine should be aware of the competition in gaining admission to medical school and should plan to apply to several institutions. *Medical School Admission Requirements*, published yearly by the Association of American Medical Colleges, provides information on premedical curricula planning, medical training and internship and residency training. In addition, it describes educational programs and admission requirements at each medical school.

Students interested in the health professions should keep alternate careers in mind. Among these are medical social work, medical education, hospital administration, health administration, sanitary engineering, nursing, dentistry, pharmacy, clinical psychology, medical technology, physical therapy, physicians' assistant and graduate work in various biological and physical sciences.

Credits required for admission to medical school regularly include English composition and literature, two semesters; general zoology or biology (including laboratory), one semester; additional biological sciences work (may include comparative anatomy, embryology, genetics, cell biology, or vertebrate physiology), three semesters; math (algebra, calculus, statistics, or trigonometry), two semesters; general physics, two semesters; inorganic chemistry (including laboratory), two semesters; and organic chemistry (including laboratory), two semesters.

To the extent possible, the Premed Club will serve as an important communication link between interested undergraduates and the School of Medicine. For information, write or call the Student Activities Office, A022 Brady Commons, (573) 882-8386.

Under certain circumstances, arts and science undergraduates may receive guaranteed admission to the MU School of Medicine. Details are available at the Honors College.

Health professions advisers are available in the biological sciences division, the departments of chemistry and physics, the Honors College, and in the School of Health Professions.
***Questions concerning required admission credits should be directed to the School of Medicine.***

**PREDENTAL** A variety of academic majors may be used for predental students. A strong general education program involving natural sciences, humanities and social sciences is recommended. In addition, courses in finance and accountancy are often useful. Students are encouraged to take the DAT (Dental Admission Test) in the April before they apply for admission. Most dental schools require application through the AADSAS (American Association of Dental Schools Application Service). This application should be filed one year ahead of a student's anticipated entrance to dental school.

Predental students are encouraged to participate in the monthly seminars offered through the Predental Club.
***More information may be obtained from predental advisers in the Department of Chemistry or the Division of Biological Sciences.***

**PREVETERINARY MEDICINE** A minimum of two years of preprofessional study is required before a student may be admitted to the professional program leading to the doctor of veterinary medicine degree in the College of Veterinary Medicine. Preprofessional requirements may be completed at any accredited college or university where the course work is offered.

Students must complete at least 64 semester hours of college work by the end of either the winter semester or spring quarter of the year in which admission is sought. However, the average number of semester hours presented is usually more than 100. Students admitted with only two years of preprofessional work are usually those with exceptionally good scholastic-achievement records and aptitude scores.

Students should incorporate the preprofessional curriculum into a degree program other than veterinary medicine, since only a limited number of applicants can be admitted into the College of Veterinary Medicine.
***More information concerning admission guidelines and application procedures may be obtained from the assistant dean of student and alumni affairs in the College of Veterinary Medicine.***

**OTHER PREPROFESSIONAL PROGRAMS**
Students planning to enroll in other professional programs not available at MU frequently complete their requirements for admission to the professional school of their choice in the College of Arts and Science. All students who have completed 55 or more college hours must transfer divisions or file an area of concentration before further registration in Arts and Science will be allowed. Among the preprofessional students enrolled in the college are those who are planning to study pharmacy, chiropractic, optometry, osteopathy, theology and mortuary science. Students completing preprofessional requirements in the college should obtain a catalog from the professional school of their choice to ensure completion of all admission requirements.

# Professional Opportunities

Because employment opportunities in the various disciplines of the liberal arts vary greatly, it is impossible to list these opportunities within the confines of this catalog. Most departments in the college have printed information available describing employment opportunities. The Office of Career Services offers students a variety of career planning services.

# Graduation Requirements

## Bachelor of Arts

To receive the degree of bachelor of arts, a candidate must complete the following requirements:

**I. ADMISSION TO DEGREE PROGRAM** A candidate must be a student in good academic standing (both term and MU cumulative GPA of 2.0) to be admitted to a degree program. In addition, a student must have completed Math 10 and English 20 (with a grade in the C range or better). Some departments have additional admission requirements. The majority of students satisfy the English 20 and Math 10 requirements in the freshman year, and file appropriate paperwork for a major in the sophomore year.

**II. HOURS AND GRADE POINT** A candidate must pass 120 semester hours of credit with an overall average grade point of no less than 2.0. The last 30 hours must be completed in course work on the MU campus and with no less than a 2.0 GPA. Departments may refuse to accept grades of C- or below in specific, required courses.

**200-Level Requirement** A candidate must pass a minimum of 30 hours in courses numbered 200 or above, including courses in the area of concentration. These courses must be regularly accepted for credit in the College of Arts and Science.

**Area of Concentration** At least 20 hours in courses numbered 100 or above, completed with a grade in the C range, must be in the area of concentration. A minimum of 12 hours numbered 100 or above in the area of concentration must be completed in residence at MU. See below for additional information.

**Upperclass General Education Requirement** A candidate must pass a minimum of three courses numbered 100 or above (if taken at MU) distributed among at least two of four areas:
- biological, mathematical and physical sciences
- behavioral sciences
- social sciences
- humanities and fine arts

A student who elects one-hour topics courses must complete a minimum of three as partial fulfillment of the upperclass requirement.

**Credit Limitation** With the exception of courses used to complete the basic skills requirements, no more than 40 hours from any one department may be presented for a degree.

**Other Credit Restrictions**
- No more than 12 hours of applied art for non-art majors may be accepted; exceptions may be made for students pursuing general studies or interdisciplinary studies degrees.
- No more than 12 hours of applied music for non-music majors may be accepted.
- No more than six hours of music ensemble for non-music majors may be accepted.
- Only two hours of physical education course work may be accepted.
- Only three hours of orientation course work may be accepted.
- Only two hours of applied course work may be accepted in non-Arts and Science classes.
- Students must complete no less than four full-time semesters (12-hour minimum) as a requirement for graduation.
- Full-time enrollment requirement: Credit that is applied toward a degree is considered valid for eight years. After this time, the validity of credit already on the transcript will be reevaluated. Departments of the college have the right to accept or to reject credit earned after eight years have passed.

**Time Limitation on Degree Credit** A student whose education has been interrupted for more than one semester may not count toward graduation credit earned eight years prior to the resumption of progress toward the degree, unless the courses are validated by the MU department in which they were offered.

**Grade Point Requirements for Graduation**
- A 2.0 minimum GPA is required in all courses taken in the major department and in courses used for the related field or minor. Some departments of the college have minimum grade requirements in specified courses.
- A 2.0 minimum cumulative GPA is required.
- A 2.0 minimum GPA is required in courses taken after a student has accumulated 60 hours of college credit.
- A 2.0 minimum GPA is required in all courses taken in the final 30 hours.

**GRADUATION WITH HONORS** A student who has completed the final 60 semester hours in residence for a letter grade (A/F) at MU may graduate with honors with the following minimum GPAs; 3.7, cum laude; 3.8, magna cum laude; and 3.9, summa cum laude. The MU cumulative grade point average necessary for these designations is subject to change, however, since the number of students qualifying for each designation is limited to a certain percentage of the graduating class.

**ASSESSMENT** Consistent with campus policy, Arts & Science degree candidates are required to participate in both "general education" and "major" assessment as determined by the MU campus and/or department.

**III. BASIC SKILLS AND GENERAL EDUCATION REQUIREMENTS** The purpose of the basic skills and general education requirements is to assure that students fulfill the common educational objectives of the College of Arts and Science. Courses satisfying these requirements aim to impart specialized knowledge and to help students fulfill the broader objectives of a liberal education. Thus, these courses are intended to help students develop the abilities to do the following:
- Communicate clearly and effectively in both writing and speech
- Generate and test hypotheses
- Locate and develop information needed to solve problems
- Think critically and use analytic skills effectively
- Examine their lives critically and objectively
- Enrich their lives through appreciation of present and past cultural achievements

**A. BASIC SKILLS** Course requirements in the following basic skills are determined for each student either on the basis of the level of attainment in admissions tests given before enrollment in the university and/or by the number of high school units in particular fields presented for admission. Courses used to fulfill basic skills requirements may not be used for the student's area of concentration nor toward partial fulfillment of general education requirements with the exception of courses that apply to campus-wide general education requirements.

**English Composition and Writing Intensive Course** Two fundamental requirements apply to arts and science AB candidates:
- Students must complete English 20: Exposition and Argumentation, the prerequisite to all Writing Intensive courses, with a grade in the C range or higher.
- After completion of English 20, students must complete at least two MU Writing Intensive courses (one upperclass course in the major) with a grade in the C range or higher. Courses in a variety of disciplines are certified as Writing Intensive by a special faculty committee. They require a substantial amount of writing and offer students the opportunity to rewrite assignments to raise the level of performance. Each semester's schedule of courses lists available Writing Intensive courses.

**Mathematics** Two requirements apply to this area:
- Students must demonstrate proficiency in College Algebra. Proficiency can be demonstrated by examination. Alternatively, the student could pass a course in College Level Algebra with a grade in the C range or better. Specific information is available at the Arts and Science Advisement Center.
  Courses taken to fulfill this requirement may not be applied toward partial fulfillment of the general education requirement in biological, physical and mathematical science.
- Students must complete, with a grade in the C range or higher, one course certified as Math Reasoning Proficiency. Each semester's schedule of courses lists available options.

**Foreign Language** Each student is required to attain the degree of proficiency equivalent to the completion of at least 12 hours of college-level work in a single foreign language. All MU foreign language departments require a grade in the C range or higher in level I of a language and level II of a language as prerequisites for levels II and III, respectively.

The foreign language requirement is waived if the student has completed four units of a single foreign language in high school. Such a student may receive credit, in addition to the waiver, if he or she completes with a grade in the C range an MU course numbered 100 or above in the same foreign language. Civilization, film and literature courses taught in English are excluded.

However, if a student who has completed four units of foreign language in high school subsequently or concurrently enrolls in a lower-level foreign language class, the waiver of the foreign language requirement is negated. For example, if the student completed four years of high school Spanish and then enrolled in Spanish I at MU, the college credit takes precedent

and Spanish II and III would be needed to complete the requirement. A student who negates the waiver of the foreign language requirement by enrolling in a lower-level college or university course may decide not to continue the sequence through level III. However, students who in essence repeat lower-level instruction will not receive credit for those courses toward the 120 credit hours needed for graduation. In addition, the grade(s) earned in those courses will not be averaged into the cumulative grade point average and, if they are MU courses, they will be changed to S or U as is appropriate.

A student who has had some language study in high school, but not enough to satisfy the college requirement, may enroll for full credit in any lower-level college language course suited to the individual's level of skill. The following scale of placement is recommended for most cases.

| If students present: | They should enroll in: |
|---|---|
| One high school unit | Course I |
| Two high school units | Course I |
| Three high school units | Course II or Course III |

In addition, a placement test is administered for students with prior work in French, German or Spanish.

Students who have not had sufficient course work in high school to meet the foreign language requirement but who think their knowledge of a language is at such a level may partially or completely satisfy the requirement by passing an appropriate examination in one of the foreign language departments.

Students with high school units in a foreign language may receive college credit for their proficiency in the following ways:

- Advanced-standing credit in a foreign language may be earned by successfully completing, with a grade in the C range or better, a college course at MU in the language. The amount of credit that may be earned in this way depends on the level of the college course that is completed. For example, a student who skips Spanish I and successfully completes Spanish II will receive five credits for Spanish I after filling out the appropriate form at the department office. In no case can the amount of credit granted this way exceed 13 hours. Advanced standing credit awarded to transfer students according to the same policy will apply towards an Arts & Science degree.
- Students who complete level I of a language and then, on the recommendation of a faculty member, are urged to skip level II and move directly into level III will receive advanced-standing credit for the level II course after successful completion of level III.
- Students transferring from other colleges or universities who have not completed the equivalent of the Missouri requirement must complete the requirement after entering MU.
- Advanced standing credit may be earned until a student has completed 30 hours of credit toward a degree, including any hours in the field toward where credit is requested.

Upperclass degree candidates should not drop a foreign language nor should a student who has completed a course in a foreign language at MU interrupt the sequence until the requirement has been satisfied.

A student who completes German 21GH, 22GH and 23GH is considered to have fulfilled the equivalent of German III.

International students whose native language is other than English are exempt from the foreign language requirement but may not receive credit for basic skills courses in their native languages. Others with native competence in one or more foreign languages offered by MU may, at the discretion of the language department(s) concerned, be granted advanced standing for basic skills courses.

Non-international students who are fluent in a language not offered at MU may have the foreign language requirement waived by passing an exam given by a faculty member who is fluent in the language. The faculty member need not be a member of the MU faculty, but must be approved by the dean's office. The exam tests the student's ability to read, write and speak the language at the level broadly described as "intermediate." Results of the examination are forwarded to the dean's office for evaluation. Students in this situation do not receive advanced-standing credit for their foreign language knowledge.

Enrolling on the S/U basis in a foreign language in order to establish advanced standing risks failure to complete the course successfully if the grade is in the D range, because this grade will be reported as U under the S/U system. Students are urged to consult with an academic adviser before selecting to take a foreign language S/U.

**B. GENERAL EDUCATION** The general education requirements in the College of Arts and Science are satisfied by arts and science courses and selected non-Arts & Science courses. Courses used as partial fulfillment of general education requirements may not be used in the area of concentration. Also, the courses used for general education requirements may not be selected from the student's major. "General Honors" courses numbered 100 and above, which vary in subject matter, may usually be applied toward fulfillment of these requirements. Research methods and special readings courses may not be used in partial fulfillment of general education requirements.

A student from an accredited community college in Missouri whose associate of arts degree requires 60 hours of college-level work oriented toward the bachelor's degree will be regarded as having fulfilled the Arts & Science general education requirements for the AB degree, with the exception of the upperclass requirement described above, as long as the requirements have not been fulfilled through CLEP General Examinations but through completion of specific courses. In addition, the college adheres to the CBHE articulation agreement.

**Campus-wide general education requirements** are described elsewhere in this catalog.

**Biological, Mathematical and Physical Sciences** A student must complete at least nine hours in the biological, mathematical and physical sciences, including at least one course with laboratory work. (Students who complete the laboratory portion of a course without completing the associated lecture portion will not have met this requirement.) The nine hours must be derived from courses in at least two of the following three areas:

- Biological sciences, including general biology, genetics, animal biology, microbiology, plant biology and biological anthropology
- Mathematical sciences, including math, statistics and computer science (Math 10, 14 or 15 and Computer Science 75 or 102 may not be used in partial fulfillment of this requirement.)
- Physical sciences, including astronomy, chemistry, physics and geological sciences

**Behavioral Sciences** A student must complete five or six hours of work in anthropology (with the exception of 149, 150, 151, or 364), theoretical courses in linguistics, psychology and/or sociology. Research and methods courses may not be used.

**Social Sciences** A student must complete nine hours in two different fields: history, economics, political science or geography (except those in meteorology, climatology and cartography; Geography 137, however, can be used). Research and methods courses may not be used.

**Humanities and Fine Arts** All students must complete a minimum of 12 hours in the humanities and fine arts. These courses must be distributed among no fewer than three of the following areas:

- Appreciation of art, appreciation of music or appreciation of theater
- History of art, music or theater
- Foreign civilizations, including civilization courses taught in foreign language departments or in area studies programs
- Classical humanities

- Selected communication courses (75, 103, 181, 183, 310)
- Literature, including all literature and linguistics courses in the Department of English, and all literature and linguistics courses numbered above 100 in foreign language departments. Conversation and composition courses may not be applied to this requirement.
- Philosophy
- Creative and performing arts including studio art, music, creative writing and theater. A maximum of two courses in this area may be counted; they must be numbered above 99.
- Religious studies
- The humanities sequence–101, 102, 103, 104. Students who complete all four courses in this sequence, offered through the Honors College, are exempted from the distribution requirement for the humanities and fine arts.
- Selected interdisciplinary courses from: Black Studies, Honors College, Peace Studies, and Women Studies can be counted to meet partial fulfillment of general education courses. Please consult with an adviser in the Advisement Center, 107 Lowry Hall or the Student Services Center.

**IV. STATE REQUIREMENT** According to Missouri state law, a candidate for an undergraduate degree at MU must present for graduation at least one course in American history or American government.

**V. "AREA OF CONCENTRATION" AND MINORS** "Area of concentration" is the term used to define the major and a related field or minor. It consists of at least 32 hours of course work acceptable to the major department. No fewer than 18 and no more than 40 hours may be selected from the department in which a student is majoring. A minimum of eight hours of course work, including at least two upperclass courses, in other departments related to the student's major constitute a "related field." (A student completing an area of concentration in geological sciences is not required to complete two upperclass courses within the related field.) A student may elect to choose a minor in place of the related field.

Students are to declare and to receive official approval for a "major" by submitting an "Area of Concentration" form no later than the semester after they have completed 55 hours. A one-semester extension may be approved under certain circumstances. Departments and programs are authorized to accept proposed areas only when students are in good academic standing and when the English 20 and Math 10 requirements have been completed with grades of C- or higher, and any department requirements have been met.

A minor consists of a minimum of 15 hours of course work, including two upperclass courses, within a department or program that offers a minor; nine of the required hours must be taken in residence. The area of concentration must include a minimum of 20 hours of upperclass course work, 12 of which must be completed in residence at MU in the major department in which the area is centered. Upperclass courses completed with grades in the D range may not be included in the area without the approval of the adviser and the dean (and in no case will more than one such grade be so approved), and students must achieve an overall average of at least 2.0 in all of the courses attempted in their major and in their related field or minor. Some departments may refuse to accept specific courses with grades of C- or lower. A student may not count toward the area of concentration any courses used to satisfy general education or basic skills requirements.

The College of Arts and Science awards minors only to undergraduate students who are recipients of bachelor's degrees.

Minors have been approved for the following College of Arts and Science departments and programs: aerospace studies, anthropology, art, art history and archaeology, biological sciences, Black studies, chemistry, classical studies, computer science, East Asia studies, economics, English, film studies, French, geography, geographic information science, geological sciences, German, history, Italian Area studies, Latin American studies, linguistics, math, military science, music, peace studies, philosophy, physics, political science, religious studies, Russian Area studies, sociology, South Asia studies, Spanish, statistics, theater and Women studies.

**VI. SCHOLASTIC STANDING** Academic status of arts and science students is determined in accordance with the following faculty guidelines. The word "term" in these regulations applies to semester, summer session or intersession; course work completed by correspondence or through extension also has a bearing on academic status.

- A student whose term and cumulative GPAs are 2.0 or higher is in good standing. (For students who begin a semester on scholastic probation, see below.)
- A student in good standing whose term GPA falls below 2.0 is placed on scholastic probation.
- Any beginning student admitted to MU who does not meet the minimum entrance standards as specified in Article II, Admission, Advanced Standing and Classification, will enter on scholastic probation and must earn a 2.0 GPA in a minimum number of hours during his or her first semester.
- Students on scholastic probation will have two terms in which to attain good academic standing (2.0 minimum term and cumulative GPA) or be subject to dismissal. A student will not be eligible for removal from probation if he or she does not complete in residence during these two terms at least 12 graded hours acceptable by the student's adviser and in accordance with college policy for credit in the College of Arts and Science. "Complete" in the preceding sentence means grades in the A, B, C or D range.
- A student whose term GPA falls below 1.0 is subject to dismissal.
- In the application of the foregoing rules, the dean will determine how an incomplete grade in a course will be considered in determining a student's academic standing.
- The dean may, in extenuating circumstances, waive any of the foregoing regulations governing eligibility to re-enroll for an individual student.

The College of Arts and Science requires the following minimal GPAs to be attained as conditions for graduation:

- A 2.0 minimum GPA in all courses taken in the major department and in courses taken for the related field or minor (Some departments of the college have particular minimum grade requirements in specified courses.)
- A 2.0 minimum cumulative GPA
- A 2.0 minimum cumulative GPA in courses taken after a student has accumulated 60 hours of college credit
- A 2.0 minimum GPA in all courses taken in the final 30 hours

**VII. CORRESPONDENCE COURSES** The Center for Distance and Independent Study and the Extension Teaching Program provide special educational opportunities for certain types of students. They do not direct their programs toward arts and science students who are enrolled in residential programs leading to a degree. Because the College of Arts and Science views residential instruction and experiences as central to undergraduate education and to the degree programs offered by its faculty, the college reaffirms its long-standing policy of disallowing correspondence courses while a student is currently enrolled as a degree candidate. These courses will be approved for currently enrolled degree-seeking students by the dean's office only for students in good academic standing for whom particularly compelling circumstances exist. Without the approval of both the department and the office of the dean, the courses taken through correspondence may not be used for completion of a major, a minor or a related field. In any event, no more than 30 hours can be counted toward the arts and science degree, and no student will be allowed to satisfy the laboratory portion of a natural science requirement with a

correspondence course or extension teaching.

In addition, these courses are not normally accepted toward the degree if the student is within 30 hours of completion of the degree even if he or she is out of school at the time these courses are selected and finished. Students who successfully appeal to have correspondence courses count in the final 30 hours presented for the degree should understand that an average of nine months is required for completion of a correspondence course. Also, regulations of the college regarding the awarding of Latin honors require the final 60 hours to be completed in course work on the MU campus for a letter grade (A/F). The local chapter of Phi Beta Kappa requires completion of a minimum of 60 hours of course work on the MU campus, usually during the last two years of study; exceptions to this latter expectation may be made for students who study abroad in an approved program during their final semesters of study.

The college reserves the right to evaluate correspondence and extension teaching program credit of students who transfer into the College of Arts and Science according to arts and science policy. These same regulations apply to students who enroll simultaneously in two institutions.

## Bachelor of Fine Arts

The bachelor of fine arts degree, offered by the Department of Art, is designed for students interested in more professional training in the visual arts than is possible under the program of bachelor of arts degree. Requirements for the degree are the same as for the bachelor of arts degree with the following exceptions:

**I. ADMISSION** A candidate must be a student in good standing (both term and cumulative GPA of 2.0) and have met the English and math basic skills requirements.

**II. BASIC SKILLS AND GENERAL EDUCATION REQUIREMENTS**

**A. BASIC SKILLS** A foreign language is not required; English composition (including two Writing Intensive courses) and math (including a Math Reasoning Proficiency course) requirements are the same as outlined in the bachelor of arts section.

**B. GENERAL EDUCATION**

**Biological, Physical, Mathematical Sciences** A candidate must complete nine hours in two fields. A lab-science course is required.

**Social Sciences, Behavioral Sciences and Humanities and Fine Arts—18 hours** A candidate must complete a minimum of nine hours in Social/Behavioral Sciences. Nine additional hours are required and can be completed in any of the three fields. At least two courses must be numbered 100 or above in two of the three fields.

**III. AREA OF CONCENTRATION** The area of concentration consists of 60 to 70 hours of studio art courses and 12 hours of art history. A minimum of two upperclass courses in art history must be taken. At least 35 semester hours must be completed in residence in the Department of Art at MU. Upperclass courses completed in the D range may not be included in the area.

## Bachelor of General Studies

Administered through the Office of Special Degree Programs (210 Switzler), the General Studies program offers a Bachelor of General Studies degree (BGS). The program provides a format to accommodate a variety of student needs and may be of particular interest to adults returning to school and to students with specific but unusual interests. Within the minimum requirement of 120 hours of course work, there is somewhat less emphasis on general education requirements than in the traditional Arts and Science degree programs, but the requirements for the major are more extensive. Students divide their work among three chosen areas of study. These areas, called components, may be selected from a variety of courses offered by any academic division or department at MU. Faculty members from across the campus serve as advisers and help students plan a curriculum based on their components.

Designed for students who have a high degree of motivation and independence and a set of educational goals that cannot be reached in a traditional university program, the General Studies program requires a written application for admission. Students must complete at least one year of college work, including at least one semester at MU before they may apply to the program. Applicants must be in good academic standing (2.0 minimum GPA, not on probation) and have completed Math 10 and English 20 or equivalents. All General Studies students are required to complete 30 hours of course work in the program once they are accepted (courses taken in the semester of application for which students receive a grade of C or better may be counted among these hours).

Interested students first meet to discuss their goals and interests with the director of Special Degree Programs. If it appears an appropriate program of study can be devised, students next meet with advisers for each of their component areas to develop a specific selection of courses. This list of courses, arranged by components on the General Studies Area of Concentration Form and approved by the individual advisers, serves as the core of the application. In addition, the application asks the student to provide a description of and a justification for the proposed plan of study within the General Studies degree program.

Applications are accepted once each semester. Students who intend to begin their programs in the fall semester must present their completed applications to the Office of Special Degree Programs no later than the third Monday of February; those who intend to begin their programs in the winter semester must present their completed applications no later than the third Monday of September. Applications are reviewed by the Admissions Sub-Committee of the General Studies Advisory Committee; these deadlines provide for notification in time for students to be eligible for early registration. Students who seek admission during the summer will be accepted *only* when they are not otherwise able to register for fall classes and when, in the judgment of the director and with the concurrence of the dean, they are candidates the Admissions Committee will approve. Students must have an MU GPA before the candidate will be approved.

**I. DEGREE REQUIREMENTS**

**A. BASIC SKILLS** English composition (including two Writing Intensive courses) and math requirements (including a Math Reasoning Proficiency course) are the same as outlined in the bachelor of arts section.

**B. GENERAL EDUCATION—30 hours.** Distribution of content categories will be determined by the Director of Special Degree Programs based on the content of a student's major. Hours will be chosen from any five of the following fields:

- Biological Sciences
- Physical Sciences
- Mathematical Sciences
- Behavioral Science
- Social Sciences
- Foreign Language (13-hour sequence)
- Humanities and Fine Arts

A minimum of nine hours must be in courses numbered 100 or above. Definitions of these fields are those that are applicable toward all arts and science degrees. Native speakers of English who satisfy the arts and science foreign language requirement need to take only 18 hours in four remaining fields, with six hours in courses numbered 100 or above. As is true with all arts and science degrees, courses that are used to satisfy the general education requirement cannot be used to satisfy other BGS requirements. BGS students must take a course in American history or American government; this course may be one of the general education courses.

**II. COMPONENT AREAS 45 hours** Three fields of study, each including a minimum of 15 hours of course work, form the core of the General Studies degree program. With the assistance of faculty advisers and the director of Special Degree Programs,

students choose courses that will best serve their educational goals. At least one component must comprise courses offered wholly within the College of Arts and Science approved by a faculty adviser in the college. The remaining two components may be chosen from other academic divisions. Students are encouraged to include mostly upper-level course work in their components; a minimum of 18 hours, six in each component, must be taken at the 200-level and above. Transfer students are expected to include at least six hours of course work at the 200-level or above in courses taken at MU in each component. Transfer students may, however, construct one component solely with courses taken at other institutions; where appropriate, the upper-level course requirements in this one component may be waived, but in such cases, students must include nine hours of course work at the 200 level or above in each of their two remaining components. No more than six hours of independent study, special projects or internships may be included in any one component; the combined total for such work is limited to 12 hours. Once a student is accepted as a General Studies degree candidate, program change requires advance approval from the Office of Special Degree Programs (approval from individual component advisers also may be required). Courses taken without securing such approval may not count toward the completion of degree requirements.

**III. CAPSTONE REQUIREMENT** General Studies students must complete a three-hour capstone essay/project with an appropriate faculty member (General Studies 175), an approved internship (GS280), or an appropriate departmental senior seminar or capstone course. This requirement may be fulfilled within a component, or may be in addition to the components.

**IV. ELECTIVES** Any courses ordinarily accepted for credit by the College of Arts and Science may be chosen as hours to be applied to the 120 required for graduation.

**V. ADDITIONAL REQUIREMENTS** General studies degree candidates must earn no less than a 2.0 GPA in each of their components and are expected to attain the same grade point average requirements expected of all other arts and science degree candidates. Similarly, general studies students are bound by other rules and practices of the College of Arts and Science that pertain to admission to degree programs, the awarding of credit and the awarding of degrees. Some departments and divisions have special requirements, such as a minimum grade point average, specific prerequisites, and procedures for securing permission to take specific courses. General studies students who propose taking courses in these programs are responsible for meeting these requirements.

## Bachelor of Music

The bachelor of music degree, offered by the Department of Music, is for students interested in obtaining stronger preparation in music than is possible with a bachelor of arts degree. Students in this degree program must choose an area of concentration in one of the following: piano, piano accompanying, voice, flute, oboe, clarinet, bassoon, saxophone, trumpet, horn, trombone, euphonium, tuba, percussion, violin, viola, cello, string bass, composition, music theory, music history, or music education. There are two configurations for the BM degree.

**THE FIRST CONFIGURATION** offers a maximum concentration in music combined with the elements of a liberal education. The requirements for this degree are the same as those for the bachelor of arts degree with the following exceptions:

**I. DEGREE REQUIREMENTS**
**A. BASIC SKILLS**
**English and Math** English composition (including two Writing Intensive courses) and math (including a Math Reasoning Proficiency course) requirements are the same as outlined in the bachelor of arts section.

**Foreign Language** For piano accompanying majors, two of the three courses in French, German and Italian diction are required in addition to the regular language requirement. For a performance major in voice, 23 hours are required, including the first two courses (10 hours) in one of the three languages listed above, the first-semester course in each of the other two languages (five hours each) and a sequence of three one-hour courses in German, French and Italian diction. For a major in music history, 23 hours are required, including the complete three-course sequence (13 hours) in German, French or Italian, plus the first two courses (10 hours) in one of the other languages. (The second language must be German if it was not chosen as the first language.)

**B. GENERAL EDUCATION**

**Biological, Mathematical and Physical Sciences** A candidate must complete nine hours in two fields. A lab-science course is required.

**Social Sciences/Behavioral Sciences** A candidate must complete nine hours in social/behavioral sciences.

One upperclass course in general education is required.

**II. AREA OF CONCENTRATION** The area of concentration for the bachelor of music consists of no fewer than 62 hours and no more than 90 hours in individual performance courses, music history, theory and ensemble. The specified course work in each of these is determined by the particular areas of music that the student wishes to emphasize.

Candidates for all bachelor of music degrees must pass a candidacy examination in the areas of performance at the completion of their sophomore year. This exam is administered by the applied faculty concerned and must be passed before entrance to the 300-level (for performance concentrations) or 200-level (for all other concentrations) studio instruction course is approved. All BM candidates are required to fulfill the departmental recital attendance requirement. In addition, each performance major is required to present a junior and senior recital. The performance must be approved two weeks in advance by a faculty hearing committee.

Upperclass courses completed in the D range may not be included in the area of concentration without the approval of the adviser and the dean, and the student must achieve an overall average of at least C (2.0) in all of the courses attempted in the Department of Music at MU.

**THE SECOND CONFIGURATION** of the bachelor of music degree is designed for musicians wishing to be certified to teach in the public schools. Students interested in this program should contact the director of undergraduate studies in music education for specific details; however, the following paragraphs describe some significant differences in this program:

**I. DEGREE REQUIREMENTS**
**A. BASIC SKILLS**
**English and Math** English composition (including two Writing Intensive courses) and math (including a Math Reasoning Proficiency course) requirements are the same as outlined in the bachelor of arts section.

**Foreign Language** There is no foreign language requirement for students in this program except for those wishing to teach vocal music in the public schools. For these students, a sequence of three one-hour courses in German, French and Italian diction is required.

**B. GENERAL EDUCATION** The MU campus General Education requirements apply in their entirety to the BM degree.

**II. PERFORMANCE REQUIREMENT** Students majoring in music education must attain the Music 255 performance level by the end of the second year of residency or after the sophomore year. They also must complete a minimum of four hours of Music 255 in studio instruction and present a one-half or full applied recital before graduation. They also must complete additional hours in music, depending on certification area, plus a minimum of 32 hours of professional education courses for certification.

## Bachelor of Science

The bachelor of science degree, offered in the departments of Biological Sciences, Chemistry, Economics, Geological Sciences, Mathematics, Physics and Statistics, is designed for students interested in more professional training in the sciences than is possible under the program of the bachelor of arts degree. Consequently, the 40-hour restriction on credit presented for the degree from one department is not applicable. The requirements for this degree are the same as those for the bachelor of arts degree with the following exceptions:

**I. DEGREE REQUIREMENTS**
**A. BASIC SKILLS**
**Foreign Language/Special Emphasis Area**

**a.** A student may fulfill this requirement by attaining the degree of proficiency equivalent to the completion of at least 12 hours of college-level work in a single foreign language as outlined in the foreign language requirement for the AB degree. Students who plan to continue their studies beyond the bachelor's level should be advised that many graduate schools have a foreign language proficiency requirement for graduation that may be satisfied by this option.

The foreign language requirement is not waived for BS candidates in biological sciences.

**b.** A student may fulfill this requirement by completing a special program consisting of no fewer than 12 credit hours of upperclass course work, not in the parent department and not normally required of all departmental majors nor appearing elsewhere in the area of concentration. This program must be a carefully planned, coherent unit formally approved by both the undergraduate adviser and the department.

**B. GENERAL EDUCATION**

*Biological Science*
• Same as AB general education requirements.

*Economics*
• **Biological and Physical Sciences—9 hours.** A lab science course is required.
• **Humanities and Fine Arts—9 hours.**

At least two of these courses must be numbered 100 or above selected from any of the above fields.

*Chemistry, Geological Sciences, Math Sciences, Physics and Statistics*
• **Behavioral and Social Sciences—9 hours.**
• **Humanities and Fine Arts—9 hours.**

At least two of these courses must be numbered 100 or above selected from two of the three fields: Behavioral Sciences; Social Sciences; and Humanities and Fine Arts.

## Special Degree Programs

Interdisciplinary programs provide for the special needs and interests of individual students. The Office of Special Degree Programs (210 Switzler Hall) is responsible for a variety of interdisciplinary degree programs, including the AB in Interdisciplinary Studies, the AB in International Studies and the BGS in General Studies. General Studies, described elsewhere, is a special program for non-traditional and returning students. This program requires a separate admissions application. Students may not be considered for admission until they have completed at least one year of college.

**The Bachelor of Arts in Interdisciplinary Studies** affords students in the College of Arts and Science the opportunity to design their own course of studies. Students with very specific career plans and goals, not easily accommodated in any one department, may find this program suited for their needs; others, less sure of their future plans, may find that this option permits a broader approach to the AB degree than may be found in a single department. The departments involved in these areas may include some outside the College of Arts and Science. This program is a good choice for students who intend to go on to professional programs (in law, business or medicine, for example), but often does not provide the focused preparation required in most areas of graduate study in the usual arts and science disciplines. Students who elect this degree program complete the same basic skills and general education requirements as other AB degree students in the college, but design their majors to include course work in three different areas.

**The Bachelor of Arts in International Studies** is a multidisciplinary Arts and Science degree offering a broad program of liberal studies with a strong intercultural and international focus. The program provides a variety of regional/cultural and interdivisional emphasis areas, including East Asian Area Studies, European Studies, Latin American Area Studies, Russian Area Studies, South Asian Area Studies, Environmental Studies, International Agriculture/Community Development and Peace Studies. The program includes a common interdisciplinary core of 18 hours of designated course work that students take as part of their general education requirements. In addition, all International Studies students must take a minimum of nine hours of foreign language study beyond the 13-hour minimum skills proficiency requirement of the College of Arts and Science (a total of 22 hours minimum, representing the equivalent of three full years of foreign language study). International Business is offered only as a dual degree program leading to the BSBA with an emphasis in International Business. Given the rigorous requirements of these programs, students should begin planning their course of study in their first semester.

# Administration

**Bruce J. Walker,** dean
**Kenneth R. Evans,** associate dean
**John D. Stowe,** associate dean

# Departments and Schools

**School of Accountancy**
**School of Business, composed of the departments of Finance, Management and Marketing**

The College of Business, established in 1914 as a senior professional school, offers curricula that emphasize educating students for their growing responsibility in business, government and the society as a whole.

The School of Accountancy was the first such school at a major state university and was among the first group of accounting programs to be separately accredited by the American Assembly of Collegiate Schools of Business. The school also is a charter member of the Federation of Schools of Accountancy.

The School of Business, which offers curricula in economics, finance and banking, international business, management, marketing and real estate, has been accredited by the American Assembly of Collegiate Schools of Business since 1926.

The faculty of the college seeks to do the following:

- Stimulate students' thought processes and intellectual curiosity to promote continued learning after formal education ceases
- Encourage disciplined imagination to enable students to come to grips with problems in a changing world
- Emphasize intellectual awareness that will help students relate general education to education for business and School of Business
- Emphasize intellectual integrity
- Develop students' capacity to reason objectively, precisely and creatively as an aid to decision making

The college also has the responsibility of enlarging the existing body of knowledge covering the theoretical structure and operational principles of private and public enterprise. Faculty members are engaged in a variety of research projects in these areas, an activity that serves to enrich the educational experience of the students.

Finally, the college is responsible for providing continuing educational services for those who enter the fields of accountancy, business or government. Therefore, the college participates, through the Institute for Executive Development, with the University Extension Division in conducting conferences, seminars and short courses for those who have completed their formal education.

# Special Services

**FINANCIAL RESEARCH INSTITUTE (FRI)** fosters, promotes and stimulates faculty and students to perform financial research to solve the major problems of business and government. The FRI performs contract research, provides development grants to faculty and students, and disseminates research results through publications, meetings, presentations and symposiums. The FRI supports research in all fields of finance.

**THE MISSOURI TRAINING INSTITUTE (MTI)** provides continuing education programs for professionals in business, government, and education to help them improve their personal and organizational performance. MTI uses a systematic approach to organizational improvement and capacity building by identifying an organization's needs and then designing and delivering training and consulting services based on those needs. MTI also offers graduate and undergraduate students internships that provide the opportunity to develop experience in consultation, training management, technical assistance, and facilitation for strategic planning, continuous improvement, team development, and related initiatives for organizations.

**THE SMALL BUSINESS DEVELOPMENT CENTER (SBDC)** is a cooperative effort of the College of Business (CoB), the University Outreach and Extension Division (UOE), and the Missouri Small Business Development Centers (MO SBDC). The center provides continuing education programs, as well as management and technical assistance, for entrepreneurs and business owners throughout Missouri. CoB faculty and center staff work closely together to give undergraduate and graduate students real world experiences with the business community. Students assist with SBDC services through participation in team projects, one-on-one counseling, research and training. Faculty schedule class visits to the SBDC and center staff give classroom instruction. Areas of center expertise include finance, accounting, marketing, human resource development, business communications, computerization, manufacturing technology and technology transfer.

# Admission

**LOWER DIVISION** The College of Business admits students at the lower-division level under the following guidelines:

- Freshman applicants (students applying to MU from high school) to CoB will be admitted to the lower division if they meet campus admission requirements.
- Students in good standing in another school or college at MU who submit a Transfer of Division form to CoB will be admitted to the lower division if they can complete degree-program admission requirements by the time 75 semester hours have been completed.
- External transfer students who request admission to CoB will be admitted to the lower division if they can complete degree-program admission requirements by the time 75 semester hours have been completed.
- International students must have a score of 550 (paper-based; 213 computer-based) on the TOEFL and an overall grade point average of 2.6 from their home institution to be admitted to CoB at any level.

Admission to an upper-level emphasis area is competitive and is based on overall cumulative grade point average. Admission to the lower division does not guarantee admission to a degree program.

**APPLICATION AND ADMISSION TO THE UPPER-DIVISION BACHELOR OF SCIENCE IN BUSINESS ADMINISTRATION (BSBA) DEGREE PROGRAM**

**Capacity Limitations**
Admission into the upper-level Bachelor of Science in Business Administration (BSBA) degree program is highly competitive, as enrollment is limited. Each of the individual emphasis areas (e.g., Economics, Finance and Banking, International Business, Management, Marketing, or Real Estate) has its own capacity limitation.

**Application**
To apply to the upper-level BSBA emphasis area program, a student must have completed, or be in the process of completing, a minimum of 54 semester hours of college-level credit. The following courses must be among the credits completed, or in process, at the time of application: Acct 36*: Accounting 1;

Acct 37*: Accounting II; Econ 4 or 14: Fundamentals of Microeconomics; Econ 5: Fundamentals of Macroeconomics; English 20: Exposition and Argumentation; Math 60: Finite Mathematics; Math 61: Elements of Calculus; and Stat 150: Introduction to Probability and Statistics. *Acct 36 and Acct 37 must both be taken in residence or both taken at another campus. Applications will be processed after grades are determined for the semester to ensure that 54 semester hours of college-level credit, and the required courses listed above, have been completed by the applicant. International students must have a score of 550 (paper-based; 213 computer-based) on the TOEFL.

**Admission**
Students will be competitively admitted to the upper-level BSBA emphasis area based on overall cumulative grade point average (including all graded hours attempted at all colleges and universities attended). Students with exceptional circumstances may ask to be considered for admission based on both grades and other factors.

Students request an emphasis area (e.g., Economics, Finance and Banking, etc.) when they apply to the upper-division BSBA degree program. If the requested emphasis area is at capacity, students who qualify for admission to the upper-division BSBA degree program will be given the opportunity to choose another emphasis area.

Students who complete 75 semester hours without gaining admission to the upper-level BSBA emphasis area will not be eligible to re-enroll in the College of Business.

Students will be placed on academic probation if they are admitted to the College without fully meeting the good standing requirements of the school. See the section on Academic Standing of Undergraduates for these requirements.

**Honors Program**
The College of Business Honors Program is a highly selective academic experience that provides the student with increased challenges and innovative learning experiences in an environment where small class sizes are the norm. The program emphasizes special curricula, independent research, leadership opportunities and individual student/faculty interaction that is necessary to fully develop those students who possess the capacity and motivation to excel. Students completing the honors requirements will receive an honors degree from CoB with an honors certificate and honors designation on their MU transcript. These students may participate in both the CoB honors program and the campus Honors College.

First-semester freshmen who graduated in the top 10 percent of their class and earned a composite score of at least 29 on the ACT (or an equivalent SAT score) are automatically eligible for admission to the Honors College and CoB's honors program.

Currently enrolled students who have a UM cumulative GPA of 3.5 and at least 30 credit hours completed may apply for admission to the Honors College and participate in CoB's honors program.

Transfer students who have an overall cumulative GPA of 3.5 and at least 30 credit hours completed may apply for admission to the Honors College and participate in CoB's honors program.

A student must maintain a 3.0 overall GPA to remain in the honors program.

To graduate with an honors degree from CoB, a student must:

- Be admitted to the Honors College.
- Have a 3.3 overall GPA or higher at the time of graduation.
- Complete 20 hours of honors courses, including at least nine hours in CoB, of which three hours must be in the student's emphasis area. Three hours in CoB must be from 300-level courses.

**APPLICATION AND ADMISSION TO THE UPPER-DIVISION BACHELOR OF SCIENCE IN ACCOUNTANCY (BSAcc) DEGREE PROGRAM (PART OF THE 150-HOUR PROGRAM IN ACCOUNTANCY)**

To be admitted to a degree program in the School of Accountancy, a student must have completed a minimum of 54 semester hours of college credit with a 3.0 cumulative GPA for all course work attempted at all colleges or universities attended. International students must have a score of 550 (paper-based; 213 computer-based) on the TOEFL. Enrollment limits to maintain a maximum enrollment of 200 undergraduate students in the school also apply, with at least 90 percent of those admitted (approximately 100 students per year at the junior level) selected on the basis of overall grade point average or the grade point average on the specified set of pre-accountancy courses listed below (providing the overall cumulative GPA is 3.0 or better). ACT or SAT scores also may be considered. Up to 10 percent may be selected by considering grades and other criteria such as demonstrated commitment, experience, and socioeconomic, racial, ethnic, or educational background.

Course work completed at the time of admission to a degree program in the School of Accountancy must include Acct 36: Accounting I; Acct 37: Accounting II; Econ 4 or 14: Fundamentals of Microeconomics; Econ 5: Fundamentals of Macroeconomics, or Econ 51GH: General Economics; English 20: Exposition and Argumentation; Math 60: Finite Mathematics; Math 61: Elements of Calculus; and Stat 150: Introduction to Probability and Statistics I. Any exceptions must be approved by the director of the 150-hour program in accountancy.

Accountancy students are in good academic standing if they maintain a 3.0 cumulative grade point average and achieve a minimum score of 1,150 based on a formula that combines the GMAT (Graduate Management Admissions Test) examination score with their overall grade point average (200 x GPA + GMAT = 1,150). The GMAT exam should be taken prior to the beginning of the senior year. In unusual cases, the director of the 150-hour program in accountancy may make exceptions to the admission and retention policies of the School of Accountancy.

Students not admissible to a degree program in the School of Accountancy may meet School of Business admission requirements and be able to transfer into a business administration emphasis area, depending on available space.

**CREDIT BY EXAMINATION** The college accepts CLEP subject examinations, departmental exams and Advanced Placement (college board).
***More information may be obtained from academic advisers in the College of Business.***

**TRANSFER STUDENTS** Transfer students are subject to requirements in the University catalog in effect at the time of their initial enrollment in college, providing enrollment has been continuous and the student has remained in the same degree program. If continuous enrollment has not been maintained, or if the student has changed his or her program objective, the catalog in effect at the time of the student's most recent continuous enrollment in the sending institution or admission to the receiving institution, as applicable, shall be followed. Course work completed with a grade of D- or better at an accredited two- or four-year institution will be accepted if the courses are appropriate equivalents of the required MU courses and if the equivalent MU courses do not require a grade in the C range. Developmental or vocational/technical course work is not accepted by the college.

Credits transferred from accredited community or junior colleges usually include general education, program prerequisite and unrestricted elective courses. The College of Business counts a maximum of 64 semester hours of course work from a community or junior college toward the bachelor's degree. When more than 64 semester hours have been completed, the additional courses are evaluated on a course-by-course basis for applicability to lower-division requirements. Students holding an associate of arts degree will be considered as having fulfilled lower-division general education requirements. However, this does not exempt the student from satisfying the specialized lower-division (program prerequisite) requirements of the college in the areas of accounting, economics, math and statistics.

Students transferring with an associate of science degree resulting from an agreement between the College of Business and a sending institution may transfer into the college as juniors. Students transferring to the college without a degree will have their transcripts evaluated on a course-by-course basis and must

meet the entrance requirements of the college in the same way as MU students.

Students are encouraged to have their transcripts evaluated by an academic adviser in the College of Business prior to their enrollment at MU.

## Maximum and Minimum Enrollment

A student with a cumulative GPA of 3.0 or higher may register for up to 18 hours with permission of the associate dean.

## Satisfactory/Unsatisfactory Grading System

The S/U grading system is limited to unrestricted elective courses.

## Student Services

**ADVISING** Students admitted to a degree program in the college are assigned faculty advisers from their selected emphasis areas. The faculty advisers will work with students in determining course work needed to complete a degree. In addition, there are full-time academic advisers available to assist lower-level students.

Students are responsible for determining an appropriate schedule of courses each semester.

**CAREER SERVICES** The College of Business Career Services Office has current information and resources to assist students in exploring career options. Each year more than 200 business organizations, public accounting firms and government agencies participate in the on-campus interview program. Interview registration is held at the beginning of each semester for students who wish to interview. An online student resume book is compiled and available to prospective employers.

In addition to the on-campus interview program for interns and graduates, the office offers three career fairs annually, workshops, resume referrals, an employer resource library, a summer employment program and an on-line job listing for alumni.

By providing career resources and counseling, the office strives to help students gain a realistic perspective of the job market and acquire the skills necessary to effectively pursue employment areas of their choice.

## Required Work in Residence

Students must complete 30 of the last 36 hours of courses in residence at MU, enrolled in the College of Business.

## Student Organizations

**AIESEC** is an international organization that exposes students to concepts of internationalism and is involved in the exchange of students through internship programs.

**CoB Student Council** Composed of 25 members elected by the students in the College of Business, the council is a liaison between students and faculty. Activities include organizing CoB Week and the Leadership Conference, and assisting with Career Fair and graduation ceremonies.

**Alpha Kappa Psi** A national, professional business fraternity. Its goals are to promote leadership and fellowship among students and encourage professionalism in business.

**Association of Accounting Students** This organization encourages communication among accounting students, faculty and professional accountants. It informs students of the opportunities available to them within the field of accountancy.

**Beta Alpha Psi** This honorary accounting fraternity conducts programs and activities to expose students to all aspects of the accounting profession.

**Beta Gamma Sigma** This is a national, scholastic honorary society for outstanding students in business.

**Black Business Student Association** This is a student organization geared toward community service, academic development and professionalism. It strives to help students feel comfortable at MU and to develop their leadership skills.

**CoB Minority Student Ambassadors** are selected through an application and interview process and serve as representatives of the college at recruiting and other campus and community events, such as MU Celebration, Latino Expo, Kansas City and St. Louis Black Expos, Vasey Academic Academy and college luncheons and social events. After training by both campus and college personnel, they are prepared to provide information and answer questions in a variety of settings. Minority student ambassadors also serve as mentors for freshman and transfer students new to MU.

**CoB Student Ambassadors** are selected through an application and interview process and serve as representatives of the college at recruiting and other campus and community events, such as meeting with Executives in Residence or attending luncheons and banquets with alumni and other guests. After training by both campus and college personnel, they are prepared to provide information and answer questions in a variety of settings.

**Columbia Holdings** Columbia Holdings is a student organization devoted entirely to the analysis and selection of low-priced equities with high growth potential. The club acts as a high growth mutual fund, investing money contributed by its members with the goal of capital appreciation. Members are also given the opportunity to learn about the stock market.

**Delta Sigma Pi** This is a national professional business fraternity that encourages the study of business and a closer affiliation between students and the commercial world.

**Entrepreneurs Unlimited** Entrepreneurs Unlimited is a professional organization established to provide students an area for networking that will enhance small business and economic development. It gives future entrepreneurs an opportunity to discover different facets of the business world from an ownership perspective.

**Financial Management Association** This is an organization to further professionalism in the field of finance and to provide interaction among students, faculty and business executives.

**Marketing Forum** A collegiate chapter of the American Marketing Association, this group exposes students to the marketing field and promotes student interaction and involvement.

**MU Business Women's Association** The purpose of the MU Business Women's Association is to provide a support network for business men and women that fosters personal and professional development. The association addresses issues and obstacles facing women, specifically, in today's challenging business environment and brings added awareness to such problems. It also strengthens ties among women in the MBA program and the Columbia community.

**National Association of Black Accountants** Fosters greater awareness of the accounting profession, enhances students' professional development, recruits potential student members into accounting, and retains current NABA members.

**Phi Beta Lambda** is a national organization that encourages active preparation for careers in all areas of business or business teaching. Events include more than 30 contests at state and national conferences, service projects, and learning activities. Open to freshmen through seniors.

**Rho Epsilon** This is a fraternity for those interested in real estate. It promotes the study of real estate and professionalism in the industry.

**Sigma Iota Epsilon** Sigma Iota Epsilon is an honorary and professional management fraternity. The purpose is to encourage and recognize scholastic excellence and to promote cooperation between the academic and practical facets of management. Sigma Iota Epsilon provides a two-way channel between

students and the Missouri business community.

**Student Portfolio Analysis and Management (SPAM)** Offers students interested in security markets the opportunity to manage two live money funds, the Crown Student Investment Fund and the Truman Tracy Memorial Investment Fund.

**Student Operations Management Association** This is an organization that encourages communication among operations management students and faculty and seeks to expand their knowledge of the field.

**Student Society of Human Resource Administrators of Columbia** Keeps students up-to-date with the field. Affiliated with the Society for Human Resource Management.

***More information on student organizations may be obtained from the Undergraduate Programs Office, 137 Middlebush Hall.***

# Scholarships

### College of Business

*Scholarships marked with an asterisk are available to freshmen. The deadline for freshmen applications is December 1. The deadline for the Sam M. Walton, Robert J. Trulaske Sr., Kansas City Alumni, St. Louis Alumni, and the Ponder Minority Freshman and Junior Scholarships is March 1. The deadline for all other scholarships is February 1.

***For more information and applications, write to the Undergraduate Programs Office, 137 Middlebush Hall, Columbia, MO 65211 or call (573) 882-7073.***

**Kenneth R. and Mary Louise Ahmann Scholarship** Preference is given to students from St. Charles County, Mo.; selection is based on scholarship, need and leadership.

**Royal D.M. Bauer Delta Sigma Pi Leadership Recognition Fund** This scholarship is awarded to juniors and seniors majoring in accountancy, economics, finance, management or marketing.

***Black Business Students Association Scholarship** Financial need and leadership ability are recognized through this scholarship, designed for minority first-time freshmen studying business.

**Black Business Students Association and State Farm Cos. Foundation Scholarship** Minority sophomores, juniors and seniors with high academic achievement and need are considered.

***Mary E. and Martha J. Briegel Scholarship** This scholarship is awarded to female students with financial need and evidence of academic promise.

**Harry Gunnison Brown Alpha Kappa Psi Scholarship Fund** Based on participation in business and public administration or campus activities, this scholarship assists undergraduates who show scholastic ability and financial need.

***Delmar and Glenna Burton Scholarship Fund** Students enrolled in CoB receive this award.

**Donald R. Egloff Memorial Fund** This award goes to a junior or senior student majoring in accountancy or finance who shows evidence of academic promise.

**Henry Hatch Green Memorial Scholarship Fund in Administration** This award recognizes academic excellence, character, citizenship and leadership.

**Richard C. Green Memorial Scholarship Fund** Preference is given to a graduate of a high school in a town served by the Missouri Public Service Co. Scholastic achievement and financial need are other factors of consideration.

***J. Charles Groom Memorial Fund** This scholarship goes to a full-time student.

***Clay Hill Scholarship Fund** The award is presented to students from metropolitan Kansas City or Harrison County, Mo. Primary criterion is need; secondary criteria are activities and academic excellence.

**Charles A. Hoyt Scholarship Fund** This is an award for a Missouri resident who demonstrates need, character and academic achievement.

**Dorothy Morris Hull Scholarship** Full-time female juniors and seniors receive this award.

**Irvin Endowed Fund** CoB student-athlete; preference given to members of the men's intercollegiate basketball team. Scholarship is considered. Awards made in compliance with all applicable NCAA regulations.

**Charles R. and Greta G. Johnson Scholarship** Seniors who are Missouri residents with financial need and evidence of academic promise are eligible for this award.

**Kansas City Alumni Association Scholarship** This is for students from the Kansas City area and possibly transfer students from Kansas City community colleges. A separate application is required.

**Kiwanis Raymond W. and Beuna Lansford Scholarship Fund** Criteria for this scholarship include academic achievement, community and college service and financial need. Membership in a high school Kiwanis Key Club or college Circle "K" Club will be considered.

**David W. Lewis Family Fund** Awarded to juniors and seniors; based on scholarship and need.

***Robert W. Lisle Scholarship** This award is for a worthy student from Bates County, Mo.

***Patrick S. May Memorial Scholarship** Graduates of Rolla High School or any other Phelps County high school are eligible to apply. The award is based on scholarship and financial need.

***Merrill Lynch Endowed Scholarship Fund** Provides scholarships to minority students in CoB. Preference given to students with financial need.

***John E. Miller Scholarship Fund** The scholarship recognizes a full-time CoB student; based on need, scholarship and promise of future success in the business world.

***Lela Kidwell Nolen Fund** This fund is awarded based on merit.

***Raymond F. and Mary A. O'Brien Scholarship Endowment** Student in CoB, with first preference given to direct descendants of Raymond F. and Mary A. O'Brien.

**Noel William Palmeter Memorial Award** The award recognizes a junior enrolled in any four-year Reserve Officer Training Corps program. Selection is based on personal integrity and devotion to duty as well as academic excellence and other personal characteristics giving promise of future success rather than upon financial need.

***H.R. and Alberta B. Ponder Scholarship Fund** This scholarship is based on academic excellence and financial need.

***Ponder Freshman Minority Scholarship** A strong background in math, high-school class rank, GPA, ACT score, ethnicity and geographic location are criteria for this scholarship. The scholarship may continue at reduced amounts over the next three years.

**Ponder Junior Minority Scholarship** Recipients must have completed, or be in process of completing, a minimum of 54 semester hours. Other criteria include a strong background in math, college class rank, GPA, ACT score, ethnicity and geographic location.

**Robert D. Schooler Scholastic Scholarship** Awarded to a junior who is a descendant of Robert or Frances Schooler or a marketing major with the highest cumulative GPA from Audrain, Boone, Callaway, Cole, Cooper, Howard, Moniteau, Monroe or Ralls counties in Missouri.

***Special Talent Scholarship** This award goes to two entering freshmen who demonstrate exceptional talent in business.

**St. Louis Alumni Association Scholarship** Students who live in the St. Louis area or surrounding counties, have a minimum GPA of 3.0 and are actively involved in school or community service may apply for this award.

**Study Abroad Scholarship** Students with a minimum GPA of 3.0 who are planning to study abroad and have been accepted to do so by the MU International Center are eligible for this award.

***David R. and Jeanne Toombs Endowed Scholarship Fund** Students in CoB with financial need who show potential for success following graduation receive this award.

***Robert J. Trulaske Sr. Endowed Scholarship** Awarded to students in CoB who fall just short of the qualifications for Bright Flight and other excellence-based scholarship programs. Emphasis placed on students who have exhibited business interests through work experience and/or other related activities throughout high school. Preference given to those with financial need.

***Gladys M. Wagner Scholarship Fund for Students With**

**Physical Disabilities** Based on scholarship, financial need and character, this award goes to a business or accountancy student with a physical disability.

### Accountancy

Students considered for these awards generally must have at least a 3.5 cumulative GPA and must be full-time accountancy majors already admitted to the upper-level degree program. **Awards are made by the Director of the School of Accountancy based on merit, cumulative GPA and criteria specified by donors.**

**Alumni With Arthur Andersen and Co. Award** This award is based on scholastic achievement and promise for professional success.

**American Society of Women Accountants (Kansas City Chapter)** A statewide competition, based on academic achievement and campus activities, determines the recipient of this award.

**Kim R. Bailey Memorial Scholarship** Based on scholarship and need, this scholarship is awarded to a fifth-year accountancy student.

**Baird, Kurtz & Dobson School of Accountancy Grant** This grant recognizes academic excellence, character and promise.

**Kenneth L. Brown Scholarship** Awarded to students enrolled in the bachelor's or master's program in accounting with high scholastic achievement.

**Grace Botner Butler Scholarship** This award goes to a senior or master's student who is a resident of a non-urban area of Missouri with a minimum GPA of 3.0 and demonstrated financial need. Preference given to female non-traditional students.

**Steven G. Butler/KPMG Scholarship** Students in the School of Accountancy with high scholastic achievement receive this award.

**Deloitte & Touche Accountancy Scholarship** Accountancy majors with outstanding academic achievement are eligible for this scholarship.

**Ernst & Young Accountancy Scholarship** Academic achievement, participation in campus activities, leadership and citizenship are the criteria for this scholarship.

**Financial Executives Institute Accountancy Award** This award is based on scholarship.

**Gregg William and Cheryl Givens Scholarship in Accountancy.** This award goes to students with high scholastic achievement enrolled in the School of Accountancy.

**Donald G. Hendren Memorial Scholarship** Awarded to a student in the School of Accountancy with preference for high scholastic achievement, work experience, and agricultural background.

**Arthur William Hoffman Scholarship** Students in the School of Accountancy with work or student leadership activity and high scholastic achievement receive this award.

**C. Ray Holman Scholarship Endowment** This award goes to students with high scholastic achievement enrolled in the School of Accountancy.

**Ronald N. Kohl Memorial Scholarship** An outstanding accountancy student in the 150-hour program will receive this scholarship.

**KPMG Peat Marwick Foundation Accountancy Scholarships** Students with scholastic excellence are chosen to receive this scholarship.

**Don Landers Endowed Scholarship Fund** This award goes to students with high scholastic achievement enrolled in the School of Accountancy.

**Clyde D. Mason Memorial Scholarship** Students with high scholastic achievement enrolled in the School of Accountancy receive this scholarship.

**Mayer Hoffman McCann Accountancy Scholarship** Awarded to students enrolled in the School of Accountancy whose residence is within 200 miles of Kansas City, MO.

**W. Mark and Linda L. Meierhoffer Accountancy Scholarship** This award goes to students with high scholastic achievement enrolled in the School of Accountancy.

**Missouri Society of Certified Public Accountants (Central Chapter)** The recipient of this award must be a junior or senior Missouri resident demonstrating leadership, scholarship and financial need.

**Charles R. Morehead Endowed Scholarship** This award goes to students with high scholastic achievement enrolled in the School of Accountancy.

**PricewaterhouseCoopers Foundation Scholarships** This award goes to students displaying professional promise and academic achievement.

**John W. Rader Scholarship** Based on academic achievement, this award goes to an accountancy student.

**The Rootes Scholarship in Accountancy** This scholarship is initially awarded to juniors from Mid-Missouri majoring in accountancy and is renewable for two additional years upon satisfactory academic performance.

**Rubin, Brown, Gorstein & Co. Scholarship** A student in the School of Accountancy with high scholastic achievement receives this award.

**School of Accountancy Alumni Scholarships** This award goes to students with high scholastic achievement enrolled in the School of Accountancy.

**John Schweitzer Accountancy Grant** This grant is based on academic performance and future promise as an accountant.

**DR Scott Memorial Scholarship** This award is for a senior accountancy student with financial need.

**St. Louis Society of Women Certified Public Accountants** A statewide competition is held to choose the recipients of this scholarship, which recognizes females with junior standing who show scholastic achievement and participation in campus activities.

**Patricia R. Vasterling Memorial Fund** This award goes to full-time female accountancy majors with a minimum 3.0 cumulative GPA and financial need.

**Paul L. and Christina S. Vogel Accountancy Scholarship** Students in the School of Accountancy with high scholastic achievement receive this award.

**Maxine A. (Jagels) Wharton and Lee Lewis Wharton Scholarship** Provided to a student in the School of Accountancy with demonstrated financial need.

### Business

***Sam M. Walton Scholarship in Business** The Walton Scholarship is available to business students entering their freshman, sophomore, junior or senior years who are seeking a degree in finance, management or marketing with the intention of pursuing a career in retailing. Based on financial need and academic achievement, these scholarships are renewable upon satisfactory progress toward a business degree and part-time retail work experience. A separate application is required and may be obtained from your high-school counselor or the Undergraduate Programs Office, 137 Middlebush Hall, Columbia, MO 65211, (573) 882-7073. Application deadline is March 1.

**The following scholarships are awarded by each individual department.**
***More information is available in respective departmental offices, School of Business, Middlebush Hall, Columbia, MO 65211. Application deadline is Feb. 1.***

### Finance (214 Middlebush)

**John F. Dean Risk Management and Insurance Program Scholarship** Students in the risk and insurance program receive this scholarship.

**Terry and Vicki Dunscombe Scholarship Fund** This award goes to an outstanding female student in finance with financial need.

**Harry Hall Trice Jr. Memorial Scholarship** This scholarship was established for students who rank in the upper one-third of the risk and insurance program and who show academic achievement, good moral character and financial need.

**Management (215 Middlebush)**

**Bill DeLong Memorial Scholarship** Based on scholarship, this award goes to a student in management.

**Donald W. Dugan Scholarship** This award goes to a full-time student in the management program with special consideration given to students with an interest in operations management.

**Marketing (216 Middlebush)**

**William and Jacqueline Bollinger Scholarship Endowment** The award goes to a student in CoB in the Department of Marketing who indicates an interest in exploring entrepreneurial opportunities following graduation.

**PMI-Eisenhart Scholarship Fund** This award goes to a student in the marketing program who has given service to MU; scholastic achievement and financial need are also considered.

**Carol and Martin Horn Lambert Scholarship** This is a scholarship for a full-time marketing major from the Kansas City area.

**Raymond E. O'Brien Consolidated Freightways Inc. Scholarship** This award goes to the marketing student who demonstrates academic excellence. Selection is also based on character and potential for success in the field of logistics and distribution. The student's area of concentration must be sales or sales management or business logistics and channel management.

**St. Louis Chapter of Delta Nu Alpha Transportation Scholarship** An outstanding marketing student with an interest in business logistics from the St. Louis area receives this award.

**W.C. Tingle Marketing Scholarship** This award goes to a junior who has demonstrated high academic performance and provided significant service to the college or its student body. Preference is given to a student who has held a part-time job while attending MU.

**Dr. Guy W. Wagner Memorial Scholarship** Awarded to sophomores and above from rural small towns who have a 3.0 GPA and who demonstrate financial need and possess character and potential for success in the field of logistics and distribution. Area of emphasis must be sales/sales management or business logistics and channel management.

**Samuel G. and Florence D. Wennberg Scholarship** This scholarship is awarded to the student in the marketing program who has the highest cumulative grade point average at the time of graduation.

# Academic Standing of Undergraduates

**Lower Level CoB Students**

- A student whose term and UM System cumulative GPAs are 2.0 or higher is in regular academic standing.
- A student in regular standing whose term or UM System GPA subsequently falls below 2.0 but is 1.0 or above is placed on academic probation.
- A student whose term or UM System GPA falls below 1.0 is subject to dismissal.
- A student on academic probation must establish 2.0 term and UM System cumulative GPAs within two successive terms of enrollment; otherwise, he or she is ineligible to re-enroll.
- A student who has been ineligible to re-enroll for a period of one year may be readmitted only on the approval of the associate dean of the college. As a condition of readmission, the associate dean may set forth stipulations with regard to minimum standards of academic work which must be maintained by the student. If the student after readmission again becomes ineligible to enroll, his or her ineligibility to re-enroll is normally considered permanent.

**School of Accountancy**

Accountancy students are in good academic standing if they maintain a 3.0 cumulative grade point average and achieve a minimum score of 1,150 based on a formula that combines the GMAT (Graduate Management Admissions Test) examination score with their overall grade point average (200 x GPA + GMAT = 1,150). Accountancy students are subject to the probation and dismissal policies set by the College of Business. See below.

An undergraduate student who has been ineligible to enroll for a period of one year may be readmitted only on the approval of the director of the 150-hour program in accountancy. As a condition of readmission, the director may set forth stipulations with regard to minimum standards of academic work that must be maintained by the student. After readmission, if the student again becomes ineligible to enroll, his or her ineligibility is considered permanent.

**School of Business**

A student whose term, University of Missouri System, and MU College of Business cumulative GPAs are 2.0 or higher is in good academic standing. (The word term as used in these regulations applies to any semester or summer session.)

**PROBATION** A student in good academic standing whose term GPA subsequently falls below 2.0 but is 1.0 or above is placed on academic probation.

A student whose cumulative UM System GPA is one-to-15 quality points below 2.0 is placed on probation.

A student whose cumulative GPA for courses offered by the College of Business is one-to-15 quality points below 2.0 is placed on probation. This includes all MU accountancy and business administration courses regardless of whether the courses are completed before or after admission to the School of Business. (Courses offered by the college are those with the curricular designations of accountancy, economics, finance, management and marketing.)

A student placed on academic probation must establish a 2.0 term GPA, a 2.0 UM System cumulative GPA and a 2.0 MU College of Business cumulative GPA within two successive terms of enrollment; otherwise, the student is ineligible to enroll.

Students placed on probation may become ineligible to enroll in the School of Business at the end of the first term on probation if they become subject to one or more of the first three dismissal provisions below:

**DISMISSAL** Students become ineligible to enroll in the College of Business if one or more of the following occurs:

- The term GPA falls below 1.0. Students whose summer term GPA falls below 1.0 are normally placed on probation rather than dismissed.
- The UM System cumulative GPA is 15.01 quality points or more below 2.0.
- The cumulative GPA for courses offered by the College of Business is 15.01 quality points or more below a 2.0. This includes all MU accountancy and business administration courses regardless of whether the courses are completed before or after admission to a BSBA degree program.
- The student fails to remove probationary status at the completion of the second successive term on probation. A student whose second successive term is a summer session is normally allowed another semester to remove probationary status, unless that student becomes subject to the second or third provision listed above.

A student who has been ineligible to enroll for a period of one year may be readmitted only on the approval of the associate dean of the college. As a condition of readmission, the associate dean may set forth stipulations with regard to minimum standards of academic work that must be maintained by the student. After readmission, if the student again becomes ineligible to enroll, his or her ineligibility is considered permanent.

# Graduation Requirements

**School of Accountancy**

In the School of Accountancy, the bachelor's and master's degree programs are merged into a 150-hour program.

The degree requirements include stipulations about number of credit hours, courses taken and grades earned.

**CREDIT HOUR REQUIREMENTS** Satisfactory completion of a minimum of 150 semester hours from accredited colleges or universities is required.

At least two courses taken at MU must be designated as Writing Intensive (WI), with one of the WI courses an accountancy course.

Computer and information management proficiency must be demonstrated by examination or by course work completed.

Accountancy majors normally must complete all required 300-level and 400-level accountancy courses in residence at MU. Exceptions must be approved by the director of the School of Accountancy. In addition, students must complete at least 30 of their last 36 hours of undergraduate courses in residence at MU to be eligible for the bachelor of science in accountancy degree. *Candidates for the master of accountancy degree must complete substantially all graduate-level course requirements in residence at MU.*

A student must complete requirements for the 150-hour degree program in the School of Accountancy within 10 years of his or her initial enrollment as a first-time freshman in order to graduate under program requirements in effect at the time of initial enrollment.

A student who has a degree in a different curricular area, or a bachelor's degree in accountancy from another college or university, may receive a master's degree from the School of Accountancy upon completion of the requirements for the degree, provided the student's program includes a minimum of 30 hours beyond the bachelor's degree (or its equivalent) selected from courses carrying graduate credit. At least 18 of the 30 hours must be completed in 400-level courses. A minimum of 24 hours of advanced study must be completed under MU faculty; a maximum of six hours of graduate credit may be transferred from another university. All requirements must be completed within eight years from the time of initial enrollment.

Graduation with Latin honors for accountancy students is determined by grade point average from either the last 50 hours of undergraduate course work or overall UM System undergraduate hours, whichever is higher. To be eligible for honors, an accountancy student must complete the last 50 undergraduate hours within the UM System. Grade point average requirements for honors are 3.5, cum laude; 3.7, magna cum laude; and 3.9, summa cum laude.

**ACCOUNTANCY COURSE REQUIREMENTS** (merged BS Acc and M Acc) (150 hours)

| | |
|---|---|
| General education requirements | 72-74 hours |
| Business courses | 37-39 hours |
| Accountancy courses* | 39 hours |

*Can include certain Law School courses at the graduate level.

These course requirements are designed to ensure that at least 40 percent of a student's course work is earned in divisions other than business.

**GRADE POINT AVERAGE REQUIREMENTS**
To stay in good standing in the 150-hour accountancy program, students must achieve and maintain a GPA of 3.0 or higher. In the graduate (master's) portion of the program, to avoid probation students must achieve a minimum 3.0 GPA for all graduate courses completed.

**School of Business**
The undergraduate degree requirements include stipulations about number of credit hours, courses taken and grades earned.

**CREDIT HOUR REQUIREMENTS** Satisfactory completion of a minimum of 120 semester hours from accredited colleges or universities is required for all BSBA emphasis areas *except international business, which requires 132 hours.* See separate section for international business requirements.

At least two courses taken at MU must be designated as Writing Intensive. One WI course must be a course from the student's emphasis area requirements.

Computer and information management proficiency must be demonstrated by examination or by course work completed.

In completing the 120 semester hours of credit for graduation, students may count no more than 30 hours of credit in courses within their emphasis area of study.

Students in the College of Business must complete 30 of the last 36 hours of courses in residence at MU, enrolled in the College of Business.

A student must complete requirements for an undergraduate degree program in the College of Business within 10 years of his or her initial enrollment as a first-time freshman in order to graduate under program requirements in effect at the time of initial enrollment.

A student who has a degree in another curricular area may receive a Bachelor of Science in Business Administration degree upon completion of all requirements for the degree, provided the courses completed include at least 24 hours taken in residence.

Graduation with Latin honors is determined by grade point average from either the last 50 hours or overall UM System hours, whichever is higher. To be eligible for honors, a student must complete the last 50 hours within the UM System. Grade point average requirements for honors are 3.5, cum laude; 3.7, magna cum laude; and 3.9, summa cum laude.

**BACHELOR OF SCIENCE IN BUSINESS ADMINISTRATION COURSE REQUIREMENTS** (120 hours)

| | |
|---|---|
| General education requirements | 28-30 hours |
| Program prerequisites | 23-24 hours |
| Core courses | 21 hours |
| Approved professional curriculum | 30-33 hours |
| Unrestricted electives | 12-18 hours |

The course requirements are designed to ensure that 40 percent of a student's course work is earned in divisions other than business.

**GRADE POINT AVERAGE REQUIREMENTS** A minimum of a 2.0 GPA for all courses attempted must be met for each of the following categories:

- All courses offered by the College of Business. This includes all MU accountancy and business administration courses regardless of whether the courses are completed before or after admission to a degree program in the School of Business.
- All UM System courses.
- All courses attempted at any college or university.

# General Education and Program Prerequisites

Courses that satisfy lower-division general education and program prerequisite requirements are recommended for the freshman and sophomore years.

**SCHOOL OF ACCOUNTANCY**
**GENERAL EDUCATION REQUIREMENTS** The following courses are general education requirements for the 150-hour program in the School of Accountancy.

**Written and Oral Communications** (six hours)
English 20: Exposition and Argumentation (3)
Comm 75: Introduction to Speech Communication (3)

**Math 10:** College Algebra (three hours)
General elective credit is given to those who complete the course with a grade of C– or better or who receive advanced standing credit by examination or by completing a calculus course at MU.

**Social/Behavioral Sciences** (nine hours)
This requirement must be satisfied by completing a six-hour sequence in either psychology or sociology and a course in political science or American history that satisfies the State of Missouri government requirement.

**Humanistic Studies** (nine hours)
Three credits in philosophy selected from Phil 1, 51, or 52 are required. Six credits are to be selected from such areas as classical studies, fine arts, performing arts, literature, music, philosophy or religion, excluding applied courses in these fields.

**Physical or Biological Science** (nine hours)
Courses are to be selected from astronomy, biology, chemistry, botany, forestry, zoology, geological sciences or physics. One course must include a laboratory.

**PROGRAM PREREQUISITES**
The following courses are program prerequisites for the 150-hour program in the School of Accountancy.

Acct 36: Accounting I and 37: Accounting II or
Acct 136: Honors Accounting I and
Acct 137: Honors Accounting II (6)

Econ 4 or 14: Fundamentals of Microeconomics and Econ 5: Fundamentals of Macroeconomics (6) or 51: GH General Economics (5)

Math 60: Finite Mathematics (3) and 61: Elements of Calculus (3) or 80: Analytic Geometry and Calculus I (5) (Math 80 must be completed with a grade of C or better to substitute for Math 60 and 61) (5-6)

Stat 150: Introduction to Probability and Statistics I and 250: Introduction to Probability and Statistics II (6)

**SCHOOL OF BUSINESS**
**GENERAL EDUCATION REQUIREMENTS** The following courses are general education requirements for the undergraduate programs in the College of Business.

**English 20:** Exposition and Argumentation (three hours)

**Math 10:** College Algebra (three hours)
General elective credit is given to those who complete the course with a grade of C– or better or who receive advanced standing credit by examination or by completing a calculus course at MU.

**Social/Behavioral Sciences** (three hours)
One course from political science or American history that satisfies the State of Missouri government requirement.

**Humanistic Studies** (nine hours)
Humanistic studies include such subjects as art, literature, music, philosophy and religion but do not include applied courses in these fields. Foreign language courses numbered 106 or above may be used to fulfill this requirement.

**Natural Science** (nine hours)
Courses chosen from astronomy, biology, chemistry, geological sciences, physics and zoology. One course must include a laboratory.

**PROGRAM PREREQUISITES** The following courses are program prerequisites for the undergraduate programs in the School of Business.

Acct 36: Accounting I and 37: Accounting II or
Acct 136: Honors Accounting I and
Acct 137: Honors Accounting II (6)

Econ 5: Fundamentals of Macroeconomics and 4 or 14: Fundamentals of Microeconomics (6) or 51: GH General Economics (5)

Math 60: Finite Mathematics and 61: Elements of Calculus (6) or 80: Analytic Geometry and Calculus I (5) (Math 80 must be completed with a grade of C or better to substitute for Math 60 and 61)

Stat 150: Introduction to Probability and Statistics I and 250: Introduction to Probability and Statistics II (6)

# College of Education

## Administration

**www.coe.missouri.edu**
**Richard L. Andrews,** dean
**Michael Pullis,** associate dean
**Barbara Townsend,** associate dean

## Units

***The College has been reorganized into the following units effective July 1, 2001:***

**Early Childhood and Elementary Education**
**Educational and Counseling Psychology**
**Educational Leadership and Policy Analysis**
**Information Science and Learning Technologies (School of)**
**Middle and Secondary Education**
**Undergraduate Teacher Development**

***At the time of this printing, the former units appear in the catalog pages:***

**Curriculum and Instruction**
**Educational and Counseling Psychology**
**Educational Leadership and Policy Analysis**
**Information Science and Learning Technologies (School of)**
**Special Education**
**Undergraduate Teacher Development**

The College of Education was established in 1868 with the specific responsibility to prepare teachers for Missouri public schools. Today's graduates of the college are employed in a variety of educational institutions and non-school settings.

The College has a vision to change education in Missouri and the nation one infant, one child, and one adult at a time. To fulfill this vision, the College's mission is to increase research-based professional practice that enables people to achieve their highest potential. For most this will include higher levels of abstract, conceptual learning that can be applied to real world problems. For some, it may include basic and functional skills necessary for independent participation in society.

The College of Education is a member of the American Association of Colleges for Teacher Education. All programs are fully accredited by the North Central Association of Secondary Schools and Colleges.

All programs leading to the granting of a certificate by the Missouri Department of Elementary and Secondary Education are fully approved by the State Board of Education.

**ADMISSION** Undergraduate students may enter the College of Education as freshmen.
***For more information on procedures, see admission in the University section of this catalog.***

The College of Education offers two bachelor's degrees: the bachelor of science in education (BS Ed), completion of which leads to a Missouri teaching certificate; and the bachelor of educational studies (BES), which is intended for students who are interested in education but who do not plan to pursue careers that require teacher certification.

Although a student may meet selective admission criteria, admission to some programs is controlled, which results in the selection of the best-qualified applicants. In addition to factors such as test scores and grade point average, the faculty will exercise professional judgment in the selection of students.

**HONORS PROGRAM** The college participates in the MU General Honors Program for academically talented students. For more information on applying and eligibility, see the Honors College section of this catalog.

## Title II Report

In April, 2001, the College of Education at the University of Missouri-Columbia (MU) submitted its first annual Title II report to the state regarding the performance of its 1999-2000 program completers on the mandatory Praxis Tests. In 1999-2000, 99.2% of MU program completers passed the required Praxis Assessment for their certification area. The percent of students passing in individual certification fields ranged from 95-100%. The State average passing rate was 97%.

The total enrollment in the College of Education for 2000-2001 is 945. The Missouri Department of Elementary and Secondary Education accredit all teacher certification programs at MU. These programs are sequenced into 3 phases and require field-based experiences in every semester. A full semester (16 week) student teaching internship is required. Clinical faculty with a 5.8 to 1 student/faculty ratio supervise this 640-hour experience. Full year internships are being piloted currently with the intention to make them available as an option in coming years.

## Student Services

**ADVISING** Students entering the college work with a faculty adviser who assists them in planning their degree programs. Additionally, the College of Education maintains Advising Services located in 102 Hill Hall. These services are staffed by three professional academic advisers. It is the student's responsibility to meet with advisers as early as possible so that requirements may be met without losing credit or carrying excessively heavy loads during the junior and senior years.

When students progress to Phase II they are assigned a faculty adviser.

**CAREER AND PROGRAM SUPPORT** A professional career office is maintained to distribute information related to careers in education and library science. Extensive assistance is provided in securing positions as well as development of portfolios, resumes and interview skills. On-campus interviews, job fairs and credential services are offered each year to all MU graduates and former students.

## Student Organizations

**The Association of Childhood Education International,** open to all students, sponsors programs on subjects pertinent to anyone interested in supporting the education and development of children from birth through early adolescence. Members engage in service projects that benefit young children.
**Association for Supervision of Curriculum Development** Provides students with the opportunity to participate in local service projects and professional development.
**Collegiate Music Educators** is composed of students who are interested in the teaching of music as a profession. It allows the students to develop a high degree of musicianship, and it acquaints students with the responsibilities and privileges associated with the music education profession.
**MU Council of Teachers of English** The Council works to further communication among English education students and between students and faculty and gains information about and improves the teaching of English at all levels.
**Education Ambassadors** assist the College of Education in public relations, alumni and recruitment activities. These undergraduate students must be recommended by College of Education faculty with final selection made by a committee appointed by the dean.
**Kappa Delta Pi,** open to undergraduate and graduate education students who are in the top 15 percent of their class, promotes

and recognizes academic excellence in the College of Education.

**Mid-Missouri Student Reading Association** informs all education students about recent developments in reading and reading instruction.

**Missouri Student National Education Association** is designed to give students preparing to teach an understanding of the teaching profession through practical experience with a professional association.

**Pi Lambda Theta,** an honorary professional organization, is open to juniors and seniors in the College of Education. Students who have completed a minimum of 45 semester hours and achieved a GPA of 3.5 or higher are invited to membership.

**Pi Omega Pi** creates and encourages interest and promotes scholarship in business education.

**Student Art Educators Association** provides opportunities for dialogue among students in art and art education. It promotes art education on campus and throughout the community.

**The Student Council for Exceptional Children** is open to students enrolled in special education programs, as well as other students interested in exceptional children.

**The Student Missouri State Teachers Association,** affiliated with MSTA, promotes activities and experiences designed to assist students in their preparation for teaching careers. All education students are eligible for membership.

**UM Mathematics Teacher Organization** This organization works to foster student interest and participation in teaching mathematics as a career option and assists students in developing skills, leadership, and awareness of effective mathematics teaching.

**The Undergraduate Education Student Council** is a division of MU student government for undergraduate students in education. The Council represents the interest of undergraduate students in education and develops and sponsors programs and activities for them.

# Scholarships

The following scholarships are available through the Financial Awards Committee of the College of Education. The deadline for application for incoming freshmen scholarships is December 1. The deadline for all other applications is February 1.

***Information and applications can be obtained from 118 Hill Hall in the College of Education.***

**Artley Scholarship Award** This is awarded to a student in the department of Curriculum and Instruction with preference to a graduate student who received a BS degree from the MU College of Education.

**Neil C. Aslin Scholarship** Given to a graduate student majoring in educational administration.

**Helen M. Barrett Memorial Scholarship in Education** Students with high scholastic standing in education are recipients of this scholarship.

**Jo (Haden) Behymer Scholarship** Students majoring in business education are recipients of this award.

**Sodienye Bendbow Scholarship** Funds aid an undergraduate planning to enter the teaching profession in the Department of Curriculum and Instruction.

**Daniel C. Berrey Memorial Scholarship** is for undergraduate students who are sophomores or above, who demonstrate interest and knowledge in computer/instructional technology, are dedicated to the enhancement of computer/technology skills in education, and exhibit leadership in activities on campus and high ideals of citizenship and character.

**Arthur J. Bitker Student Aid Fund** This scholarship is given to a student who actively participates in golf and demonstrates financial need. Preference is given to a female student.

**Joseph P. Blanton Scholarship** A sophomore or junior receives this award based on scholarship and need.

**Robert L. Burton Scholarship** Awarded to a graduate student enrolled in the department of Educational and Counseling Psychology. Preference to those who have completed at least two courses in group theory or practice and who have a special interest in group procedures.

**Virginia Hultz Booth Memorial Award** This award goes to students with financial need who are of good moral character. This award is renewable with subsequent application each year.

**John Homer Bothwell Educational Award** This scholarship is presented to an undergraduate student preparing to teach.

**Isaac Hinton Brown Scholarship** This scholarship is awarded to a female Missouri high school graduate who intends to pursue the teaching profession.

**Carol Westerman Campbell Memorial Scholarship** The award is presented to a student enrolled in the College of Education who has earned at least 30 semester hours and who shows promise as a teacher.

**E. M. Carter Missouri State Teachers Association Scholarship** The scholarship aids an undergraduate planning to teach.

**Lucille Marie Cobb Memorial Scholarship** A graduate student majoring in library science who demonstrates academic excellence and financial need receives this award.

**College of Education Alumni Scholarship** This award goes to an undergraduate or graduate student; preference is given to children of College of Education alumni.

**Cushing-Gepford Special Education Scholarship** This award is given to students preparing to teach special education.

**Flora E. Davidson Scholarship** Funds aid a worthy undergraduate majoring in elementary education.

**Eugie Dean Research in Reading Fund** Given to a graduate student majoring in reading education. The intent is to support expenses related to reading education research.

**Loreen Mohler Dorsey Scholarship** The award is given to prospective first-grade teachers.

**Velma Bowers Douce Scholarship** Awarded to full-time undergraduate or graduate students from a rural farm background who are dedicated to teaching and demonstrate financial need.

**Family and Consumer Sciences Education Scholarship** This is awarded to a College of Education family and consumer sciences major who has completed at least 60 semester hours and shows outstanding promise as a teacher.

**Geraldine K. Fergen Scholarship** Undergraduate or graduate students enrolled in special education are recipients of this award.

**John L. Ferguson Scholarship** This scholarship is awarded to a graduate student who is an experienced teacher, who has been involved in school counseling, and who is planning a degree program leading to certification as an elementary- or secondary-school counselor. The student must be enrolled in the department of Educational and Counseling Psychology.

**William H. Fisher and Lennie H. and J. Ephraim Downing Memorial Scholarship Fund** This award goes to students with financial need who are elementary education majors.

**S.H. Ford Scholarship** This is awarded on the basis of scholarship and probable service in the field of education to a graduating student.

**Robert M. Frank Fellowship Fund** Awarded to an in-residence doctoral student enrolled in the department of Curriculum and Instruction.

**Freshman Talent Scholarship** This award is presented to incoming freshmen who show outstanding promise.

**Cynthia Hagan Memorial Scholarship** This award goes to a Missouri or Kansas first-year student majoring in elementary education.

**Hardin-Pettit Scholarship** Given to a graduate student who is committed to working with students experiencing academic difficulties. Preference is given to a student who has a BS in Education from MU.

**Alta Mae Harness Memorial Scholarship** This scholarship is awarded to an outstanding student majoring in math.

**Constance Loraine Hill Memorial Fund in Library & Informational Science** Awarded to an African-American graduate student in library science.

**Albert Waldo Holman Memorial Award** A first-year student who is a descendent of an alumni of the University High School, and active in 4-H work and athletics, receives this award.

**Helen Ortense Hood Scholarship** The award is given to a student in education or arts and science.

**Clara Marksbury Hudson Scholarship** The recipient of this scholarship must be an outstanding undergraduate student with a GPA of 3.2 or higher who is planning to teach at the K-3 level.

**Theo W.H. Irion Memorial Scholarship** A senior or a first-year graduate student majoring in education receives this award.

**Edwina Diane Jenkins Memorial Scholarship** Awarded to a Junior level student in the College of Education who plans on a teaching career. Recipients must be in good standing within the College of Education and must demonstrate financial need.

**Larry Kantner Scholarship** This award is presented to a student majoring in art education or a graduate student in art education.

**Kappa Delta Pi Scholarship** This is awarded to a junior, senior or graduate student in the college who is a member of Kappa Delta Pi.

**Lois Knowles Scholarship** This scholarship is given to a graduate student with high scholastic standing majoring in elementary education with an emphasis other than reading or language arts. Minimum of 24 semester hours having been completed at MU.

**Esther Choate Lacey Scholarship** The scholarship is awarded to students dedicated to teaching elementary or secondary education.

**Mary Jane Lang Graduate Scholarship** Given to a graduate student (doctoral preferred) of academic excellence majoring in business education.

**Mary Jane Lang Doctoral Scholarship** Given to a doctoral student whose research proposal has been accepted by the Graduate Advisory Committee, who is completing the second year of residency in the doctoral program, and who has successfully completed comprehensive exams. The intent is to support the student's final year of residency. Preference to business education majors.

**Norman and Patricia Lawnick Scholarship** Recipient will be a junior or senior music education major with financial need and a GPA of 3.0 or above.

**Thomas & Jeanne Lawson Graduate Scholarship in Educational Administration** A graduate student majoring in educational administration who is maintaining a GPA of 3.0 or above and demonstrates financial need is the recipient of this award.

**A. Susan Leddick Scholarship** This is awarded to a female student majoring in secondary education who resides in a nonmetropolitan area of Missouri.

**Mary Helen Hill Locaty Memorial Scholarship** A student planning a teaching career is awarded this gift.

**H.H. London Graduate Research Assistantship Fund** Awarded to a graduate student majoring in Career and Technical Education in the College of Education. Preference is given to doctoral students.

**Friedel C. Maasdorf Foreign Language Education Scholarship** Funds aid students who major in foreign language education.

**Marketing Education Scholarship** The award goes to a College of Education student with preference given to marketing education majors.

**Mamie J. McCormick Graduate Student Fellowship** This scholarship is given to a graduate student from a rural area of Missouri.

**James L. McGregor Scholarship in Health and Exercise Sciences** Given to an outstanding graduate student in education.

**John P. and Eleanor McKay Memorial Scholarship** This scholarship will be awarded to a junior or senior student with a GPA of 3.0 or higher who graduated from a high school in Boone or Jefferson counties in Missouri.

**Harry R. McMillan Memorial Scholarship Fund** The award recognizes outstanding students in the College of Education who are preparing to teach.

**Marilyn Lacey McMullen Scholarship** This scholarship is awarded to an undergraduate or graduate student who is planning to teach elementary or secondary education and has a minimum GPA of 3.0.

**Meharry Fellowship in Graduate Education** Awarded to a graduate student pursuing advanced study to provide leadership for public education with preference given to African-American students.

**Alda Michel Scholarship** This is awarded to an elementary or a secondary education major.

**Edward P. Miller Library and Informational Science Endowment** This scholarship is awarded to a student majoring in Library Science.

**Hazel Hill Miller Memorial Scholarship** The award is presented to a full-time student planning a teaching career.

**Walter Scott Monroe Research Fellowship** Awarded to a graduate student pursuing educational research.

**Mary Virginia Morgan Scholarship** The gift is presented to undergraduate students majoring in early childhood or elementary education.

**Music Educators Scholarship** The award goes to an undergraduate student majoring in music education.

**Ben Nelms Scholarship** This scholarship aids an undergraduate or graduate student majoring in English education.

**Ruth E. Norris Scholarship for Graduate Students** Given to a graduate student enrolled in the College of Education.

**Edward J. O'Brien Scholarship** Awarded to a student majoring in health education who has made outstanding contributions to the field.

**Mary Ann Baugher O'Brien Special Education Scholarship Fund** An undergraduate or graduate student majoring in special education receives this award.

**Mary McMullan Packwood Scholarship** This scholarship is awarded to a student majoring in art education with a GPA of 3.0 or above.

**Wantanee Pakarandom Memorial Scholarship** This award goes to a graduate student majoring in reading/language arts. Preference to students from Thailand or other Asian countries.

**Ralph H. Parker Endowment for Excellence** Given to a student majoring in Library Sciences.

**Peabody Scholarship in Education** This scholarship is awarded to a deserving student in the College of Education.

**Vaona H. Peck Freshman Scholarship in the College of Education** Awarded to entering Freshmen in the College of Education that are planning a career in teaching. Student must exhibit academic excellence in high school and have demonstrated financial need.

**Vaona H. Peck Sophomore Education Endowment Fund** Given to Sophomore level students in the College of Education preparing to become a teacher.

**Vaona H. Peck Junior Education Endowment Fund** Given to Junior level student in the College of Education preparing to become a teacher. Recipients will be designated as "Peck Fellows".

**Pettit-Hardin Scholarship** This gift is for undergraduate or graduate students majoring in English education.

**Phi Beta Lambda Scholarship** This is awarded to College of Education students majoring in business education who are members of Phi Beta Lambda.

**Phi Delta Kappa Graduate Scholarship** Awarded to a graduate student who is a member of Gamma Chapter of Phi Delta Kappa and has completed a minimum of 12 hours of graduate work in education with at least a 3.5 GPA.

**Phi Delta Kappa Undergraduate Scholarship** Undergraduates planning teaching careers are eligible for this scholarship. It is renewable if a minimum of 2.75 GPA is maintained.

**Pi Lambda Theta Alpha Chapter Scholarship** This is awarded to a College of Education student who is a member of the Alpha Chapter.

**Paul C. Polmantier Memorial Fund** This scholarship is presented to a student majoring in educational and counseling psychology.

**Reys/Bestgen Mathematics Education Scholarship** This scholarship is awarded to an outstanding full-time math education major who has completed the calculus sequence.

**Marvellee Michel Ridgeway Scholarship Fund in Education** This award is for undergraduate students majoring in elementary or secondary education with a minimum 3.25 GPA.

**Ruth Tandy Royse Fellowship in Library Science** Awarded to a graduate student in library science, demonstrating academic excellence; preference is given to graduates of the University of Missouri-Columbia.

**John Rufi School Administrators' Fund** Given to a student designated to work with the state office of the North Central Association. Student must be preparing for a degree in administration.

**Emogene Sampson Scholarship** This scholarship aids undergraduate students who are planning teaching careers.

**Herbert Schooling Fund for Leadership in Higher Education** Presented to a student majoring in higher and adult education.

**College of Education Sesquicentennial Scholarship Fund** This gift is awarded to an undergraduate student who has completed at least one academic year at MU preparing to become a teacher.

**Emily Larsen Stoll Memorial Scholarship Fund** This award goes to students who have demonstrated a commitment to teaching with a preference given to students from Jefferson County.

**Gertrude Strickler Memorial Fund** Given to a female graduate student.

**Student Council for Exceptional Children Scholarship** This scholarship is awarded to an undergraduate education major.

**Eleanor Taylor Memorial Scholarship** The award aids a student majoring in early childhood education.

**Technology and Industry Education Scholarship** An undergraduate planning to teach technology and industry education receives this scholarship.

**Loran G. Townsend Scholarship in Education** Selection of senior or graduate students is based on recognized ability and professional promise in the field of education.

**James R. Trice Scholarship** Funds aid a full-time undergraduate student majoring in art education.

**Eunice Drake Vandiver Fund for Education** Awarded to an undergraduate or graduate student enrolled in the College of Education.

**Ralph K. Watkins Scholarship** The scholarship recognizes an undergraduate or graduate student in education.

**Dorothy J. Watson Fellowship Fund** Given to a literacy education graduate student who has a holistic perspective on learning and learners, preference is given to minority students.

**Kate Stamper Wilhite Scholarship** Undergraduate and graduate students in education are eligible to receive this award.

**Jewell F. Williams Memorial Scholarship** This award is presented to an upperclass or graduate student with financial need who is majoring in elementary education.

**Merea Williams Scholarship** This is awarded to undergraduate students planning to teach.

**Sharon Willis Memorial Prize** This is awarded to a graduate student majoring in library and informational science, demonstrating significant contributions in the area of children's literature or children's library services.

**H.W. Wilson Foundation/Library Science Development Scholarship** Given to students majoring in Library Sciences.

**Bob G. Woods Scholarship** Awarded to a graduate student majoring in educational administration. Student must have had two or more years experience as a teacher or administrator in Missouri secondary schools.

**Verna Wulfekammer Art Education Doctoral Fellowship** Awarded to a doctoral student with concentration in weaving and its application.

# Special Services

**ADVENTURE CLUB** is a before- and after-school enrichment program for children grades K-5 in the Columbia Public Schools. Undergraduate Education students are tapped for their expertise in staffing the program's offerings.

**ASSESSMENT AND CONSULTATION CLINIC,** located in the Department of Educational and Counseling Psychology, provides diagnostic and prescriptive services for clients suspected of having learning problems, including various types of Learning Disabilities and/or Attention Deficit Disorder. The incorporations of effective research-based and field-tested accommodation strategies are recommended to assist the clients to progress from school to employment.

**ASSESSMENT RESOURCE CENTER (ARC)** has a long history of promoting quality in educational assessment. ARC conducts surveys, including evaluations of student life; scores classroom tests and course evaluations for the University of Missouri and other colleges; and assists educational institutions in designing surveys and evaluations, assessing general education and major field performance and evaluating programs and student needs.

**CONSORTIUM FOR EDUCATIONAL POLICY ANALYSIS** carries out research necessary for increasing the effectiveness of state, local and national reform efforts. In alliance with the National Education Goals and Goals 2000 proposed by the Department of Education and the U.S. Department of Labor, the consortium focuses on areas such as: academic standards in elementary and secondary education; the impact of performance-based assessment; and personnel, finance, recruitment, and retention issues that influence the success of higher education institutions. The consortium is a joint effort of MU, UMKC and UMSL.

**CENTER FOR INNOVATIONS IN SPECIAL EDUCATION (CISE)** is a resource for educators serving students with disabilities in Missouri as well as serving colleges, parents, agencies and others involved in the education of students with disabilities. The Center contains a loan library of more than 1,100 materials and reference volumes; sponsors conferences; and provides newsletters, support services for the deaf/blind, and credit courses through summer institutes.

**CENTER FOR TECHNOLOGY INNOVATIONS IN EDUCATION (CTIE)** is committed to improving education through the invention and innovative application of new technologies. These technologies are created with the purpose of supporting people learning through active and enthusiastic engagement in interesting, fun, authentic, and meaningful tasks. Leadership of CTIE is provided by Dr. Dale Musser, Director of Technology Innovations, and Dr. James Laffey, Director of Innovations in Education. CTIE is located at 111 London Hall.

**HEART OF MISSOURI REGIONAL PROFESSIONAL DEVELOPMENT CENTER,** funded by the Missouri Department of Elementary and Secondary Education, develops and maintains a support structure to link the ongoing professional development of educators within the region to the resources necessary for their success.

**INSTRUCTIONAL MATERIALS LABORATORY (IML)** is a center within the college that develops, produces and disseminates instructional materials and teaching aids for secondary and post-secondary vocational teachers. It also contains the Missouri Vocational Resource Center, Gender Equity and Task Oriented Training Projects.

**MU PARTNERSHIP FOR EDUCATIONAL RENEWAL (MPER)** is a collaborative partnership that brings together the MU Colleges of Education and Arts and Science, the Missouri Department of Elementary and Secondary Education, the Learning Exchange, the Network for Educational Development, and a group of diverse public school districts to discover, develop, demonstrate, and disseminate effective standards-based educational practices. The work is focused on five key areas: technology integration; professional growth; creating an effective infrastructure; establishing professional development schools; and linking school educators, university faculty, professional

organizations, and Missouri's Department of Elementary and Secondary Education. The ongoing and ultimate goal is the establishment of professional development schools (partner schools) through which systemic educational reform can be implemented.

**MISSOURI ASSESSMENT PROJECT (MAP)** is a partnership between the Missouri Department of Elementary and Secondary Education, the College of Education and the College of Arts and Science to develop a regional MAP center designed to facilitate public school teachers and university faculty in the development of performance tasks.

**REFLECTOR** is an educational technology and curriculum resource with several dozen computer stations (PC, Macintosh and SGI) with state-of-the-art multimedia capabilities. It also includes a large open shelving area with adjacent reading rooms and media rooms. The Reflector acquires and makes accessible print and non-print instructional materials needed to support the curriculum of the College of Education that are not otherwise available to students and faculty through other resource units on campus (i.e., textbook series, instructional manuals, teachers' guides, manipulative kits, audio and video materials, computer software and equipment). The Reflector also provides the equipment necessary for previewing and evaluating these materials. This is one of the ways to provide the resources necessary to help Education students become inquiring, reflective professionals.

# Professional Opportunities

A career in professional education offers many challenging opportunities. Professional personnel who are well-prepared and who can provide evidence of competence in their areas of specialization are in demand.

The professional education programs of the College of Education are organized and administered to make optimal use of all of the resources at MU that are applicable to the preparation of teachers and educational administrators as well as other educational and human-service specialists.

Students who complete the requirements for the bachelor of science in education degree and pass the National Teacher Examination speciality area assessment are eligible for a teaching certificate, issued by the Missouri Department of Elementary and Secondary Education, to teach in Missouri public schools. Graduates of the college typically meet most certification requirements in other states. The bachelor of educational studies degree provides programs for students who are interested in education as a discipline or who wish to prepare for educational work in a setting that does not require teacher certification.

**DEGREE AND CERTIFICATION REQUIREMENTS** The College of Education administers the bachelor of science in education degree and the bachelor of educational studies degree.

The course work necessary to complete the requirements for certificates issued by the Missouri Department of Elementary and Secondary Education also may be completed in the College of Education. Students who have completed a bachelor's degree should contact Advising Services, 102 Hill Hall, for information regarding the post-bachelor's certification process.

# Undergraduate Teacher Development

**Deborah Carr,** director

The Undergraduate Teacher Development will be the primary "department" of all entering freshmen.

**TRANSFER STUDENTS** Students transferring to MU from a community college or other accredited college or university are subject to the academic regulations on transfer of credit established by the MU Faculty Council. Transfer of credit is described in the Academic Regulations section of this catalog.

Course work hours satisfactorily completed at an accredited, four-year institution will be accepted without limitation except that the final 24 semester hours leading to the bachelor's degree must be completed at MU. Course work hours satisfactorily completed at an accredited community college generally will be accepted.

To facilitate the transfer of students into the College of Education from other four-year institutions and from community colleges in Missouri, the College of Education will accept a general education program, consistent with the transfer/articulation policy of the Missouri Coordinating Board for Higher Education.

This program shall consist of, but not be limited to, the distribution of courses that shall meet the general education requirements of the College of Education. These courses are as follows:

- **Communication skills in the English language:** one or two courses. One must be written, and for BES students only one must be oral communication
- **Humanities:** three courses from at least two disciplines
- **Physical and biological sciences:** one course in each science including at least one with its associated laboratory component (refer to specific majors)
- **Mathematics:** one college course of algebra or higher and one or two additional courses in math, statistics or computers (refer to specific majors)
- **Social and behavioral sciences:** three courses, one in American government, one in American history and one in psychology

With the exception of laboratory courses, all of the above courses are assumed to be a minimum of three semester hours.

The transfer policy does not waive nor alter any course requirements for the bachelor of science in education nor the bachelor of educational studies.

Grades received from other accredited institutions will be recorded on the MU transcript as they were earned (A=A, etc.).

Advanced-standing credit applicable toward a bachelor's degree in education normally will be granted for college-level courses earned at an accredited institution, provided the grade was D or better. Course work in professional education and required general education courses in written communication, oral communication, and math must be completed with a GPA of 2.000 or better. Content courses, as defined by teacher certification, must be completed with a cumulative GPA of 2.500 or better. Advanced-standing credit includes course work used to satisfy degree requirements, including the elective portion of the degree program.

MU College of Education students who plan to take courses at another college or university should fill out the transfer credit approval form, available in 102 Hill Hall, prior to enrollment. ***More information may be obtained at the Office of Academic Programs, 101 Hill Hall, in the College of Education.***

**CALCULATION OF GRADE POINT AVERAGES (GPA)** Each campus of the University of Missouri System will calculate a UM grade point average for each student enrolled in the system. This GPA is to be used for general purposes, such as application of rules governing dismissal, probation and graduation. In calculating this grade point average, the grades and honor points earned in all courses taken on any University of Missouri campus will be included. Only a single UM grade point average for each student will appear on the grade report and transcript.

**MAXIMUM AND MINIMUM ENROLLMENT** A student new to MU may enroll for a maximum of 18 hours. Depending on the grade point average, and with permission from a repre-

sentative of the College of Education, Office of Academic Programs, students previously enrolled at MU may register for a maximum of 20 hours.

**RESIDENCE REQUIREMENT** Students must earn the last 24 semester hours of course work applicable to their degree on the MU campus to obtain the bachelor of science in education or bachelor of educational studies degrees. For the BS Ed, these courses shall include internship and courses in Inquiry Into Curriculum and Pedagogy. Work completed in the summer sessions on the Columbia campus may be counted as work in residence.

# Bachelor of Science in Education (Teacher Development Program)

Admission to a specific program is a prerequisite to many upperclass courses and field experiences (including the teaching internship) and, ultimately, certification to teach.

Students become eligible for consideration for admittance to Phase II in a specific program when the following criteria have been met:

- Current enrollment in the College of Education
- 2.750 UM and overall GPA
- 22 on ACT or 1010 on the Recentered SAT
- 235 on each subtest of the CBASE
- English 20 with a 2.000 or better
- Math 10 with a 2.000 or better
- Satisfactory completion of Orientation Seminar (ED100) or designated alternative
- Satisfactory completion of any selected additional courses in the certification major (a list of these courses is available from the TDP Office or the COE Academic Programs Office advisers)
- Possession of characteristics associated with effective performance in a professional role at the level(s) and in the major(s) selected
- Approved degree plan (approval by faculty in certification area)
- Demonstrated competence of Phase I mid-preparation benchmarks (as documented by Inquiry into Learning instructors)
- Successful completion of a written portfolio and oral mid-preparation portfolio presentation
- Additional requirements as approved by the faculty for areas with enrollment limitations

A student admitted to a professional program must maintain the standards met at the time of admission to the program. Continued assessment will be made of the characteristics associated with effective performance in the role of a professional at the level(s) and in the emphasis area, or major, selected.

Individuals who possess a bachelor's degree and desire to meet Missouri teacher certification requirements through the College of Education must meet the above criteria.

A student recommended for teacher certification must have a cumulative GPA of 2.750 for all course work completed at the University, as well as an overall GPA of 2.750 for all college course work completed, a GPA of 2.500 on content course work, and have a satisfactory score on the NTE or Praxis area specialty test required by the state of Missouri.

The requirements for the bachelor of science in education (BS Ed) degree are specified in three areas: general education, professional education and a teaching major. All students preparing to be early childhood, elementary, middle school, or secondary teachers, regardless of the major field, are required to complete the general education program. Students transferring from other institutions are required to fulfill the equivalencies of these courses.

To secure the degree of bachelor of science in education, the candidate must fulfill the following requirements:

- Be admitted to a teacher education program in the College of Education
- Complete all professional courses and experiences in education listed in the various curricula with a GPA of 2.000 in each course, all courses required in the area(s) of specialization with a cumulative GPA of 2.500, and the general education requirements for all teachers
- Demonstrate satisfactory proficiency in English. This requirement may be met by making a GPA of 2.000 or better in English 20 or the equivalent
- Demonstrate satisfactory proficiency in oral communication. This requirement may be met by successful completion of Phase I
- Demonstrate satisfactory proficiency in math by making a GPA of 2.000 or better in the required general education course(s) in math
- Complete a minimum of 120 semester hours acceptable toward the degree of bachelor of science in education
- Have a cumulative UM GPA of 2.750 as well as an overall GPA of 2.750 for all college course work completed
- Be recommended for the degree by the College of Education faculty
- Meet the residence requirement of completing the last 24 semester hours with MU faculty

**THE BS Ed** is offered in early childhood (grades preK-3), elementary education (grades 1-6), middle school (grades 5-9) as well as secondary education (grades 9-12). Middle school offers a major emphasis in English, mathematics, science and social studies with a minor emphasis also available in these areas as well as in agriculture, business, family and consumer science, and industrial technology. Secondary education offers the following emphasis areas: art education; business and marketing education; French; German; language arts; Latin; math education; music education; social studies; Spanish; and unified science (with endorsements in biology, chemistry, earth science or physics).

Students will proceed through four phases as they complete the program. Each phase will include training in technology as well as clinical experience. General education and content requirements will be completed each semester in addition to the required Undergraduate Teacher Development courses.

Phase I (Inquiry into Learning) occurs over a two-semester sequence (approximately four hours each semester) and will provide students with an immersion into the discipline and culture of teaching and learning prior to focusing on a teaching specialty. This phase will provide experiences that include the teacher's roles in facilitating learning at all levels of psychological development, career exploration, general instructional strategies, classroom and behavior management, and educational measurement.

Phase II (Inquiry into Curriculum and Pedagogy and Inquiry into Schools, Communities and Society) occurs over a three-semester sequence (approximately four to 16 hours each semester) and focuses increasingly on a chosen teaching specialty and on interdisciplinary teaching. This phase provides students with experience in the methods of teaching in a specific subject area as well as emerging problems and practices within the field of education, and how problems of schools, family, community and society affect educators. Application to Phase II required.

Phase III (Internship) occurs during the last semester (approximately 16 hours) of the program with student placement in a partner school for the entire semester. Application for Phase III required.

Phase IV (Induction Years Program) occurs after the student graduates and begins the first year of teaching. This phase offers faculty support to the graduate during the first two years of teaching.

Refer to Undergraduate Teacher Development for further information.

# Bachelor of Educational Studies

Procedures for admission to Phase II in the bachelor of educational studies degree parallel those for the bachelor of science in education degree.

To qualify for admission to Phase II, the applicant must:

1. Be regularly admitted to the College of Education.

2. Have a UM and overall cumulative grade point average of at least 2.750 on a 4.000 scale.
3. Have a 22 on the ACT or 1010 on the Recentered SAT.
4. Complete English 20 with a 2.000 or better.
5. Complete Math 10 with a 2.000 or better.
6. Have at least 45 semester hours of college credit.
7. Possess the characteristics associated with effective performance in a professional role at the level(s) and in the area(s) of emphasis selected.
8. Complete an application for the BES and secure appropriate signatures.

The requirements for the bachelor of educational studies (BES) degree prepare students for education-related, human-service careers. The College of Education will not recommend certification to teach in the public schools on the basis of the BES degree.

The candidate for the BES degree must fulfill the following requirements:

1. The candidate for the Bachelor of Educational Studies degree must meet the general education requirements of the College of Education.
2. The candidate must complete at least 24 semester hours of course work offered by the College of Education in accordance with the candidate's educational and career objectives.
3. The candidate must complete at least one area of concentration totaling 24 or more semester hours (exclusive of requirement no. 2 above) in accordance with the candidate's educational and career objectives.
4. The candidate must complete the program of studies as specified in the "Admissions to Degree Program" and "Degree Program Requirements" sections of this policy.
5. The candidate must have a cumulative grade point average of at least 2.750 based upon all UM course work as well as an overall grade point average of 2.750 based upon all college course work completed.
6. The candidate must meet the residence requirement of the College.
7. Each candidate shall have field experience for academic credit appropriate to his/her degree program.
8. The candidate must be recommended for the degree by the faculty of the College of Education.

**THE BES** is offered in the following emphasis areas: curriculum and instruction and interdepartmental.

# General Education Requirements

All undergraduates in the College of Education must meet the general education requirements of the campus and college. Selected credit earned by examination may be applied toward the general education requirements. These requirements and the minimum hours are indicated below.

**SYMBOLIC THOUGHT AND COMMUNICATION:** six to 12 hours

**Linguistic Studies:** three hours for BSEd; six hours for BES
One course in written communication. For BES candidates, one course in oral communication is required. Students must earn a GPA of 2.000 or better in each course.

**Mathematical, Statistical and Computing Studies:** three to nine hours (refer to specific major)
One course must be college algebra or above. Other courses may be selected from the areas of math, statistics and computing. Remedial and developmental courses may not be used to satisfy this requirement. Students must earn a GPA of 2.000 or better in each course.

**SYSTEMS OF INTELLECTUAL INQUIRY:** 27 to 36 hours

**Humanities:** nine to 12 hours (two fields) (refer to specific major)
At least one course each from two of the following areas is required: art, music, philosophy, humanities, classical studies, foreign language, religion, literature, theater and drama. Courses from this area may be used to meet the multicultural and world/international topics requirements.

**Natural Science:** nine hours
One course in biological science and one in physical or earth/atmospheric science are required. One or two of these courses must include a laboratory (refer to major).

**Social and Behavioral Science:** nine to 15 hours (refer to major)
One course in each of the following areas is required: American history, American government and general psychology. Courses from this area may be used to meet the world/international topics requirements.

**WRITING INTENSIVE REQUIREMENTS FOR BACCALAUREATE CANDIDATES** All students in the College of Education are required to complete two courses that are designated as Writing Intensive. The first course should be taken early in a student's program of study. The second course must be an upper-level course taken in the student's area of emphasis.

For a course to be Writing Intensive, it must be approved as such by the Campus Writing Board. Writing Intensive courses have a low student/teacher ratio and require at least 5,000 words of writing to give students ample opportunity to revise their work to improve their performance. All Writing Intensive courses have a prerequisite of English 20 and require a GPA of 2.000.

**MATH REASONING PROFICIENCY** All students must complete a course that includes a substantial amount of math reasoning or content. All math reasoning proficiency courses have a prerequisite of college algebra or higher and require a GPA of 2.000 or better.

**DISTRIBUTION OF CONTENT** Each student is required to complete a minimum of nine semester hours of course work in Humanities and Fine Arts and nine semester hours of course work in Physical and Biological Sciences with an "intermediate level" course in one area or the other (refer to major).

**MULTICULTURAL AND WORLD/INTERNATIONAL TOPICS REQUIREMENTS FOR BACCALAUREATE CANDIDATES** To satisfy the requirements of accrediting agencies, all baccalaureate candidates in the College of Education must complete course work that reflects the study of diverse cultures (multicultural studies) and course work that reflects the study of world/international topics. The multicultural requirements are met in professional education courses. The world/international requirement, by careful course selection, may be satisfied through the humanities or social and behavioral science general education requirements.

**REQUIREMENTS FOR TEACHING MAJORS** Students preparing for elementary school teaching need preparation in a number of subject-matter areas as well as a specialization in elementary education. Programs in elementary education are planned with the close supervision of an adviser.

Students preparing for middle school and secondary school teaching are required to have a teaching major. By careful program planning, it is possible in some instances to earn certification in more than one area.

**PROFESSIONAL INTERNSHIP** Students completing a teacher preparation program on the MU campus are required to complete a professional internship. During the student's senior year, one full semester is devoted to a teaching internship.

To qualify for the teaching internship, the applicant must meet the following requirements:

- Be admitted to Phase III in their program area
- Successful completion of Phase II as documented via portfolio
- Have a minimum of 90 semester hours
- Have spent at least the preceding semester in residence
- Have a minimum 2.750 GPA for all work completed in the UM System, an overall GPA of 2.750, and a 2.500 in content courses
- Meet specific prerequisite professional education and subject area course requirements for the level at which the teaching internship is to be accomplished

Teaching internship assignments are available in several partner schools across the state.

Applications are accepted approximately a year preceding internship.

***More information concerning student teaching internships may be obtained from Field Experiences, 109 Hill Hall, in the College of Education.***

**CURRICULUM ABBREVIATIONS**

**A** Educational and Counseling Psychology
**B** Education Studies
**C** Educational Administration
**T** Curriculum and Instruction
**F** Practical Arts and Vocational-Technical Education
**K** Higher and Adult Education
**L** Special Education
**ED** Undergraduate Teacher Development
**Q** Information Science & Learning Technologies

**REQUIREMENTS FOR ADDITIONAL CERTIFICATES**

An individual completing an MU program in teacher education leading to a Missouri certificate to teach may obtain certification in additional areas by meeting requirements established by the Missouri Department of Elementary and Secondary Education. For specified areas of course work required for additional state certifications, contact Advising Services, 102 Hill Hall.

# College of Engineering

## Administration

**James E. Thompson,** dean
**Jay B. McGarraugh,** assistant dean

## Departments

**Biological Engineering**
**Chemical Engineering**
**Civil and Environmental Engineering**
**Computer Engineering and Computer Science**
**Electrical Engineering**
**Industrial and Manufacturing Systems Engineering**
**Mechanical and Aerospace Engineering**
**Naval Science**
**Nuclear Engineering Program**

A course in civil engineering was taught on the Columbia campus in 1849, giving the University the distinction of being the first institution west of the Mississippi River to offer engineering education.

Engineering is the profession that uses the principles of nature as described by the sciences to meet the technological design expectations of society.

At MU, engineering offers a curriculum designed to keep up with rapid technological changes. Electives allow the student to choose from many interdisciplinary opportunities.

While many students complete the BS degree program in four years, some may find it advisable to extend the curriculum in order to carry lighter semester loads, add preparatory courses or compensate for part-time work.

Bachelor's, master's and doctoral degrees in engineering are available as follows: biological (BS, MS and PhD), chemical (BS, MS and PhD), civil (BS, MS and PhD), computer (BS, MS), electrical (BS, MS and PhD), industrial (BS, MS and PhD), mechanical (BS), mechanical and aerospace (MS, PhD), nuclear (MS, PhD), computer science (BS, MS) and computer engineering and computer Science (PhD).

The curriculum provides a solid foundation of mathematics and physical sciences followed by the application of these sciences in engineering specialties. The balance of the curriculum encompasses communication skills, English and social and humanistic courses such as economics, history, political science and literature.

The college also offers master of science and doctoral programs in civil, electrical and mechanical engineering in Kansas City.

## History of Engineering at MU

**1859:** Department of Civil Engineering established
**1882:** Department of Electrical Engineering established
**1891:** Department of Mechanical Engineering established
**1903:** Department of Chemical Engineering established
**1917:** Department of Agricultural Engineering established
**1958:** Department of Industrial Engineering established
**1964:** First nuclear engineering degree awarded
**1967:** Mechanical Engineering became Mechanical and Aerospace Engineering
**1981:** Electrical Engineering became Electrical and Computer Engineering
**1995:** Computer Engineering and Computer Science Department established

## Admission

Entering freshmen are expected to have completed 17 units of approved high school course work (in grades 9-12), including four units in English, four in mathematics and three in science with laboratory. Mathematics should include two units of algebra, one unit of plane and solid geometry (combination course) and one-half unit of trigonometry. Senior mathematics beyond this is recommended.

Many freshmen are eligible to start with calculus. However, some can profit from additional pre-calculus preparation, which is an add-on to the undergraduate curricula.

All engineering students participate in the Writing Intensive program. Most students qualify to enroll in English 20: Exposition and Argumentation during the freshman year. Those whose ACT score in English indicates the need for additional preparation will be required to enroll in English 20 with a lab. The College of Engineering faculty has adopted the following policy on Writing Intensive courses: English 20 normally will be taken in the freshman year. Two additional Writing Intensive courses are required, one in the student's major area and one in an elective area.

**DIRECT FRESHMAN ADMISSION TO ENGINEERING** The average ACT scores for first-time freshmen admitted to the College of Engineering for fall 2000 were ACT-Composite 28.0, ACT-Math 28.7 and ACT-English 26.8.

Direct admission to the College of Engineering would require the applicant to earn an ACT-Math of at least 22 and have either an ACT-Composite of at least 24 or a high school class rank in the upper 25 percent. The numbers shown above are subject to change.

**PRE-ENGINEERING PROGRAM (PEP)** Freshmen who do not meet the criteria for direct admission to the College of Engineering are admitted initially into the College of Arts and Science Pre-Engineering Program.

Although admitted to the College of Arts and Science as freshmen, each PEP student receives advising by an engineering adviser.

Most first-semester PEP students enroll in one preparatory math course and three College of Arts and Science courses, which count in both the engineering and arts and science degree programs. The prime objective is to strengthen math preparation sufficiently for success in engineering.

The special feature of PEP is reducing freshman pressures while preserving alternatives. Since PEP students are technically enrolled in the College of Arts and Science, degree options in the College of Arts and Science are available to those who may decide to change their focus from engineering.

PEP students are eligible to transfer to the College of Engineering on satisfactory completion of 24 credit hours with a last term grade point average of 2.0 or higher, a cumulative grade average of 2.0 or higher and a grade of C or better in Calculus I.

**INTERNATIONAL STUDENTS** Admission of international students is determined on an individual basis by a committee of representatives from the Admissions Office and the College of Engineering.

Before registering for classes at the University, each international student must take the MU English Language Test, which was developed for international students. Students passing the test will be eligible to take English 20 and other required English courses, if any.

All international students, even those with transferred English credit, whose test scores indicate that additional English training is needed will be required to register for an English-language support class. Developed for international students, the course should be taken during the first semester of enrollment. This course does not count toward graduation credit, but regular attendance is required and failure to attend will result in dismissal

from the University. The English-language support class taken must be satisfactorily completed before the student can enroll in English 20. Students not satisfactorily completing the class in the first semester of enrollment must re-enroll in the second semester. If the student does not satisfactorily complete the English-language support class in the second term of enrollment, the student will not be permitted to re-enroll in the College of Engineering.

**TRANSFER STUDENTS** Students wishing to transfer to MU from another accredited college or university are subject to the regulations established by the MU Faculty Council concerning transfer of credit. The regulations are described in the Academic Regulations section of this catalog.

The MU College of Engineering cooperates with many colleges in helping pre-engineering students transfer to MU with maximum ease and minimum loss of credits.

A student may take the first two years at the participating school and then transfer to MU for the junior and senior years in engineering. After the program is completed, the students are awarded a BS in their chosen field of engineering.

**Participating schools include:**

- **Benedictine College,** Atchison, Kan.
- **Black Hawk College,** Moline, Ill.
- **Central Arkansas,** Conway, Ark.
- **Central Missouri State University,** Warrensburg, Mo.
- **Columbia College,** Columbia, Mo.
- **Culver Stockton,** Canton, Mo.
- **Drury University,** Springfield, Mo.
- **East Central College,** Union, Mo.
- **Evangel University,** Springfield, Mo.
- **Florissant Valley Community College,** St. Louis, Mo.
- **Forest Park Community College,** St. Louis, Mo.
- **Hannibal-LaGrange College,** Hannibal, Mo.
- **Jefferson College,** Hillsboro, Mo.
- **John Wood Community College,** Quincy, Ill.
- **Johnson County Community College,** Shawnee Mission, Kan.
- **Lincoln University,** Jefferson City, Mo.
- **Lindenwood University,** St. Louis, Mo.
- **Longview Community College,** Kansas City, Mo.
- **Maple Woods Community College,** Kansas City, Mo.
- **Meramec Community College,** St. Louis, Mo.
- **Mineral Area Community College,** Flat River, Mo.
- **Missouri Southern College,** Joplin, Mo.
- **Missouri Western State College,** St. Joseph, Mo.
- **Moberly Area Community College,** Moberly, Mo.
- **North Central Missouri College,** Trenton, Mo.
- **Northwest Missouri State University,** Maryville, Mo.
- **Penn Valley Community College,** Kansas City, Mo.
- **Quincy University,** Quincy, Ill.
- **Rockhurst College,** Kansas City, Mo.
- **Southeast Missouri State University,** Cape Girardeau, Mo.
- **Southwest Missouri State University,** Springfield, Mo.
- **St. Charles Community College,** St. Charles, Mo.
- **State Fair Community College,** Sedalia, Mo.
- **Three Rivers Community College,** Poplar Bluff, Mo.
- **Truman State University,** Kirksville, Mo.
- **Webster University,** St. Louis, Mo.
- **Westark Community College,** Fort Smith, Ark.
- **Westminster College,** Fulton, Mo.

To be recommended for the BS degree from the MU College of Engineering, a student transferring from an accredited institution must complete at least 30 upper-level credit hours, at the 200 level and above or the equivalent, in the degree program at the UM System campuses. At least 21 of the 30 credit hours must be upper-level engineering courses approved by the department awarding the degree. However, for a student transferring with senior standing from another UM System campus, the last 15 hours must be completed in residence on the campus where the degree program is located; 12 of these 15 hours must be in engineering and approved by the department awarding the degree.

Any student whose enrollment in any college-level academic program resulted in dismissal or departure while on probation shall be admitted to the MU College of Engineering only after the application has been approved by the college. The criteria used for admission shall be the same as those used for students in similar circumstances who have left the MU College of Engineering.

# Advanced Credit

Advanced credits are possible from the following four sources:

- Evaluation of courses shown on official college transcripts
- CLEP subject exams
- Departmental Exams
- Advanced placement program (AP)

Missouri Constitutional requirements cannot be satisfied through CLEP credits.

# Student Services

**ADVISEMENT** Each student in the College of Engineering is assigned a faculty adviser who assists the student in reaching academic and professional goals. Students are encouraged to meet with their advisers as often as needed.

**CAREER SERVICES, CO-OP AND INTERNSHIPS** The Career Services Office in W1025 Engineering Building East is staffed by a director, assistant director, and two professional staff members. Students are provided assistance in scheduling and preparing for full-time, co-op and internship on- and off-campus interviews. This assistance includes seminars in preparing professional resumes and cover letters, interviewing skills and business etiquette.

Employers make final employment decisions based upon the academic credentials, associated work experience and interviewing skills of applicants. Career Services serves as a focal point in an attempt to ensure that all engineering graduates are highly successful in their initial employment selection.

**DIVERSITY IN ENGINEERING** The Diversity in Engineering Program (DEP) is a major component of the University of Missouri-Columbia engineering education effort. Its mission is to support increased graduation rates among underrepresented group students from the MU College of Engineering. A student-supported program, the DEP is designed to create a user-friendly environment for all students pursuing an engineering degree at the University of Missouri-Columbia. DEP strives to provide students with excellent learning conditions at the College of Engineering. This effort includes models for successful outreach, recruitment, early research experience, counseling, undergraduate retention, academic enrichment, mentoring, orientation to graduate study and increases in student participation and success in the College. The program provides a support network with other students to ensure success in the College through group study programs and involvement in DEP. Some academic opportunities include tutoring, mentoring, Supplemental Instruction, cooperative work experience and internships. DEP also offers outreach opportunities for students to interact with the local community that include tutoring, mentoring and giving presentations to local elementary, junior high and high school classes. All students are welcome to take part in the academic support measures the program provides. DEP scholarships are available; specific guidelines may be obtained by contacting the DEP Office, W1025 Engineering Building East.

**LEARNING COMMUNITIES** The College co-sponsors several living/learning options for engineering students. The College believes that the creation of an environment that is conducive to the formation of networks, with aspects of social as well as academic interaction, will enhance the retention and ultimate success of students in the engineering curriculum. Figures show that students generally post higher grades and have a better chance of graduating than the average engineering student. The Engineering Success Program (ESP) is a special environment that offers women engineering majors a full range of moral and academic support and activities. ESP allows these women students to live together, study together and have fun together. The Men of Engineering (MOE) offers the same opportunities for

male students in engineering. Both communities have their own computer lab, peer tutors, study groups and quiet hours. Freshman Interest Groups are geared toward incoming freshmen. If you choose to be a member of a FIG, you will be co-enrolled in three courses during the first semester of your freshman year with a group of up to 20 students. Where possible, FIGS are imbedded in the engineering living/learning communities.

**THE LEARNING CENTER** Engineering students are encouraged to take advantage of programs offered by the Learning Center for tutoring and guidance on learning strategies.

**ENGINEERING TUTORING** In addition to the Learning Center, the College of Engineering offers a free tutoring service for all required math, physics, chemistry and introductory engineering courses carrying the ENGR prefix.

# Required Work in Residence

A student transferring from an accredited institution other than the University must complete at least 30 upper-level credit hours, 200 and above or equivalent, in the degree program at UM System campuses. At least 21 of the 30 credit hours must be upper-level engineering courses approved by the department awarding the degree. However, for a student transferring with senior standing from another UM System campus, the last 15 hours must be completed in residence on the campus where the degree program is located; 12 of these 15 hours must be in engineering and approved by the department awarding the degree.

# Engineering Honors

The college maintains an undergraduate honors program to further challenge those who have established a minimum grade point average of 3.0 after the freshman year. A comparable grade point average is required of transfer students. The program leads to an undergraduate honors thesis on a research or advanced design project, provides for additional curricula flexibilities and contains features that help ease the transition to graduate school for those who continue in that direction.

Opportunities available to honors students include:
- Study programs tailored to the student's interests
- More personal attention from the honors adviser
- Independent study or undergraduate research with a senior faculty member whose specialty interests the honors candidate

Students who successfully complete the engineering honors program, including the independent project, will have the designation Honors Scholar in Engineering added to their diplomas and permanent records. Interested students should contact their departmental office.

Qualified engineering students are also welcome to join the programs of the Honors College and may enroll in various honors courses and honors sections of regular courses.

# Student Organizations

One of the highlights for engineering students, dating back to 1903, has been the annual celebration of St. Pat's week. Tradition has it that St. Patrick was an engineer. In celebration of his birthday, engineering students stage a series of campus programs including a dance, queen contest, banquet and lab exhibits open to the public. Many alumni return to join in the festivities.

Some of the scholastic and professional organizations available to engineering students are as follows:

**Alpha Epsilon** honor society for upperclass and graduate students in agricultural engineering
**Alpha Pi Mu** national industrial engineering honor society
**American Society of Agricultural Engineers** student chapter
**American Institute of Chemical Engineers** student chapter
**American Society of Civil Engineers** student chapter
**American Society of Mechanical Engineers** student chapter
**Associated General Contractors** student chapter
**Association of Computing Machines**
**American Society of Metals** student chapter
**American Nuclear Society** student chapter
**Biological Engineers Club**
**Chi Epsilon** national civil engineering honor fraternity
**Engineering Student Council**
**Engineers' Club** for all students and faculty of the College of Engineering
**Eta Kappa Nu** national electrical engineering honor society
**Institute of Electrical and Electronics Engineers** student branch
**Institute Industrial Engineers** student chapter
**IEEE Computer Society** student branch
**Midshipmen's Club** Navy ROTC
**National Society of Black Engineers**
**National Society of Professional Engineers** student section
**Omega Chi Epsilon** national chemical engineers honor society
**Pi Tau Sigma** national mechanical engineering honor fraternity
**Scabbard and Blade** national ROTC honor fraternity
**Society of Automotive Engineers** student branch
**Society of Hispanic Professional Engineers** student chapter
**Society of Manufacturing Engineers**
**Society of Women Engineers** open to any person enrolled in the College of Engineering
**St. Pat's Board**
**Tau Beta Pi** national engineering honor society

# Scholarships

The college offers many scholarships to full-time engineering undergraduates with appropriate academic credentials and technical interest. The Engineering Scholarship Committee reviews scholarship application forms in an attempt to match engineering applicants' interests and qualifications with particular scholarships. Therefore, it is not necessary to apply for each specific scholarship separately. A college scholarship may be combined with other campus or external awards.

The college encourages engineering students to compete for externally awarded scholarships. Programs are available to support students with specific technical interests at the junior and senior level, and do require a separate application form. Information about the scholarship program may be obtained by contacting the Engineering Scholarship Committee, W1025 Engineering Building East, Columbia, MO 65211, (573) 882-4092.

Since many scholarships consider financial need, students are strongly encouraged to submit the Free Application for Federal Student Aid (FAFSA), which is available through your high school counselor's office, your home college or the campus Student Financial Aid Office.

### General

**Squire H. Anderson Scholarship** Awarded to full-time engineering students.

**John S. and Dorothy Rule Ayres Scholarship** Awarded to qualified engineering students.

**Curtis L. Benton and Barbara Kortright Benton Scholarship** Two annual awards of $5,000 each to undergraduate students in engineering who are well-rounded students who participate in extracurricular activities related to engineering and who have demonstrated through actual applications the ability to create practical solutions to real problems.

**Burns & McDonnell Foundation Scholarship** This is awarded to a full-time engineering junior with a 3.0 grade point average or above in the civil, mechanical, chemical, electrical or environmental engineering departments. It may be renewed in the senior year. Recipients must be U.S. citizens or permanent residents residing in Colorado, Missouri,

Kansas, Nebraska, Iowa, Oklahoma, Arkansas, or Illinois. Also, students must be active in campus professional engineering society activities and express an interest in entering the consulting engineering field.

**Lloyd Cardwell Memorial Engineering Fund** Awarded to qualified engineering students.

**Caterpillar Scholarship** Awarded to at least one minority and one female student in mechanical, electrical, civil, or computer engineering and computer science.

**Ralph Coatsworth Engineering Scholarship Fund** Awarded to qualified engineering students.

**Arch and Agnes Dawson Scholarship** Awarded to full-time engineering students who are U.S. citizens. Preference to Missouri residents and those who have graduated from Missouri high schools.

**James C. Dowell Scholarship** This award is based on scholarship and professional promise.

**Engineering Dean's Scholarship Fund** This is for undergraduate engineering students exhibiting academic excellence.

**Engineers' Club Scholarship** One or more awards each year to students who have achieved the highest scholastic records during their freshman year.

**Engineering Alumni Organization Scholarship** Awarded to a full-time engineering student based on financial need.

**Alfred S. Gaskell Memorial Scholarship** Awarded to freshmen engineering students on the basis of academic record, financial need and professional promise.

**H. William Gieschen Memorial Scholarship** This award is based on scholarship, financial need, indication of professional promise and U.S. citizenship.

**George C. Gundlach and James M. Sherman Scholarship** This scholarship is awarded to qualified engineering freshmen; preference is given to high school graduates of Harrison County, Miss.

**Jesse Sherman Gundlach Scholarship** This is awarded to sophomores, juniors or seniors demonstrating academic excellence; preference is given to high school graduates of Harrison County, Miss.

**J.L. Hamilton Memorial Scholarship** This award is based on scholarship, financial need and indication of professional promise.

**Roy P. Hart Scholarship** The recipient must be a student in engineering or the physical sciences, a leader in student activities, a distinguished athlete in a major team sport and have completed four years of eligibility in athletic competition at MU. The recipient must also have an above-average scholastic record and need financial assistance to complete his or her studies for the BS engineering degree or to pursue graduate study. The recipient is nominated jointly by the College of Engineering and Intercollegiate Athletics.

**George and Eliza Hechler Memorial Scholarship** This is for a senior student from Chariton County, Mo., enrolled in engineering, agriculture or human environmental sciences.

**W.R. Hechler Scholarship** Two or more awards are made to juniors from Chariton County, Mo., in the areas of engineering, agriculture, human environmental sciences, natural resources or veterinary medicine or to students in education preparing to teach in one of these areas.

**Lloyd E. Hightower Endowed Fund in Engineering** Awarded to qualified engineering students.

**Charles Wayne Horn Memorial Engineering Endowment** Awarded to full-time engineering junior students. Preference to mechanical engineering students, academic achievement, financial need and U.S. citizens, priority to students from Weston, Mo. (West Platte) or Princeton, Mo.

**Lloyd S. Hubbard Memorial Scholarship** The fund for this scholarship provides one or more annual awards to full-time engineering students.

**Lloyd and Margaret Ketcham Scholarship Fund** This award is for juniors or seniors and is based on scholarship, financial need and indication of professional promise. Recipients must be U.S. citizens.

**W.R. Kimel Scholarship** This is for a junior or senior engineering student with financial need.

**James E. Kunkler Scholarship** This is for entering freshmen who were in the top 10 percent of their high school graduating class and scored in the 90th percentile on national tests.

**Frederic A. Lang Tau Beta Pi Scholarship** Awarded to the president of Tau Beta Pi, the honorary society.

**C.W. La Pierre Scholarship** This award is based on scholarship, professional promise and financial need.

**John and Mary Lockwood Scholarship** This annual scholarship is for an outstanding upperclass student interested in engineering research.

**Forest S. Lyman Scholarship** This annual award is based on scholarship, professional promise and financial need.

**John C. "Jack" Lysen Memorial Scholarship Fund** Awarded to full-time engineering students.

**Gladys C. and C. Myron Lytle Scholarship** This scholarship is awarded to engineering students who are residents of Missouri.

**Edward and Dorothy Maran Scholarship** This is awarded to engineering students from St. Charles County, Mo., with preference to students from any high school of that county who are U.S. citizens.

**Floyd McCall and Helen Black Maupin Engineering Scholarship** Awarded annually to undergraduate engineering students with academic excellence and financial need. Recipients shall be residents of Missouri. Renewable if progress is satisfactory.

**Dean E.J. McCaustland Scholarship Fund for Working Students** This award is for a working engineering student of good moral character and academic standing.

**Minority Engineering Program Scholarships** This is an engineering program for minority students with the amount of the award based on scholastic ability and financial need.

**Missouri Engineers of Chicago Scholarship** Awards are based on academic excellence and creditable participation in student activities.

**Jack W. Morgan Engineering Scholarship** This is for junior or senior engineering students based on academic record, financial need and professional promise.

**Hiram Phillips and Frederic Thomas Kennedy Memorial Scholarship** This scholarship, based on academic excellence, is for sophomore, junior or senior engineering students enrolled in full-time programs.

**Rolf Engineering Scholarship** One or more annual awards made to full-time engineering students. Recipients must be U.S. citizens.

**James S. Rollins Scholarship** This is awarded to a junior in engineering in recognition of academic merit and character.

**Andrew W. and Cecelia A. Roth Scholarship** Awarded to engineering students in their freshman years, renewable if in good standing. Students must be U.S. citizens, preferably from Missouri high schools, and must have demonstrated financial need.

**I.O. Royse Scholarship in Engineering** This is based on academic merit and financial need.

**Michael K. Rust Memorial Scholarship** This is for engineering undergraduates who exhibit leadership, participate in athletics and have well-rounded characters.

**Katherine Y. and Chauncey M. Saville Memorial Scholarship** Awarded to freshmen engineering students.

**Virgil B. Saville Scholarship Fund** Awarded to full-time engineering students.

**Lionel O. Schott Memorial Scholarship** Awards are made to undergraduate engineering students.

**Dwayne C. Smith Memorial Scholarship** Awarded to freshmen engineering students.

**Special Talent Scholarships** This is for two entering freshmen who demonstrate exceptional talent in engineering.

**Sprint Scholarship** Awarded to juniors in computer science, computer engineering or electrical engineering with at least a 3.0 GPA and financial need.

**Robert Lee Tatum Scholarship** This is for undergraduate engineering students.

**3M Company Scholarship** This is awarded to engineering students in chemical, electrical, industrial and mechanical engineering who have at least two regular semesters remaining before graduation; preference given to U.S. citizens.

**Frank Thornton Jr. Memorial Scholarship** This is for under-

graduate engineering students and is based on scholarship, financial need and indication of professional promise.

**Union Electric Co. Scholarships** This is for outstanding engineering students who are interested in the field of energy systems and their technological and socioeconomic problems. A separate application is required.

**UMC-Engineers' Club Scholarship** Awarded to freshmen students with the highest scholastic rank.

**F.H. Wells Scholarship in Engineering** This is for freshmen or sophomores with high grade point averages and professional promise.

**Western Chapter of Missouri Society of Professional Engineers Auxiliary Scholarship** The fund for this scholarship provides one or more annual awards to engineering sophomores, juniors or seniors.

**Rex M. Whitton Sr. Memorial Scholarship** This is an award for qualified engineering students. Preference is given to students from Jackson County, Mo.

**Horace W. Wood Jr. Memorial Scholarship** This is awarded to undergraduate engineering students.

### Agricultural Engineering

**R.P. Beasley Memorial Scholarship** This is awarded to one or more agricultural engineering sophomores.

**Paul N. Doll Scholarship** The fund for this scholarship provides awards to one or more agricultural engineering sophomores.

**M.M. Jones Scholarship** This is for freshmen in agricultural engineering.

### Chemical Engineering

**Dow Chemical Scholarship** Awarded to an outstanding junior in chemical engineering.

**DuPont Scholarship** This is for qualified full-time undergraduate chemical engineering students.

**Robert N. and Marcia J. Healy Scholarship in Chemical Engineering** This is for full-time qualified undergraduates in chemical engineering.

**Mallinckrodt Scholarship** This is for qualified students in chemical engineering.

**Thomas John McMahon and Alice Hahn McMahon Memorial Engineering Scholarship** Awarded to freshmen majoring in chemical engineering, with preference to those with financial need and who are residents of St. Louis.

**Monsanto Scholarship** This is for qualified students in chemical engineering.

**Procter and Gamble Scholarship in Chemical Engineering** This is for qualified students in chemical engineering, who are U.S. citizens or have permanent resident visas.

**Charles F. Roney Memorial Scholarship in Chemical Engineering** This is for sophomores, juniors or seniors in chemical engineering. Recipients must be U.S. citizens who demonstrate high motivation, professional promise and financial need.

**Srikant Memorial Scholarship** Awarded to qualified full-time chemical engineering junior and senior students.

**Texaco Inc. Scholarship** This is for a full-time undergraduate student in chemical engineering.

### Civil and Environmental Engineering

**Robert M. Barton Scholarship in Engineering** Awarded to undergraduate students; preference to civil engineering students with financial need.

**Michael L. Burgesen Memorial Scholarship in Civil Engineering** This is for undergraduate civil engineering students. Preference is given to students with financial need.

**John A. and Elizabeth K. Epple Scholarship Fund** This is for a junior or senior in civil engineering and is based on financial need and promise of academic excellence.

**Arlow and Agnes Ferry Memorial Scholarship in Civil Engineering** Awarded to an undergraduate in civil engineering with financial need who is a resident of Missouri.

**Stanley and Jeanne Fistedis Scholarship Award** Preference is given to Missouri residents who are graduates of rural Missouri high schools and are interested in civil engineering.

**George A. Heist Scholarship in Engineering** Awarded annually to engineering students with demonstrated financial need. Preference to students in civil engineering.

**Glen J. and Elma P. Hopkins Scholarship in Civil Engineering** Preference is given to applicants from Kansas City or Plattsburg, Mo., and applicants whose parents are employed by the City of Kansas City. (For students at MU and CEP-UMKC.)

**Claude P. and Edith Owens Memorial Scholarship in Civil Engineering** Recipient must be a junior in civil engineering, U.S. citizen, Missouri resident and a graduate of a Missouri high school. Scholarship may be renewed for a second year. Preference is given to students whose parents are or were employees of the Missouri State Highway Department, Highway Patrol or other Missouri Department of Highway Transportation division.

**Harry K. and Ann Todd Rubey Memorial Scholarship in Civil Engineering** This is for a junior in civil engineering whose interest is in civil engineering management and who is able to relate well to people.

**Jewell F. Williams Memorial Scholarship** Awarded in odd-numbered years to junior, senior or graduate students in civil engineering.

**H.W. Wood Scholarship in Civil Engineering** This is for a civil engineering undergraduate and is based on academic excellence and promise of community leadership and activities after graduation. The recipient must be a Missouri resident.

### Electrical Engineering

**Donald B. Atkinson Scholarship** Awarded to electrical engineering student; must have and maintain a grade point average of 2.5 on a 4.0 scale.

**David H.S. and C. Shan Cheng Memorial Scholarship in Electrical Engineering** This is for a full-time graduate or undergraduate student in electrical engineering. Preference is given to a student studying electro-magnetic theory. Selection is based on scholarship ability rather than financial need.

**Brian W. Dellande Memorial Scholarship** Awarded to a full-time electrical and/or computer engineering junior. May be renewed in senior year. Recipient must be a U.S. citizen. Preference to those with financial need and a proven record of academic achievement.

**Albert L. Donaldson Scholarship in Electrical Engineering** This is for undergraduates in electrical or computer engineering. Recipients must be U.S. citizens.

**Paul W. Franklin Memorial Scholarship Fund** This is for an undergraduate student in electrical engineering whose major subject interest is rotating electrical machinery, as indicated by the undertaking of an independent study project of three credit hours. Financial need and a specified minimum grade point average shall not be included in selection criteria.

**Dr. Jerry Gold Scholarship** This is for undergraduates in electrical and computer engineering. Preference to those who have an interest in bioengineering. Selection is based on academic promise and financial need.

**Ira G. Hubbell Scholarship** Awarded to full-time electrical engineering undergraduates from rural Missouri communities. Must have financial need.

**John Lamb Fund in Electrical and Computer Engineering Scholarship** This is awarded to qualified electrical and computer engineering students.

**Arthur G. Miller Memorial Scholarship** This is for an electrical engineering student with high academic achievement or financial need.

**F. Robert Naka Scholarship** This provides annual awards to qualified electrical engineering students.

**Donald L. and Florence E. Waidelich Scholarship in Electrical and Computer Engineering** This award is granted to

a junior or senior in the electrical and computer engineering department. The recipient must have a minimum grade point average of 3.0 and demonstrate financial need. The award may be renewed for a second year.

**Mendell P. and Regina Paves Weinbach Memorial Scholarship in Electrical Engineering** This is for a junior or senior student majoring in electrical engineering. The award is based on financial need and academic record.

**Charles C. and Betty B. Willhite Scholarship in Electrical and Computer Engineering** This scholarship, based on financial need, is awarded to students from Clay, Platte or Jackson counties in Missouri. Preference is given to freshmen.

**Jonathan Marc Zimmering Memorial Prize in Engineering** Awarded to senior engineering student majoring in electrical engineering seeking an academic career in research and teaching in electrical engineering and accepted into a recognized program at an institution outside the University of Missouri system of higher education.

### Industrial and Marketing Engineering

**AIIE, Greater Kansas City Chapter, Stephen E. Gillespie Memorial Scholarship** This award goes to an outstanding industrial engineering junior or senior.

**American Institute of Industrial Engineers, Greater St. Louis Chapter Scholarship** This is awarded to an outstanding industrial engineering freshman.

**Stephen E. Gillespie Memorial Scholarship** Awarded to full-time industrial engineering students.

### Mechanical Engineering

**Frederick G. Baender Scholarship** This is awarded to mechanical engineering undergraduates.

**Milo M. Bolstad Scholarship** This is awarded to mechanical engineering undergraduates.

**Howard and Janice Hesselberg Engineering Scholarship** Awarded to those students with demonstrated financial need. Preference to mechanical engineering students.

**The Ruth Adele Hombs Davis Memorial Scholarship** This is awarded to mechanical engineering undergraduates.

**Mechanical Engineering/Industrial Advisory Council Scholarship** Awarded to full-time mechanical engineering students exhibiting academic excellence.

**Procter and Gamble Scholarship** Awarded to qualified mechanical engineering students.

**Ralph L. Scorah Scholarship** This is for undergraduate students in mechanical engineering.

**Shell Oil Foundation Scholarship** Awarded to qualified mechanical engineering students.

**David Wollersheim Scholarship in Mechanical Engineering** This is an academic excellence award for a junior or senior mechanical engineering student.

**Herbert Young Jr. Scholarship in Mechanical Engineering** Awarded annually to juniors and seniors in mechanical engineering.

# Professional Opportunities

The average starting salary offer for May 2000 BS graduates was $46,330. A recent national survey ranked engineering starting salaries as some of the highest in the United States. Engineering is a flexible profession. Future engineers have a wide range of career choices from highly abstract research to technical design. Engineers apply scientific knowledge to the use of natural resources to benefit society.

# Professional Engineering Registration

The revised statutes of Missouri (Section 327.221) require that all applicants for registration as a professional engineer in Missouri be a graduate of, and hold a degree in, engineering in a curriculum accredited by the Accreditation Board for Engineering and Technology. The MU undergraduate programs in agricultural, biological, chemical, civil, computer, electrical, industrial and mechanical engineering at Columbia are so accredited.

Senior students are strongly encouraged to take the Fundamentals of Engineering Exam leading to the Engineer-in-Training (EIT) status as a first step toward registration.

# Undergraduate Program

Requirements for graduation from the College of Engineering:

- The student must earn a UM System GPA of at least 2.0.
- The student must earn a GPA of at least 2.0 in all courses taken that have a UM System engineering (ENGR, AgE, ChemE, CI, CECS, EE, BE, IMSE, MAE, NE) designation. Only the last grade in a repeated course will be used in the calculation.
- Courses that do not count toward any degree programs in engineering are physical education courses, applied music, applied art and "remedial" courses, such as Math 10, Math 14, Math 15 and English 10. Also excluded are military science and ROTC courses, with the exception of up to nine hours of advanced ROTC, which can be counted only for students who have fulfilled all departmental requirements and are commissioned in a branch of the armed forces.

**DECLARED AND UNDECLARED STATUS** Freshmen engineering students may start with a particular departmental affiliation or in an undeclared status and defer the selection of a particular department for the first few semesters. For those choosing the latter route, special faculty advisers are provided. Students starting on an undeclared basis should discuss their choice of courses with their academic adviser carefully each semester in order to keep options open among departmental curricula until the particular department of choice is selected.

It also is possible to transfer from one department to another during the early part of the curriculum. The appropriate forms for such a transfer are available in the College of Engineering dean's office. Students who transfer must satisfy the specific degree requirements of the new department.

**CURRICULUM OF RECORD** In 1987, the College of Engineering faculty voted to adopt the following policy: "For students who maintain continuous, full-time enrollment, the curriculum of record is the one approved by the College of Engineering at the time the student achieves upper-division status in his or her discipline of choice. For others, the curriculum of record is decided by the department faculty."

**SOCIAL AND BEHAVIORAL SCIENCES/HUMANISTIC STUDIES AND FINE ARTS REQUIREMENT** One approved cluster in either the Social and Behavioral Sciences **OR** Humanistic Studies and Fine Arts must be taken. Another nine hours must be taken in the other area not used for the cluster. Refer to the Engineering Cluster Booklet on Clusters and consult with your engineering academic adviser for cluster selection.

All engineering students are required to have an economics course. Economics 4, 5 or 14 will meet the economics requirement.

In addition, the Missouri Constitution requires that students complete a course in American history or American government. History 3 or 4 or Political Science 1 or 11 will meet the state constitutional requirement.

**GENERAL EDUCATION REQUIREMENTS** The University of Missouri-Columbia general education requirements are shown in this catalog under "The University" section. Students are advised to consult with their academic advisers regarding course selections to meet the general education requirements.

# School of Health Professions

## Administration

**Richard E. Oliver,** dean
**Michael W. Prewitt,** associate dean for student and academic affairs
**P. Kevin Rudeen,** associate dean for administrative affairs and Director for research

**Departments**
Cardiopulmonary and Diagnostic Sciences
(radiography, nuclear medicine, respiratory therapy, radiation therapy, diagnostic medical ultrasound)
Communication Science and Disorders
Occupational Therapy
Physical Therapy

The School of Health Professions was established in 1978 to bring together the professional training programs in health sciences on the MU campus. The bachelor of health science (BHS) is offered in the following content areas: communication science and disorders; occupational therapy; radiography, radiation therapy, nuclear medicine, respiratory therapy and pre-physical therapy. Diagnostic medical ultrasound, currently a certificate program, is anticipated to be approved for the BHS and MHS Summer 2001. The Master of Health Science (MHS) is offered in communication science and disorders. The Master of Physical Therapy is also offered. In the latter two areas, the master's degree is the entry-level degree for professional practice. Applicants to the physical therapy MPT program are not required to hold a bachelor's degree, as the program is one of consecutive undergraduate and graduate study. Applicants to the communication science and disorders MHS program are required to hold a bachelor's degree. The doctor of philosophy degree (PhD) in speech pathology/audiology is offered by the Department of Communication Science and Disorders in conjunction with the Department of Communication. All entry-level professional programs meet the standards of the respective national accrediting agencies.

**ADMISSION** Freshmen and sophomore students are enrolled in the School of Health Professions for academic advisement in order to complete general education and prerequisite requirements. Students are advised by faculty and staff of the department in which they have declared a major. Undecided students are advised in the Student Affairs Office. Students should stay in close contact with their respective department faculty to be certain they are progressing satisfactorily toward completion of the prerequisites. Advisers also assist students concerning the proper time to make formal application to the program.

Admission to the University and to the School of Health Professions as a preprofessional student does not constitute admission as a candidate for the bachelor of health science degree. Preprofessional students are admitted to candidacy for the BHS only when they have been selected to participate in the professional component of a program. Students whose native language is not English should contact the School of Health Professions for requirements.

**APPLICATION PROCEDURES** While completing prerequisite requirements, students must make formal application for admission to the professional component of the program of their choice. Enrollment in the professional component of each program in the School of Health Professions is limited and is governed by program admission committees. This policy applies to students who begin their higher education at the University, as well as to those who transfer to the University with the intention of enrolling in one of the programs.

In addition to the student's academic record, attributes such as interpersonal skills, motivation, attitude, interest, commitment and knowledge of the field are considered in selecting students to participate in the professional phase of any program.

Applicants also are evaluated on school and college aptitude tests, pattern of academic achievement, verbal expression, extracurricular activities, and motivation demonstrated by employment and volunteer activities.

To achieve the goals of diversity and equal opportunity, the School of Health Professions encourages the participation of minority and disadvantaged students in its programs.

**PREREQUISITE CURRICULUM REQUIREMENTS**
Please contact departments for specific course requirements in the various programs.

**Humanities** nine hours
Includes art, classical studies, foreign language, humanities, literature, music, philosophy, religion and theater/dramatic art

**Communication Skills** three hours
English 20: Exposition and Argumentation

**Social Science** nine hours
This must include one course in American history (History 3 or 4) or Political Science (Pol Sci 1 or 11); one course from either sociology or anthropology; and one psychology course.

**Biological Science** five hours (Must include laboratory component)
Biology 1 and 2 or 42: General Biology

**Physical Sciences** three hours
Must include laboratory component

**Mathematics** six hours
Math 10: College Algebra and an MU-approved math reasoning proficiency (MRP) course. However, if a student receives a subscore of 26 or higher on the ACT math section, the student is exempt from the college algebra requirement, but will still need to complete the MRP requirement.

All students in or transferring into the School of Health Professions with at least 55 hours of college credit must have completed Math 10 and English 20, or their equivalent, with grades in the "C" range or higher to be admitted into or continue in the School.

The School of Health Professions requirements incorporate all General Education requirements as specified by the MU campus. The student is responsible for making certain that he/she has met graduation requirements for the program and MU.

**TRANSFER STUDENTS** Students wishing to transfer to MU from another accredited institution are subject to the academic regulations established by the faculty. Transfer of credit is described in the Academic Regulations section of this catalog.

**CREDIT BY EXAMINATION** Students who have previously learned enough about a subject to pass an approved, comprehensive examination may be able to receive college credit for this knowledge. Three different programs allow students to gain credit by examination at MU: Advanced Placement Program (APP), Departmental Placement Program (DE) and College-Level Examination Program (CLEP) subject exams. The APP is administered through the high schools, and the CLEP is usually given through a local testing center. For more detailed information, refer to the Credit by Examination section in this catalog. The School of Health Professions accepts credit approved by MU Admissions and earned through these three programs, but any credit awarded cannot duplicate subject

matter that has been previously completed. Students with previous training or experience may be allowed to earn advanced-standing credit through challenge or equivalency evaluation in certain programs.

Contact the Health Professions Student Affairs Office for information pertaining to the awarding of credit for these exams.

# Professional Opportunities

Professional opportunities for graduates in the School of Health Professions are excellent. Graduates serve in schools and in all areas and levels of patient care and management in many types of health-care facilities, hospitals, specialized clinics, nursing homes, home care and other health-care agencies. Graduates in some areas may go into private practice as well as into education and administration.

# Maximum Enrollment

A student may enroll for more than 17 hours only with permission from the associate dean.

# Student Services

**ADVISEMENT** Advisement is considered a major responsibility of the faculty in the School of Health Professions, and every effort is made to give the student the best advisement possible. Each student is assigned a faculty adviser in the student's program of study. In addition to faculty advising, the School also maintains a Student Affairs Office located in 504 Lewis Hall, which is staffed by a professional academic adviser.

It is helpful if the student has selected an area of interest prior to completing the first two years of college. To assist with career decisions, the School of Health Professions offers introductory courses and experiences to provide information and career opportunities in these areas.

**PLACEMENT** Graduates of programs in the School of Health Professions are highly recruited and frequently hired prior to receipt of their degrees. Graduates bring regional and national recognition to the school's programs and to the University. The achievement of these graduates is reflected in the high percentage who serve as deans and directors of schools, department chairs, executive directors of national associations, officers in national agencies and leaders in higher education and health care.

**INSURANCE** Liability insurance coverage is provided for students in the clinical component of the professional major by the University of Missouri-Columbia. Personal health insurance is not provided but is strongly recommended.

# Required Work in Residence

The last 24 semester hours must be completed in residence.

# Student Organizations

Students have the opportunity to become involved in the following student organizations:

**Alpha Eta National Honor Society in Allied Health**
**Local Chapter of National Student Speech-Language-Hearing Association**
**School of Health Professions Student Council**
**Student Occupational Therapy Association**
**Student Physical Therapy Association**
**Student Respiratory Therapy Association**
**Student Radiography Association**
**Student Diagnostic Medical Ultrasound Association**

# Scholarships

Students considered for scholarships must be admitted to the School of Health Professions and continue in the School for the duration of the award.

**Freshman Special Talent Scholarship** is awarded on the basis of academic achievement with an emphasis on community or school health-related activity.

**Student Ambassador and Leadership Program Scholarships** are awarded to full-time students who have completed a minimum of one semester in the School of Health Professions. Ambassadors are selected for a one-year period and commit themselves to a minimum of 30 clock hours of service to the School. Student selection will be based on written and verbal expressions.

**Alumni Scholarships** are awarded to students entering their final undergraduate year of their professional program. The recipients are selected on their academic achievement and participation in school and professional activities.

# The Bachelor of Health Science

**GENERAL REQUIREMENTS** The bachelor of health science degree is granted to candidates who have successfully fulfilled all requirements, including the following:

- A minimum of 120 semester hours of credit with a cumulative grade point average of at least 2.0
- A minimum of the last 24 semester hours of the degree program completed in residence with the School of Health Professions
- Completion of all didactic and clinical requirements of the program

In addition to the academic and clinical education requirements of a program, the student must possess and exhibit those personal qualities and characteristics that are associated with patient welfare and professional trust. These elements are a part of the overall evaluation process for the professional phase of each program. Should it be determined that these qualities are not present in sufficient degree or that satisfactory growth and progress in these areas are not being demonstrated, the student is subject to dismissal from the program.

Fulfillment of all requirements for graduation is the responsibility of the student.

**APPLICATION AND SELECTION DEADLINES** Freshmen and transfer students are enrolled in the School of Health Professions for academic advisement and to complete preprofessional course requirements prior to applying for admission to the major. Priority for admission to all programs is given to residents of Missouri.

Preprofessional students are admitted to candidacy for the degree only when they have been selected to participate in the professional component of a program.

The following table summarizes the application deadlines for the professional component of each program.

| | | Application deadline | Classes begin |
|---|---|---|---|
| Communication Science and Disorders | | Mar. 1, sophomore | Fall |
| Physical Therapy | | Jan. 31, sophomore | Summer |
| Occupational Therapy | priority<br>late | Jan. 31, sophomore<br>May 31 | Summer |
| Radiography | | Feb. 1, sophomore | Summer |
| Nuclear Medicine | | Feb. 1, sophomore | Fall |
| Respiratory Therapy | | Feb. 1, sophomore | Fall |
| Diagnostic Medical Ultrasound | | March 15, sophomore | Summer |

# College of Human Environmental Sciences

## Administration

**Bea Smith,** dean
**Margaret Mangel,** dean emeritus
**Robert Hughes,** associate dean for human environmental sciences outreach and extension
**Richard Dowdy,** associate dean for research and graduate studies
**Victoria Shahan,** student services director

## Departments and Schools

**Consumer and Family Economics**
**Environmental Design**
**Human Development and Family Studies**
**Family and Consumer Sciences Education**
**Nutritional Sciences**
**School of Social Work**
**Textile and Apparel Management**

Programs in Human Environmental Sciences focus on improving the quality of people's lives. Students are prepared for rewarding and interesting jobs in the nation's largest business and manufacturing sectors, as well as education, government, and social service agencies. The college has a national reputation for strong, relevant programs in consumer economics, nutrition and wellness, personal and family finance, design of living and working environments, family stability, human development, community support systems, and textiles and apparel—studies directed toward making people's lives healthier, more manageable, and more fulfilling.

The college is consistently rated as one of the top human sciences programs in the nation. Programs are accredited by the North Central Association of Colleges and Schools, the American Apparel and Footwear Association, the American Dietetic Association, the Foundation for Interior Design Education and Research, the Association for Financial Counseling and Planning Education, the Personal Financial Planning Board of Standards, and the Council on Social Work Education. Accreditation teams have commended the faculty for their academic qualifications, professional competence, productive scholarship, and leadership in their professions.

Basic to the college philosophy is the development of the whole student through effective advisement and leadership experiences in numerous student organizations and service opportunities. Students also have opportunities to meet with industry professionals through advisory board and executive-in-residence programs.

## Admission

Undergraduate students may enter the College of Human Environmental Sciences as freshmen.
***For more information see admission in the University section of this catalog. Some programs may have additional requirements.***

**TRANSFER STUDENTS** Transfer students from other accredited schools and colleges should receive approval from the College of Human Environmental Sciences prior to taking courses in the major area before entering MU. This minimizes the number of additional courses that may be necessary.

Up to 75 hours of credits may be transferred from two- to four-year colleges at any time before graduation.

Courses taken on a pass/fail basis are accepted only if comparable to the MU grading system.

Students in another MU school or college or from other UM System campuses must have cumulative and term grade point averages of 2.0 or better to be eligible for admission to the College of Human Environmental Sciences.

A student ineligible to enroll in another school or college may not enroll in the College of Human Environmental Sciences during the period of ineligibility. An appeal for admission may be made after the period of ineligibility is over.

A student who transfers to the UM System from another institution and then applies for transfer into the college will have the transcript re-evaluated by the college.

For more information on transfer policies, see transfer of credit in the Academic Regulations section of this catalog.
***Questions regarding transfer credit should be addressed to the Student Services Office, 117 Gwynn Hall.***

## Maximum Hour Per Semester Enrollment

A student with a cumulative grade point average below 3.0 must obtain permission from the adviser and the student services director to enroll in more than 17 hours.

## Student Services

**ADVISEMENT** One of the outstanding features of the College of Human Environmental Sciences is its advisement program. It is designed to assist the student in planning a college program, with each student assigned a faculty adviser during the first registration period. In addition, the Student Services Office provides consultation on student problems and concerns.

The student need not select a major until after exploring the various career possibilities. An entering freshman has the first year to explore the departments and school in the college and the combinations of subject areas for positions in fields such as education, health and welfare, business, industry, and government.

All freshmen entering the College of Human Environmental Sciences enroll in Introduction to Human Environmental Sciences. This course emphasizes career decision making, provides an orientation to the campus and the college and brings into focus the role of human environmental sciences in the improvement of the quality of life in the near environment.

**PLACEMENT** Students have the advantage of placement services that cover a wide spectrum of career options. These include business, education and agriculture career services offices on the campus. The Student Services Office and individual advisers provide information regarding procedures and contacts. Career exploration information may be obtained in the Career Center.

## Required Work in Residence

Students must complete a minimum of 45 hours in residence.

## Student Organizations

**Ambassadors**
**American Society of Interior Designers**
**Association of Textile and Apparel Management**
**Consumer Affairs and Personal Financial Management Association**
**Council of Student Social Workers**
**Family, Career and Community Leaders of America Alumni Chapter**
**Human Development and Family Studies Student Association**
**International Interior Design Association**

**Kappa Omicron Nu (Honorary)**
**Nutrition and Wellness Association**
**Phi Alpha (Honorary)**
**Phi Upsilon Omicron (Honorary)**
**Student Council for Human Environmental Sciences**
***More information on the student organizations may be obtained from the Student Services Office, 117 Gwynn Hall.***

# Scholarships and Awards

Inquiries and requests for applications should be made to the Student Services Office, 117 Gwynn Hall, and completed applications returned to Student Financial Aid Office, 11 Jesse Hall.

**Veta Bird Adams Scholarship** An endowment was established in honor of Veta Adams, a member of the faculty for 20 years. The income provides scholarships for students who show professional potential and who earn a part of their college expenses. The award is intended for the special deserving student who may not meet guidelines for other awards.

**Eleanor Blumenthal Graduate Fellowship** This award goes to graduate students in the Department of Human Development and Family Studies. Preference shall be given to students preparing for careers in aiding children who have suffered major trauma in their lives.

**Virginia Hultz Booth Memorial Scholarship** This scholarship is for students who made at least average grades in high school, are in need of financial assistance and are of good moral character. Preference shall be given, but not limited to, females living in Boone County who are studying or majoring in human environmental sciences.

**Lois Bryant Memorial Scholarship** This award is for a black graduate or undergraduate student majoring in human development and family studies.

**Campbell-Harrison Scholarship** Full-time undergraduate or graduate students enrolled in the College of Human Environmental Sciences are eligible for this scholarship. Preference is given to Campbell-Harrison alumni and their descendants.

**Rintha Mary Carter Social Work Scholarship** This fund is established to aid worthy students in the study of social work.

**Marilyn Caselman Memorial Scholarship** This fund is to provide scholarships to students in the College of Human Environmental Sciences.

**Marjorie A. Chollett Memorial Scholarships** Marjorie A. Chollett established this scholarship in her will. Scholarships are awarded to students pursuing degrees in the departments of the College of Human Environmental Sciences.

**Marilyn Coleman Human Development & Family Studies Outstanding Graduate Student Scholarship** This scholarship is given to an outstanding HDFS graduate student who has shown strong academic ability and excellent practical and service skills.

**Henry and Mary Cornelia Crumbaugh Award** This is awarded to a nutritional sciences major for scholastic excellence in chemistry. It was established in the will of Mrs. Roberta Lee C. Hearne in memory of her parents.

**Judith and Joseph Davenport Scholarship in Rural Social Work** This scholarship is given alternately to graduate and undergraduate students in the School of Social Work with an interest in working in rural areas. Preference is given to students from rural areas, and selection is based on academic achievement.

**Isabelle Delaney Memorial Scholarship** This fund provides a scholarship for a junior or senior majoring in dietetics. Selection is based on financial need and above-average scholarship.

**Dickerson Endowment for Textile and Apparel Management** Dr. Kitty Dickerson, chair of Textile and Apparel Management, established this endowment for scholarships, as well as faculty teaching and research activities.

**Elsie Park Duncan Memorial Scholarship** This scholarship is given to a student pursuing a degree in Human Environmental Sciences. The scholarship was established by Elsie Park Duncan and her niece, Mrs. Virginia S. Miller.

**Marian Harpster Dysart College of Human Environmental Sciences Scholarship** Selected recipients shall be residents of the state of Missouri, exhibit academic achievement with a minimum grade point average of 3.00 and must have demonstrated financial need. This award is available to undergraduate students, including incoming freshmen, and may be renewed for a period not to exceed four years as long as the recipient continues to meet the criteria for the award.

**Jane Bierdeman Fike Doctoral Fellowship** Jane Bierdeman Fike, a social worker and longtime friend of the School of Social Work, endowed this fellowship for awards to graduate students in the School of Social Work. Preference is given to doctoral students whose research focuses on public mental health services for the chronically mentally ill.

**Cleo Fitzsimmons Endowment** This provides scholarships, fellowships, program and faculty enhancements. Cleo Fitzsimmons established the endowment because of her strong commitment to consumer and family economics.

**Carl Christian Friedrich, Nevada Susan Friedrich/Dorothy Friedrich Rose Scholarship** This award shall be given to an environmental design student with the best project generated from the interior design studio sequence, which includes Design Studio I, II, and III.

**Flo Dickey Funk Scholarship** Established in memory of Mrs. Funk by her husband, this scholarship is awarded to a student who is in need of financial assistance to attend the University.

**Harold Bailey Gallison Sr. and Sharilyn L.L. Gallison Scholarship** This scholarship is given to students in the College of Human Environmental Sciences. It was established by Mr. and Mrs. Gallison, both graduates of the University of Missouri-Columbia.

**Lawrence H. Ganong Graduate Fellowship** This fellowship is awarded to a graduate student in Human Development and Family Studies who is studying family diversity. The student's career goals should include a commitment to conducting research and/or helping diverse families via education, consultation, and other preventive approaches. Although American families vary in many ways, preference is given to students interested in family structure diversity (e.g. stepfamilies, single-parent families) or families of color. The fellowship was endowed by Larry and Marilyn Ganong, both professors of Human Development and Family Studies.

**Ernest L. Garner Memorial Scholarship** This fund is awarded annually to Missouri residents who are from Carl Junction, Mo., and enrolled in first, agriculture; second, veterinary medicine; or third, human environmental sciences. If there is no suitable applicant from Carl Junction, the scholarship is available to any student from Jasper County. Preference is given to a veteran or a student from a large family.

**Pauline Gillette Garrett Award** Upon Dr. Garrett's retirement from the home economics education faculty, professional colleagues and friends established a scholarship fund in her name. The scholarship is awarded with preference given to those preparing to teach family and consumer sciences.

**Adella Ginter Scholarship** This award goes to a junior in the college who shows professional potential as evidenced by leadership and scholarship.

**Gregory Scholarship** Awarded to students in rural sociology, human environmental sciences, communication, extension or any combination of these areas. Preference is given to graduate students, and priority is given to those demonstrating professional potential. Financial need is considered but is not a determining factor. It is awarded to recipients in human environmental sciences in even-numbered years.

**Walter E. Haas Memorial Scholarship** Established through a gift from Mary Haas in her husband's memory, this award is for a sophomore in the College of Human Environmental Sciences who has a high cumulative grade point average and is enrolled full-time. The scholarship may be maintained a second or third year while an undergraduate. The award also may be a loan for a full-time student.

**G. Maxene Harris Memorial Scholarship** Awarded to graduate students in the Departments of Consumer and Family Economics, Environmental Design, Human Development and Family Studies, Nutritional Sciences, Textile and Apparel Management and the Program of Family and Consumer Sciences Education. Recipients shall be enrolled in the Intensive Writing Program or shall have completed the program. Preference is given to female students and selection is based on merit and academic performance; financial need shall not be a consideration. Recipients expected to gain additional communication skills.

**Florence Harrison Scholarships** Students who are in need of financial assistance and show professional promise are eligible for this award.

**George and Eliza Hechler Memorial Scholarship** This scholarship is awarded to outstanding seniors ranking in the upper half of their class. Recipients must be residents of Chariton County, Mo., enrolled in Agriculture, Engineering or Human Environmental Sciences.

**W.R. Hechler Scholarship** The scholarship is awarded to juniors who graduated from a Chariton County high school, who are majoring in Agriculture, Engineering, Human Environmental Sciences, Forestry, Fisheries and Wildlife, Veterinary Medicine or Education, and are preparing to teach in one of the above areas. Mr. Hechler established the scholarship.

**Adeline Hoffman Award** This award, presented to one graduate student from each department in human environmental sciences, is given to stimulate and reward performance demonstrating excellence in aesthetics, as judged by criteria determined by individual departments.

**Human Development and Family Studies Student Development** provides for the Marilyn Coleman Outstanding Human Development and Family Studies Graduate Student Scholarship in recognition of Professor Coleman's outstanding contributions, as well as her longtime service to the department.

Also provides for the Virginia L. Fisher "Gumption" Award to the senior in Human Development and Family Studies who best exemplifies "gumption" during his/her academic career. Dr. Fisher was the former chair of Human Development and Family Studies.

**Human Environmental Sciences Alumni Board Scholarship** Scholarships are awarded annually to freshmen, sophomores and juniors on the basis of scholarship and need.

**Human Environmental Sciences Senior Scholarship** This award shall be made to a senior student in the College of Human Environmental Sciences. Criteria for selection is based on financial need, the amount the student is contributing toward his/her educational expenses, and recognition of overall activities and academic achievement. Preferences shall be given to a student working his/her way through college.

**Mariana Paull Johns Fellowship in Social Work** This award shall be given to a graduate student in the School of Social Work who has demonstrated financial need. Preference shall be given to a non-traditional student.

**Dorothy Johnson Scholarship** This scholarship is given to a student pursuing a degree in the College of Human Environmental Sciences.

**Mary L. Johnson Scholarship** This is awarded on the basis of professional potential to a student in social science, extension service, human environmental sciences, communications or a combination with another area. Consideration is given to financial need. Preference is given to graduate students.

**Kellwood Company Scholarship in Textile and Apparel Management** One or more annual awards shall be made to a junior, senior, or graduate student in the College of Human Environmental Sciences, Department of Textile and Apparel Management. Selected recipients shall have demonstrated a strong record of academic excellence and have indicated a strong career objective in the softgoods industry.

**Amy Kelly Scholarship** This award goes to worthy junior or senior students in the College of Human Environmental Sciences with preference to applicants considering extension as a profession. The fund was established by the Missouri Association of Family and Community Education in recognition of Miss Kelly's years of dedicated leadership in University extension work.

**Treva Carpenter Kintner/Phi Upsilon Omicron Mature Student Scholarship** The recipient of this award must be at least 30 years old and must have completed 60 credit hours. Selection is made by the Phi Upsilon Omicron Alumni Committee.

**Vera E. Nielson Langford Scholarship** The Vera E. Nielson Langford Scholarship is for scholarship awards to Human Environmental Sciences students who are majoring in the departments found in the College of Home Economics. The fund was established by Mr. Wilbur H. Langford in honor of his wife.

**Margaret I. Liston Consumer and Family Economics Fellowship** This fellowship is awarded to a student in Consumer and Family Economics. It was established by a bequest of Margaret I. Liston. Dr. Liston was a Consumer and Family Economics graduate.

**Martha Jo Martin Memorial Scholarship** This scholarship is awarded to students who exhibit balance in academic achievement, service, and other life dimensions, with special consideration given to leadership potential.

**Edward J. Metzen Graduate Fellowship in Consumer and Family Economics** Awards made to graduate students in Consumer and Family Economics who exhibit academic excellence, show potential, and have a demonstrated financial need. The award may be renewed. The fellowship was endowed by Edward J. Metzen, professor and chair of Consumer and Family Economics.

**Marian Couranz Miller Scholarship in Human Environmental Sciences** This scholarship was endowed as a birthday present to Mrs. Miller by her husband and children. It is given to students in Human Environmental Sciences who have shown financial need.

**Missouri Association of Family and Consumer Sciences Scholarship** Awarded to two second-semester juniors majoring in Human Environmental Sciences; recipients are selected from applicants in four-year colleges throughout the state. Separate application required.

**Missouri Farm Bureau Scholarship** One annual award will be given to a deserving sophomore, junior or senior pursuing a degree in the College of Human Environmental Sciences. Selected recipients shall be children of families holding current Farm Bureau membership or shall hold membership in their own name. Criteria for selection shall be based on academic progress, leadership abilities, financial need, and Farm Bureau membership (either the recipient's parents or the recipient him/herself).

**Mitchell-King Junior Leadership Scholarship** For students entering their junior year, this scholarship is awarded to a student showing professional potential as evidenced by leadership and scholarship. The scholarship is provided by Kate King, a graduate of the college, in honor of her father, Robert Mitchell.

**Marita Monroe Award** Given to a worthy student in food science and human nutrition, the scholarship was established by the Altrusa Club of Columbia in memory of one of their members who was a faculty member in food science and human nutrition.

**Aimee P. Moore Undergraduate Scholarship in Dietetics** Dr. Moore was the director of the medical dietetics program for a number of years before her retirement in 1984. Sophomores entering the dietetics program are eligible. Selection is based on grade point and demonstrated leadership potential.

**Mike Munie Memorial Scholarship** Given to students majoring in Textile and Apparel Management, the scholarship

was established by Michele Fish, a graduate of Textile and Apparel Management, to honor the memory of her brother.

**William Bryan Myers II Memorial Scholarship** This scholarship is awarded to social work students who have demonstrated unusual potential for the field of social work both through academic performance and extracurricular activities. The applicants should be U.S. citizens.

**Virginia Norris Scholarship** Based on scholastic ability, high moral character and financial need, this award is given to a full-time student in the College of Agriculture, Food and Natural Resources or the College of Human Environmental Sciences who is from Shelby County, Mo., or who attended a Shelby County high school.

**Georgianne Dickey Partridge Scholarship** This award shall be given to a student who will graduate from the College of Human Environmental Sciences. Criteria for selection include extreme financial need and acceptable scholastic achievement. The donor understands that those students who must work for part or all of their living expenses do so at the sacrifice of their grades.

**Phi Upsilon Omicron Collegiate Scholarships** Phi Upsilon Omicron, Rho Collegiate Chapter, and various donors endowed this scholarship to provide awards to students in the College of Human Environmental Sciences who are members of Phi Upsilon Omicron. Two annual awards are given: the Treva Carpenter Kintner Outstanding Student Award for the student with the highest grade point average; and the Marilyn Caselman Outstanding Service Award for the student who has shown outstanding leadership and service to the chapter.

**Ream-McClure Freshman Scholarship** This scholarship for a beginning freshman is based on scholarship, leadership, character and need. It is given by Ray and Jean Ream McClure.

**Natalie R. Wheeler/Natalie Reid Scholarship** This award is presented to junior, senior or graduate student(s) in Textile and Apparel Management. Recipient(s) must have demonstrated financial need with academic achievement a secondary consideration.

**Linda Wellons Richichi Award** Environmental Design students with not more than 60 hours may apply for this scholarship, which was named in memory of Linda Richichi, a 1975 graduate of the department. The fund is provided by her family.

**Dr. Arthur J. Robins Scholarship** This scholarship is sponsored by the Crandell Foundation in honor of a former director of the School of Social Work. It is intended for an outstanding student in the mental health concentration.

**Ross Laboratories: Richard Dowdy Award in Undergraduate Nutritional Sciences Research** Award supports undergraduate students and faculty research in Nutritional Sciences. The research must have a clear application to the betterment of the human condition and can be of either a basic or applied nature. A separate application is made with an accompanying research proposal. Ross Laboratories established the fund in honor of Dr. Dowdy, and to support research in Nutritional Sciences.

**Russell Corporation Scholarship** This scholarship, endowed by the Russell Corporation, is awarded to students majoring in Textile and Apparel Management. Preference is given to students who show financial need.

**Doris Saxon Scholarship** Donated by a graduate in honor of a former faculty member, this award is for Textile and Apparel Management majors.

**Maxine Seabaugh Schade Fellowship in Nutritional Sciences** Maxine Seabaugh Schade established this fellowship, which is awarded to outstanding graduate students in Nutritional Sciences in the College of Human Environmental Sciences.

**Sabra Kara Scofield Award in Medical Dietetics** Named after a medical dietetics student who was killed in a car accident in 1983, this award was established by her mother and brother for a senior dietetics student who has shown consistent growth over two years in the program, a sincere and caring spirit for clients and professional potential.

**Bea Litherland Smith Scholarship** This scholarship, endowed by Stephen B. Smith, is awarded to a junior in the College of Human Environmental Sciences. Recipients will have an outstanding record of organizational leadership in the college.

**School of Social Work Alumni Board Scholarship**

**Jerry Tieman Memorial Scholarship** This award is provided by Kaye Tieman, a graduate of the college, in memory of her husband, Jerry. Students must have a 3.0 or better grade point average and participate in extracurricular activities designed to enhance the student's total education. Financial need is considered but is not the primary determining factor.

**Charles Louis and Thelma Ferrell Van Buren Scholarship** For students majoring in agriculture, food and natural resources or human environmental sciences who are in need of financial assistance. Selection is made on the basis of academic performance, good character and financial need.

**Elizabeth Nelson Vemer Minority Scholarship** This scholarship is awarded to a graduate or undergraduate minority student in human development and family studies.

**Tom and Carolyn Wiley Scholarship** Family and friends of Tom and Carolyn Wiley established this scholarship for students completing their junior year in the College of Human Environmental Sciences in the following areas: Environmental Design, Human Development and Family Studies (a child-life major), and Textile and Apparel Management. The award shall be rotated among the three departments, based on demonstrated financial need, with no consideration given to grade point average. Preference is given to students who participate in extracurricular activities.

**Carol Ann Roberson Williams/Dr. Kate Ellen Rogers Scholarship** One or more annual awards shall be made to full-time junior- or senior-level students enrolled in the Department of Environmental Design in the College of Human Environmental Sciences. Selected recipients shall exhibit academic achievement and have a demonstrated financial need.

**Gladys Wyckoff Human Environmental Sciences Scholarship** This is awarded to full-time student(s) in the college.

**Louise A. Young Doctoral Fellowship in Consumer and Family Economics** One or more annual awards shall be made to first-year Ph.D. students, or to students at any stage of active progress toward completion of the Ph.D. program in the Department of Consumer and Family Economics, College of Human Environmental Sciences.

# Special Services

The American Council on Consumer Interests, a national organization that provides a forum for research and discussion on consumer issues and family economics, is housed in the department of Consumer and Family Economics.

Students in Nutritional Sciences can take advantage of the Coordinated Program in Dietetics, incorporating a 900-hour internship into the curriculum. Nutritional Sciences students also can gain undergraduate research experience in the Molecular Mineral Nutrition Laboratory.

The Child Development Laboratory in the Human Development and Family Studies department gives students the opportunity to work with children and parents in the operation and administration of one of the top child-care centers in the nation.

The Textile and Apparel Management department is home to the Missouri Textile and Apparel Center (MO-TAC), which aids in the economic development of textile and apparel producers throughout the state. The Apparel Production Laboratory in the department houses state-of-the-art design and production equipment for student and MO-TAC client use. The department is also home to an extensive historic costume collection.

The School of Social Work offers a distance-learning program leading to the Master's in Social Work degree. This program is offered in Kansas City and Poplar Bluff.

# Professional Opportunities

Careers in the human sciences cover a broad range of disciplines. Graduates work in fields ranging from banking, insurance, customer service and personal finance; to interior design and architecture; dietetics, wellness, and nutrition research;

child development and family counseling and social work; to apparel production management and retail buying and management. New graduates have a wide variety of entry-level positions from which to choose, and the career ladders are extensive and often quite lucrative. Some fields, such as social work and family and consumer sciences education, are experiencing dire shortages of trained professionals.

# Requirements for the BS Degree

The completion of all requirements for graduation is the responsibility of the student. To receive the degree of bachelor of science in human environmental sciences, a student must have met the following requirements:

- Satisfactorily completed a minimum of 120 semester hours, including the required general education and human environmental sciences courses
- Completed requirements for a professional area of competence in one of the departments
- Completed a minimum of 45 hours in residence
- Acquired a minimum cumulative grade point average of 2.0

**DEGREE AUDIT** A degree audit will be prepared for students at the time of each pre-registration. It will include courses completed and those courses remaining that will complete the requirements for a degree. It is the student's "contract" with the college, which assures the student that when the degree program has been completed the student will receive a degree.

When changes in the degree audit are necessary, a Course Substitution form should be filled out, signed by the adviser and returned to the Student Services Office, 117 Gwynn Hall.

Students earning credit from another institution will have a Transfer Equivalencies form completed by their adviser for course work in their professional program. The Student Services Office, 117 Gwynn Hall, will handle all transfer equivalencies for general education courses. This information will be used to update the degree audit each semester. Students are responsible for submitting this form to 117 Gwynn Hall their first semester in the college.

It is the student's responsibility to initiate a graduation check to be certain all requirements are met. An appointment for the graduation check should be made in the Student Services Office, 117 Gwynn Hall, the semester preceding graduation.

**SECOND BS DEGREE** A student may be granted two bachelor's degrees if all requirements for both degrees have been met and the student has completed at least 12 semester hours of course work beyond that required for the first degree.

**MINORS** Each of the departments in the College of Human Environmental Sciences offers a minor to students outside the college. The number of hours required for a minor varies from 15 to 18 hours depending on the department. Minors provide students an opportunity to diversify their educational experience and broaden their course of study. Students who wish to pursue a minor should obtain requirement information in the Student Services Office, 117 Gwynn Hall.

# General Education Requirements

A minimum of 45 hours is necessary to meet the general education requirements for the Bachelor of Science in Human Environmental Sciences degree. Courses should be taken in the classifications shown below. Courses of similar content transferred from accredited schools may be substituted for courses listed. If there is a question about a course, write the Student Services Director, 117 Gwynn Hall. CLEP or other advanced credit is accepted where applicable.

**General Education Requirements:** (39 hours minimum)

**I. *English: 3 hours**
English 20: Exposition and Argumentation
Two writing intensive courses: At least one must be in the major: Prerequisite: English 20 *(Classes may also count as other requirements for the degree.)*

**II. *Mathematics: 3 hours**
Math 10: College Algebra
One Math Reasoning Proficiency course. Prerequisite: Math 10 *(Class may also count as another requirement for the degree.)*

**III. American History or Political Science: 3 hours**
Choose from: History 3, 4, 20, 210, 251, 342, 357, 358 or Political Science 1, 11, 102

**IV. Social and Behavioral Sciences: 9-12 hours**
Choose from courses in Agricultural Economics, Anthropology 1, 50, 80, 110, 153, 154, 170, Black Studies, Economics, Geography, History, Linguistics, Peace Studies, Political Science, Psychology, Sociology, Women's Studies.
- CFE majors must complete Psychology 1 and Sociology 1 and 5 hours of Economics or Agricultural Economics.* Choose from Ag Econ 40 & 41, or Econ 4 or 14 and 5 or 51GH.
- NS: Dietetics majors must complete Psychology 1 and Sociology 1 or Anthropology 1.
- HDFS majors must complete one course in Psychology and one course in Sociology. Anthropology is recommended as a third course.
- TAM majors must complete Economics 4 and 5 and six additional hours from two different departments.

**V. Physical and Biological Sciences: 9 hours**
Students must take at least one course in the Physical Sciences and one course in the Biological Sciences. At least one course must include a laboratory.
- NS majors must complete Biology 1 and 2 and Chemistry 31 and 32.
- HDFS Child Life majors are recommended to take Chemistry 15 or 31 and either Biology 1 and 2 or 10 or Anatomy 201 or 203.
- EDn: Pre-Architecture majors must complete Physics 21.

*Biological Sciences (at least one required):*
Choose from courses in Animal Sciences, Biological Anthropology (149 and 151 OR 150), Biochemistry, Biological Sciences, Fisheries and Wildlife, Food Science, Nutritional Sciences (excluding 34, 134), Forestry, Honors College Science Sequence, Plant Sciences.
*Physical Sciences (at least one required):*
Choose from courses in Astronomy, Chemistry, Geological Sciences, Physics, Engineering, Soil and Atmospheric Sciences.

**VI. Humanistic Studies and Fine Arts: 9 hours**
Choose from courses in Art, Art History, Anthropology 215, Classics, Communication 103, English (other than 20), Foreign Civilization, Foreign Language, Honors Humanities Sequence, Music, Philosophy, Religious Studies, Theatre.
- ***Applied courses are accepted on a department-by-department basis.***
- CFE majors may use some applied courses to fulfill requirement.
- EDn majors must complete Art History 10 or 11, Art 60, and Art 21.
- HDFS majors must take courses from at least two different departments. Up to three hours of applied course work may be included.
- HDFS: Child Life majors must complete Philosophy 331.
- NS majors may use applied courses to fulfill requirement.
- TAM majors may take one applied humanities/fine arts course.
- TAM: International Option majors must complete a

Philosophy: Ethics course.
- NS: Dietetics majors are advised to take a Philosophy: Logic or Ethics course.

**VII. Communication Skills: 3 hours**
Choose from: Communication 75, 271, 275 or Agricultural Journalism 210.

**VIII. *Computer and Information Proficiency**
One course designated as meeting Computer and Information Proficiency requirements. *(Class may also count as another requirement for the degree.)*

**IX. *Capstone Experience**
All majors must complete a capstone experience within the department. This may include a course, an internship or practicum experience, or a thesis or special project. It should be completed during the last two semesters of course work. Please check with your faculty adviser for more information.

*All courses in these categories must be completed with a C- or better, unless otherwise specified by the department.

**Human Environmental Sciences Foundation Courses: 6 hours minimum**
A minimum of two courses outside the student's major are required. These courses must be selected from two different departments and must be chosen from the following list. Freshmen students are required to take HES 10: Introduction to Human Environmental Sciences. If a student enters as a sophomore, HES 10 is strongly recommended. HDFS majors must complete NS 34 and CFE 183.

**Human Environmental Sciences**
HES 10: Introduction to Human Environmental Sciences (1)

**Consumer and Family Economics**
CFE 180: Personal and Family Management (3)
CFE 183: Personal and Family Finance (3)
CFE 185: The Consumer in Our Society (3)

**Environmental Design**
EDn 161: Fundamentals of Environmental Design (3)
EDn 362: Environment and Behavior (3)

**Nutritional Sciences**
NS 34: Current Concepts and Controversies (3)
NS 134: Nutrition and Fitness (3)

**Human Development and Family Studies**
HDFS 150: Principles of Human Development (3)
HDFS 163: Close Relationships in Families (3)
HDFS 175: Introduction to the Study of Families (3)

**Social Work**
SW 25: Social Work and Social Welfare (3)
SW 310: Social Justice and Social Policy (3)

**Textile and Apparel Management**
TAM 184: Introduction to the Textile and Apparel Industry (3)
TAM 187: History of Western Dress (3)
TAM 188: Social Appearance in Time and Space (3)

**Total:** 45-48 hours

**Electives** Electives vary with the student's professional objectives and are chosen by the student in consultation with the adviser. Up to four hours of physical education may be taken for elective credit.

# Human Environmental Sciences Extension

A student who plans to be an extension specialist may choose a subject-matter area of interest. In addition, a master's degree in a subject-matter area generally is required in Missouri.

The student must fulfill the requirements for the chosen major while pursuing the extension objective. Additional electives can be chosen from such areas as adult education, communications and the social sciences.

# School of Journalism

## Administration

**Dean Mills,** dean
**Esther Thorson,** associate dean for graduate studies
**Rob Logan,** associate dean for undergraduate studies

The world's first School of Journalism was established in 1908 at the University of Missouri-Columbia to strengthen the effectiveness of public communications in a democratic society. The faculty has a basic commitment to educate students in the responsibilities and skills of the professional journalist. It also has a broader commitment to advance the profession of journalism through scholarly research, analysis and criticism and through special programs to serve practitioners. The school's first dean, Walter Williams, who went on to become president of the University in 1930, wrote the Journalist's Creed, which stresses the profession's rights and responsibilities as a public trust.

The Missouri Plan assures a journalism graduate the broad, liberal education that is essential for a journalist whose work may span many segments of today's complex society. In addition to a liberal arts education, students complete practical laboratory work in a variety of settings, including a public radio station, a commercial daily newspaper and a network television station.

The school offers the bachelor of journalism, master of arts and doctor of philosophy degrees. Approximately 900 students are enrolled.

The Accrediting Council on Education in Journalism and Mass Communication has accredited the undergraduate program and a professional master's degree.

The school offers cooperative programs with other divisions in the university, combining study in journalism.

## Facilities

The School of Journalism is housed on the north side of campus in Lee Hills Hall, Jay H. Neff Hall, Walter Williams Hall, the Neff Annex and Gannett Hall. Laboratory work is carried on at radio station KBIA, television station KOMU-TV and the *Columbia Missourian.*

***COLUMBIA MISSOURIAN*** Students, supervised by faculty members with professional and academic experience, produce news, editorial, feature, photographic and advertising work on the *Columbia Missourian,* a daily (except Saturday) general circulation newspaper for the city of Columbia and Boone County, and *Missourian Weekly,* a free, total-market-coverage newspaper published Wednesday and Sunday.

**Digmo.com & KOMU.com** These multimedia services on the World Wide Web are written and produced by students with faculty supervision. The sites provide local, regional, national and international news as well as extensive hyperlinks to information resources.

**GLOBAL JOURNALIST** The magazine of the International Press Institute is edited and produced by students and faculty.

**JOURNALISM LIBRARY** The Frank Lee Martin Library in Walter Williams Hall receives 130 newspapers, including at least one daily from most states and one from every major foreign country. It receives 200 periodicals relating to the philosophies and practices of journalism and contains 25,000 volumes relating to journalism. The journalism library is a branch of the University of Missouri-Columbia library system, which contains more than 2.6 million volumes and an equal number of microfilm files. Online access to computer databases is available at the journalism library.

**KBIA** MU's public FM radio station covers central Missouri with a 100,000-watt stereo signal. The School of Journalism produces a full schedule of news and public affairs programming on the station, an affiliate of National Public Radio.

**KOMU-TV** The University of Missouri-Columbia operates its own commercial television station on Channel 8. As on the *Missourian* and KBIA, students work with professional faculty and staff members at the station to prepare and broadcast daily news reports from early morning through 10 p.m. and to produce public affairs and other broadcasts. KOMU-TV is an NBC affiliate.

***Vox: Voice of Columbia,*** a magazine and entertainment supplement, is photographed, written and edited by magazine and photojournalism students.

## Service to the Profession

Since its inception, the school has had the support and respect of professional journalists. The tradition of support that began in 1920 with an alumnus's gift to build Neff Hall continues today. A major gift from the Knight Foundation and donations from other friends of Lee Hills, longtime executive for Knight-Ridder newspapers and a former student in the school, funded Lee Hills Hall, a 42,000-square-foot facility dedicated in 1995. It houses the *Columbia Missourian,* the Digital Missourian, and the photojournalism and magazine journalism programs.

**BROADCAST JOURNALISM** Since 1983, professional news directors come to the school each spring to review scores of radio and television news reports that were winners at regional levels, and select the national winners of the Radio-Television News Directors Association's Edward R. Murrow Awards.

**BROADCAST MANAGEMENT** Current and aspiring news executives come to Columbia each summer for the MU/RTNDA Management Seminar for News Executives. The school's Leonard H. Goldenson Professor of Local Broadcasting conducts the highly-praised management training sessions with support from the Radio-Television News Directors Association.

**FREEDOM OF INFORMATION CENTER** The Freedom of Information Center, established in 1958, is a special library that indexes newspaper and magazine articles on information access and press freedom in support of the school's teaching and research functions. The Center responds annually to more than 1,000 requests from journalists, attorneys, public officials and scholars for data on governmental, societal and economic controls of information.

**INVESTIGATIVE REPORTING** Investigative Reporters and Editors Inc. established its national headquarters at the School of Journalism in 1978. IRE, organized in 1975, has more than 3,000 members. It provides educational services to reporters, editors and others interested in investigative journalism and seeks to foster high professional and ethical standards. The quarterly *IRE Journal* examines successful investigative projects and includes how-to tips and techniques.

**MINORITY STUDENT DEVELOPMENT** Recruiting talented minority high school and college students for journalism careers is a year-round school goal. The school, the Dow Jones Newspaper Fund of Princeton, N.J., and Missouri newspapers have offered a two-week summer Urban Journalism Workshop since 1971. A Minority Broadcasting Workshop operates concurrently. Sponsors include the school and the Missouri Broadcasters Association.

**MISSOURI MEDALS** Every year since 1930, the School of Journalism has given medals honoring those who have distinguished themselves in the field of journalism. The medals are awarded in the fall of each year. Missouri Honor Medals are based on records of performance rather than on particular instances of journalistic achievement. Nominations are accepted prior to January 30 of each year.

**PHOTOJOURNALISM** The Pictures-of-the-Year competition, established in 1943, selects the best photojournalism from newspaper, magazine and picture editing categories. More than 30,000 photos are submitted annually in the world's largest news-oriented photo contest. The competition is co-sponsored with the National Press Photographers Association under an educational grant from Canon USA and Fuji Photo USA Inc.

The school also conducts the annual College Photographer of the Year competition.

A one-week Photojournalism Workshop has been held each year since 1945 in a Missouri town. Professional photographers produce picture stories under the direction of a faculty of outstanding photographers and editors.

**SERVICE JOURNALISM** Beginning in 1986 under an endowment from a major multi-media company, the Meredith Corporation, the school has sponsored workshops and research on service journalism. The communications concept concentrates on techniques bringing readers and viewers news and information that they need and can use on a fairly immediate basis.

**SCHOLASTIC JOURNALISM** The Missouri Interscholastic Press Association has offered seminars and competitions since 1923. The press association headquarters at the School of Journalism publishes newsletters and provides annual critiques. A one-week Summer Media Workshop, begun in 1956, develops skills for high school students and teachers.

High School Journalism Awards Day, in the spring, honors the Missouri Journalism Teacher of the Year, the Administrator of the Year, the Student Journalist of the Year and individual winners in newspaper, yearbook and broadcasting competition.

**SCIENCE JOURNALISM** The Science Journalism Center was established at the school in 1986 to fill a longtime need for an independent organization to help journalists prepare science and biomedical news stories.

**SOCIETY OF AMERICAN BUSINESS EDITORS AND WRITERS INC.** It is located within the School of Journalism. SABEW was formed in 1964 to promote superior coverage of business and economic events and issues.

# Admission Requirements

Admission to the school is competitive and done by individual sequence. Students must complete an acceptable pre-journalism course of study, earn an appropriate grade point average and complete the admissions procedures announced by the school. The bachelor of journalism degree requires 39 hours of journalism and 84 hours of non-journalism credits. At least 65 of the 84 hours of non-journalism must be hours from the College of Arts and Science.

The School of Journalism's requirements were current as this catalog went to press. The School of Journalism reserves the right to make changes in its undergraduate requirements. For updated information, please contact the school's academic advisers, or visit our Web site: http://jour.missouri.edu.

**GRADE POINT REQUIREMENTS** Students declare their intended sequences when applying to the school. Enrollment limits are established for each sequence, with 90 percent of those admitted chosen on the basis of grade point average and the other 10 percent on the basis of grades and other criteria, such as demonstrated commitment and improvement in sophomore year grades.

**COURSE REQUIREMENTS** The school requires the completion of a course of study that includes at least 60 semester credit hours of work at MU or another accredited two- or four-year institution.

**English Composition:** This requirement may be met by completing one or more of the following: English 20: Exposition & Argumentation (3) with a grade of B or better; or with a grade of C and a satisfactory score on the Missouri College English Test. It is not possible to test out of this requirement; however, students with an AP English composition score of 4 or 5 may substitute English 120 for English 20. Two Writing Intensive courses are required after completion of English 20 or 120.

In addition, students whose native language is not English must present a TOEFL (test of English as a foreign language) score of at least 600.

**Foreign Language:** Unless students have completed four or more years in a single foreign language in high school, they must complete 12-13 hours in a single foreign language at the college level. The final three-hour course may be taken the first semester in the School of Journalism. In this case, it will count as elective credit. Placement and proficiency exams are available in French, German and Spanish.

**Biological, Mathematical, Physical Science:** Nine hours are required. Introductory Statistical Reasoning (Statistics 25*) is required; however, Elementary Statistics (Statistics 31*) or its equivalent in transfer will be accepted under certain circumstances. You will also need an additional six hours from the following areas: biological anthropology, astronomy, biology, chemistry, computer science 103, geology, math*, physics. One course must include a lab.
*College Algebra, with a C-range grade is a prerequisite.

**Science Electives:** Five or six hours are required in behavioral or additional biological, physical, or mathematical sciences. You will need to complete these hours in courses from the following areas: anthropology, astronomy, biology, chemistry, computer science, geology, math*, physics, psychology or sociology.

**Social Science:** Nine hours are required. American History (History 3, 4, 251 or 20) ***OR***: American Government or Introduction to Political Science (Political Science 1 or 11). Microeconomics (Econ 4). Plus three additional hours from Economics, History or Political Science. Pre-advertising majors must complete both micro (Econ 4 or 14*) and macroeconomics (Econ 5). Please note: Economics 4 is a prerequisite for Economics 5. Economics 5 will complete the additional hours requirement for pre-advertising students.
*College Algebra, with a C-range grade is a prerequisite.

**Humanistic Studies:** Eight hours are required (three hours of American or British literature; choose Eng 5, 15, 16, 102, 103, 104, 105, 108, 135, 189, 204, 208, 215, 216, 225, or 226; plus five hours in two of six areas): 1) communication or theater (Comm 103; Theater 6, 44, 160, Eng 91, 92); 2) history or appreciation of art or music; 3) humanities (Honors 101-104 or 130GH); 4) non-U.S. civilization or classics; 5) philosophy; and 6) religious studies.

**Journalism:** Pre-journalism students must complete J 200, Principles of American Journalism, and J 105, News, with a C-range grade or better in order to be considered for admission to the school.

Principles of American Journalism, J 200, should be taken during the first semester of the sophomore year. You must have sophomore standing (30 credit hours), have a minimum cumulative grade point average of 2.5, and have satisfied the English composition requirement in order to be eligible to enroll.

News, J 105, should be taken during the second semester of the sophomore year. You must have a minimum cumulative grade point average of 2.75, have satisfied the English composition requirement, and you must be enrolled in any remaining pre-journalism requirements. A consent card, available from Jill McReynolds, is required to enroll in the course.

**CREDIT REQUIREMENTS**

- CLEP (College Level Examination Program) Advanced Placement and bonus credit: The school will accept credit by examination toward entrance requirements; credit will be evaluated on an individual basis. It is not possible to test out of the English composition requirement.
- Credit earned as a high school student: The School of Journalism may recognize course work completed by high school students in other institutions of higher education provided it appears on a transcript from an accredited college or university and was not used toward high school graduation.
- Unacceptable college courses: The school accepts no journalism or communication credits in transfer. In certain instances, students may be excused from repeating some introductory journalism courses, but they are still required to complete a minimum of 39 hours of journalism credit at MU. The school does not accept credit in basic military science, basic physical education, typing or shorthand; no more than three hours of applied or performance music, dance, drama or studio art, or courses considered professional education for other disciplines.
- Junior college course work: Students may offer for admission a maximum of 64 hours of junior college work. Junior college work taken after admission to the school is not acceptable.
- Word processing skill: Journalism courses require the use of the typewriter or computer. Students must demonstrate word processing proficiency.

**APPLICATION AND ADMISSION DEADLINES** Incoming students who have met the University admission requirements will be admitted as pre-journalism students in the College of Arts and Science. All incoming students must have high school and college transcripts submitted directly to the admissions office from each school attended.

Pre-journalism students in residence must complete a transfer of division application with the Office of Admissions, 230 Jesse Hall. The deadlines for applying for admission to the School of Journalism are Feb. 15 for admission in the summer and fall semesters and Sept. 15 for admission for the winter semester.

## Maximum and Minimum Enrollment

A student who has established a 3.0 grade point average the previous year may carry 17 or 18 hours, and one who has established a 4.0 GPA may carry 19 hours. In both instances, special permission of the dean is required.

## Satisfactory/Unsatisfactory Grading System

No student may take a required course or a course in a required area S/U either before or after admission to the School of Journalism.

## Required Work in Residence

Students must complete 33 credit hours in professional journalism courses on this campus.

## Graduation Requirements

Upon admission to the School of Journalism, students are assigned advisers in their major field who assist them in planning programs. However, fulfillment of all requirements for graduation is the responsibility of the student.

Early in the semester preceding the one in which the student expects to complete degree requirements, the student must file an application for graduation with the dean and at the same time supply requested information for his or her permanent file.

If the student wishes to have records checked for possible graduation with honors, that must be indicated on the application. Graduation with honors is based on the final 60 hours in residence. Cum laude—3.5; magna cum laude—3.7; summa cum laude—3.9. The student must have a minimum of 60 hours in residence at MU to be considered for graduation with honors.

The School of Journalism confers one undergraduate degree, the bachelor of journalism (BJ). To obtain the degree, students must:

- Be regularly admitted to the school
- Complete at least 33 hours of acceptable journalism course work
- Complete at least 30 hours of acceptable course work outside the school
- Earn a cumulative grade point average of at least 2.0 for all work taken while in the School of Journalism and a grade point average of at least 1.67 for all journalism courses

**COURSES REQUIRED OUTSIDE OF JOURNALISM**
Twenty-four hours numbered 100 or above are required from these areas:

**Behavioral, Biological, Physical and Mathematical Science:** At least three hours are required from one of eight areas: anthropology, biology, computer science, psychology, physical science, sociology, statistics or mathematics.

**Social Science:** At least six hours are required from two of four areas: economics, history, political science or geography.

**Humanities:** At least six hours are required from two of six areas: history or appreciation of art or music, non-U.S. civilization or classics, humanities, literature, philosophy, appreciation of communication and theater, religious studies.

**Upperclass, Non-Journalism Electives:** Nine hours are required and all must be numbered 200 or above or 100 GH or above.

**GENERAL ELECTIVES** In addition to the 24 hours listed above, students must take any general electives necessary to complete a minimum of 84 hours non-journalism. Any course acceptable to the school and adviser is allowed.

**COURSES REQUIRED IN JOURNALISM**
Students must complete 39 credit hours in professional journalism, including these core courses:

**ADVERTISING**
J 302: Cross Cultural Journalism
J 303: Solving Practical Problems or
J 309: History of American Journalism

**Core**
J 319: Principles of Strategic Communication
J 321: Strategic Writing I
J 333: Strategic Communication Research I
J 336: Strategic Design and Visual I

**Journalism Electives** (12 hours required)
**Suggested Advertising Electives:** J 318, Media Sales; J 322, Psychology in Advertising; J 323, Advanced Media Sales; J 326, Broadcast Advertising; J 327, Mail-Order Advertising; J 328, Retail Advertising; J 329, Strategic Writing II; J 330, Media Planning; J 331, Strategic Communication Management; J 332, Public Relations; J 334, Global Communication; J 335, Impact of Advertising; J 337, Advertising Design; J 339, Advertising Law & Ethics; J 364, Organizational Communication in Public Relations.
**Capstone course** (select one—3 hours. Must be taken during the final semester) J 324: Strategic Campaigns

*Marketing:* Advertising students must complete six hours of upper division marketing credit. Three of the six must be Marketing 204 or its equivalent in transfer. These hours take the place of six of the nine hours of upper division electives required of all journalism students.

**BROADCAST NEWS**

J 302: Cross-Cultural Journalism
J 303: Solving Practical Problems or
J 309: History of American Journalism

**Broadcast News Core**

J 351: Broadcast News I
J 352: Broadcast News II
J 353: Broadcast News III

**Journalism Electives** (12 hours required)

**Suggested Electives:** students should consult their faculty advisers to select electives that are appropriate to their area of interest, whether within or outside broadcasting.

**Capstone course** (select one—3 hours. Must be taken during the final semester)

J 356: Advanced Internet Applications or
J 359: Seminar in Radio/TV News or
J 389: Media Management and Leadership

**PHOTOJOURNALISM**

J 302: Cross-Cultural Journalism
J 303: Solving Practical Problems or
J 309: History of American Journalism

**Core**

J 306: Reporting
J 340: Fundamentals of Photojournalism
J 331: Advanced Techniques in Photojournalism
J 342: Staff Photography

**Journalism Electives** (12 hours required)

**Suggested Electives:** J 311: Advanced Newspaper Editing and Design; J 343: Electronic Photojournalism; J 346: History of Photojournalism; J 347: Visual Communication; J 362: Magazine Design; J 377: Newspaper Graphics Desk Management.

**Capstone course** (select one—3 hours. Must be taken during the final semester)

J 344: The Picture Story & Photographic Essay, or
J 412: Photography in Society

**NEWS EDITORIAL**

J 302: Cross-Cultural Journalism
J 303: Solving Practical Problems or
J 309: History of American Journalism

**Core**

J 110: Editing
J 306: Reporting
J 310: Newspaper Editing
J 369: New Media

**Journalism Electives** (9 hours required)

**Suggested Electives:** J 307: Advanced Reporting; J 314: Computer-Assisted Reporting; J 315: Reporting of Public Affairs; J 316: Science Writing; J 319: Principles of Strategic Communication; J 320: Editorial Writing; J 360: Intermediate Writing; J 361: Advanced Writing.

**Students whose focus is in Editing or Design are encouraged to consider these electives:** J 140: Basic Press Photography; J 311: Advanced Newspaper Editing and Design; J 336: Graphics; J 347: Visual Communication; J 362: Magazine Design; J 363: Magazine Editing.

**Capstone course** (Must be taken during the final semester)

J 390: Journalism and Democracy

**Design sequence—**same as above except students can substitute J 311: Advanced Newspaper Editing and Design for J 369: New Media.

**MAGAZINE**

J 302: Cross-Cultural Journalism
J 303: Solving Practical Problems or
J 309: History of American Journalism

**Core**

J 306: Reporting
J 360: Intermediate Writing
J 362: Magazine Design
J 363: Magazine Editing

**Journalism Electives** (9 hours required)

**Suggested Electives:** J 140: Basic Press Photography; J 307: Advanced Reporting; J 311: Advanced Newspaper Editing and Design; J 314: Computer-Assisted Reporting; J 315: Reporting of Public Affairs; J 316: Science Writing; J 332: Public Relations; J 320: Editorial Writing; J 364: Organizational Communication in Public Relations; J 369: New Media.

**Students whose focus is in Editing or Design are encouraged to consider these electives:** J 140: Basic Press Photography; J 311: Advanced Newspaper Editing and Design; J 336: Graphics; J 347: Visual Communication; J 362: Magazine Design; J 363: Magazine Editing.

**Capstone course** (select one—3 hours. Must be taken during the final semester)

J 361: Advanced Writing, or J 365: Magazine Production or J 368: Magazine Publishing

**Design sequence as above except students can substitute** J 311: Advanced Newspaper Editing and Design or J 336: Graphics for J 360: Intermediate Writing.

**Semester by semester**

**ADVERTISING:**

| | |
|---|---|
| Semester One: | J 319: Principles of Strategic Communication |
| | J 333: Strategic Communication Research I |
| | J 336: Strategic Design and Visual I |
| Semester Two: | J 302: Cross-Cultural Journalism |
| | J 321: Strategic Writing I |
| | J 304: Communications Law |
| Semester Three: | J 303: Solving Practical Problems or |
| | J 309: History of American Journalism |
| | Journalism elective (3 hours) |
| Semester Four: | J 324: Strategic Campaigns |
| | Journalism electives (6 hours) |

**PHOTOJOURNALISM:**

| | |
|---|---|
| Semester One: | J 340: Fundamentals of Photojournalism |
| | J 303: Solving Practical Problems or |
| | J 309: History of American Journalism |
| | J 304: Communications Law |
| Semester Two: | J 302: Cross-Cultural Journalism |
| | J 306: Reporting |
| Semester Three: | J 342: Staff Photojournalism |
| | Journalism elective (3 hours) |
| Semester Four: | Capstone Course |
| | Journalism electives (6 hours) |

**BROADCAST NEWS:**

| | |
|---|---|
| Semester One: | J 304: Communications Law |
| | J 303: Solving Practical Problems or |
| | J 309: History of American Journalism |
| | J 351: Broadcast News I |
| Semester Two: | J 302: Cross-Cultural Journalism |
| | J 352: Broadcast News II |
| | Journalism elective (3 hours) |
| Semester Three: | J 353: Broadcast News III |
| | Journalism elective (3 hours) |
| Semester Four: | Capstone course |
| | Journalism electives (6 hours) |

**MAGAZINE:**

| | |
|---|---|
| Semester One: | J 302: Cross-Cultural Journalism |
| | J 306: Reporting |
| Semester Two: | J 303: Solving Practical Problems or |
| | J 309: History of American Journalism |
| | J 304: Communications Law |
| | J 360: Intermediate Writing |
| Semester Three: | J 362: Magazine Design |
| | J 363: Magazine Editing |
| | Journalism elective (3 hours) |
| Semester Four: | Capstone Course |
| | Journalism electives (6 hours) |

**NEWS EDITORIAL:**

Semester One: J 110: Editing
J 303: Solving Practical Problems or
J 309: History of American Journalism
J 304: Communications Law
Semester Two: J 302: Cross-Cultural Journalism
J 306: Reporting
Semester Three: J 310: Newspaper Editing
J 369: New Media
Journalism electives (6 hours)
Semester Four: Capstone Course
Journalism elective (3 hours)

# Special Programs and Cooperative Agreements

The School of Journalism welcomes cooperative agreements with other disciplines. It expects those programs to enhance and to provide a base for graduate work later.

The school offers students from other disciplines a program designed to provide an understanding of the news process — an understanding valuable to students and to the communications industry — and to allow them to enter the school's graduate program without delay on completion of a bachelor's degree.

The school expects that cooperative agreements will result in formal programs of 12 to 15 hours of undergraduate study in each discipline by interested journalism students.

Students from other divisions with junior or higher standing may take non-laboratory courses in journalism without being admitted to the school. Permission of the journalism dean (initials on enrollment card) is required. Because of crowding in the school's media, courses directly related to the three media are usually not open to the outside students while they are undergraduates in other disciplines. Students from other schools or colleges admitted to journalism courses are expected to meet the course prerequisites and grade point requirement equal to that of students in the School of Journalism.

**AB/BJ COMBINATION** In order to receive two bachelor's degrees, a student must complete a minimum of 132 semester hours and complete all of the specific requirements for both degrees. Normally, a minimum of one additional semester is required for both degrees. Each candidate for a dual degree is assigned an adviser in the journalism school and in the department of major interest in the College of Arts and Sciences.

**AGRICULTURAL JOURNALISM** The College of Agriculture, Food and Natural Resources, in cooperation with the School of Journalism, offers an interdivisional BS Ag degree in agricultural journalism.
***For more information, see Agricultural Journalism in the Departments and Courses section of this catalog.***

**BUSINESS AND ECONOMICS REPORTING** To obtain the degree of bachelor of journalism with a concentration in business and economics reporting, students must meet requirements for the news-editorial major and pass Journalism 338: Business and Economics Reporting. They also must complete 12 hours of courses in the College of Business or in the Department of Economics. A student interested in pursuing work toward a master's degree in journalism with some specialization in business journalism may do so by completing the professional and research courses regularly required for the degree. The student's program should also include a selection of graduate-level courses in the College of Business or in the Department of Economics, which are approved by the student's adviser.

**MANAGEMENT** Requirements for obtaining the degree of bachelor of journalism with a concentration in management are as follows:

- The student must be regularly admitted to the school.
- The student must meet the requirements for any one of the five sequences in the school and pass J 399: Management in Media.
- The student must complete 12 credit hours of courses in the College of Business. The following courses are highly recommended:
  Acct 36: Accounting I (3)
  Acct 37: Accounting II (3)
  Mgmt 310: Personnel Management (3)
  Mgmt 311: Collective Bargaining (3)
  Mgmt 329: Organizational Behavior (3)
  Mktg 204: Principles of Marketing (3)
  Mktg 309: Marketing Management (3)
  Financ 203: Corporation Finance (3)
- The student must pass one of the following two-credit courses in the School of Journalism:
  J 328: Retail Advertising
  J 331: Advertising Management
  J 357: Issues in Broadcast Management (2-3)
  J 368: Magazine Publishing
- The student must complete a total of 123 credit hours and otherwise meet the conditions and regulations governing the awarding of the BJ degree. The student may earn six hours of upperclass credit in the College of Business.

**PUBLIC AFFAIRS JOURNALISM** The purpose of this program is similar to that of the sociology-journalism program: to prepare students for graduate work. Political science students with a minimum of 60 credit hours may include up to 13 hours of journalism in their BS program in public administration. Journalism courses recommended include:

Jou 105: News
Jou 200: Principles of American Journalism
Jou 306: Reporting
Jou 304: Communications Law

While it is hoped the students will go on to graduate school in journalism, the value of journalism courses is obvious for city officials who may never go beyond the bachelor's degree.

**PUBLIC RELATIONS** There is no public relations sequence in the School of Journalism. Students preparing themselves for work in that area should follow the magazine sequence, news-editorial sequence, or advertising sequence.

**SERVICE JOURNALISM** This is a magazine program that prepares students to work on service-oriented periodicals by taking specially-oriented courses in magazine writing, editing and publishing. The program is advised by the Meredith Professor of Magazine Journalism.

**SCIENCE, MEDICAL AND ENVIRONMENTAL REPORTING** Students who wish to take science, medical or environmental writing as an area of concentration may do so while enrolled in the news-editorial or magazine sequence leading to a bachelor of journalism degree.

**ENVIRONMENTAL REPORTING** This is an MA program that combines 12 hours in the School of Natural Resources with about 33-34 hours of course work within the School of Journalism. The program provides highly specialized education in environmental reporting, including advanced training in evaluating scientific information. Full access to School of Journalism and School of Natural Resources faculty and facilities is provided. Some courses are team-taught by faculty from both schools. Degree candidates have thesis or professional project options within the School of Journalism.

**The following requirements apply to students seeking an area of concentration in science, medical and environmental reporting:**

- The student must be regularly admitted to the School of Journalism

- The student must complete at least 33 hours in journalism, including:
  J 105: News (3)
  J 110: Editing (3)
  J 200: Principles of American Journalism (3)
  J 306: Reporting (3)
  J 309: History of American Journalism (3)
  J 310: Newspaper Editing (3)
  J 316: Science Writing (3)
- The student must complete at least 30 hours in the physical, biological and social sciences, and environment studies. Students should see the faculty coordinator for these areas for listings of suggested courses.
- The student must complete a total of 123 credit hours and otherwise meet requirements for the BJ degree.

**SOCIOLOGY-JOURNALISM** This program permits journalism undergraduates to enter the Graduate School for work in sociology and sociology undergraduates to enter the Graduate School for work in journalism, having already taken as many required courses as possible.

Journalism undergraduates may take up to 12 hours of sociology courses under the direction of an adviser in sociology. Sociology undergraduates may take up to 16 hours of non-media courses in journalism, with the help of a journalism adviser. Sociology students become eligible to take journalism courses when they have earned 60 credit hours. Journalism students may take sociology courses without being part of a formal program.

# Academic Policies

**SEMESTER CREDIT HOURS (Maximums and Minimums)** The hour, which is the unit of credit given at the University, is the equivalent of a subject pursued one period a week for one semester of 16 weeks.

A student in the School of Journalism may take no more than 16 hours a semester, except that an undergraduate student who has established a B average the year before may carry 17 or 18 hours, and one who has established an A average may carry 19 hours. In both instances, special permission of the dean is required.

A student may take no more than 10 hours of journalism courses per semester.

**PROBATION, SUSPENSION AND DISMISSAL** Journalism students are placed on probation when either their journalism or their overall (term or cumulative) grade point average falls below 2.0. Students may remain on probation no more than one term. They regain good standing when their term and cumulative grade point averages, for journalism and overall, climb to 2.0 or higher.

Students may be placed on academic probation and may be declared ineligible to enroll if they neglect their academic duties.

Students are suspended and become ineligible to enroll for a period of one regular semester when their term grade point average (journalism or overall) is below 1.5, when they pass less than one-half of their work in any term or when they are on probation and their term grade point average is 2.0 or lower.

Students are dismissed and become ineligible to enroll for a period of one calendar year when their term grade point average (journalism or overall) is below 1.0, when they pass less than one-fourth of their work in any term or when they fail to perform their academic duties.

A student who has been declared ineligible to enroll may be readmitted only on the approval of the dean of the school or college in which the student desires to enroll. As a condition of readmission, the dean may set forth stipulations with regard to minimum standards of academic work that must be maintained by the student. If the student, after readmission, again becomes ineligible to re-enroll, his or her ineligibility normally is considered permanent.

**PASS/FAIL GRADING** A student may take a maximum of one Satisfactory/Unsatisfactory course each academic term.

A student receives a grade of Satisfactory for C or higher, and Unsatisfactory for D or lower. S/U courses are not available to students on scholastic probation.

Courses taken on an S/U basis are not used in calculating a student's grade point average.

No course specified as an admission or graduation requirement may be taken on an S/U basis. Only elective, non-journalism courses may be taken S/U.

**ETHICS OF JOURNALISM** The School of Journalism is committed to the highest standards of academic and professional ethics and expects its students to adhere to those standards. Students are expected to observe strict honesty in academic programs and as representatives of school-related media.

Should any student be guilty of plagiarism, falsification, misrepresentation or other forms of dishonesty in assigned work, they may be subject to a failing grade from the course teacher and such disciplinary action as may be recommended pursuant to University regulations.

**ADDING AND DROPPING CLASSES** Students may change their original enrollment only with the approval of their adviser and the dean. No student may register in the school or in any course (other than problems, special readings or research) after the expiration of one week beginning with the first day of classes in regular session or the equivalent thereof in a shorter session.

Students may withdraw from a course without penalty until six weeks after the semester begins.

Students who withdraw from a course after the six-week period are eligible to receive a grade of W if they are making a grade of D or better in the course.

Students who wish to withdraw from a course must process the appropriate form no later than four weeks before the last scheduled day of classes.

The add/drop procedure may begin on the first day of classes of each term and can be initiated only by the student.

Cessation of attendance in a given class does not constitute a formal withdrawal and attending a course without officially petitioning does not entitle a student to receive credit for the course. Petitions are not approved retroactively; therefore, changes in class schedules should be effected immediately. Add-drop forms are available in 120 Neff Hall.

**SUMMER SESSION** The School of Journalism offers two summer sessions in which most of its media laboratory courses are offered. The first session begins in mid-May; the second in early July. Students may combine one or both of the sessions with the regular University summer session if their enrollment does not exceed nine hours at any one time.

Many non-media journalism courses, including graduate courses, are offered in the regular University summer session. Courses offered in the journalism summer sessions include those courses in which lab work is completed under faculty supervision on the *Missourian,* KBIA and KOMU-TV.

Classes are smaller in the summer sessions, and students have the opportunity to consult on a one-to-one basis with faculty members. Because labs are smaller, students' opportunities are much greater for obtaining publishing and broadcasting experience.

**INTERSESSION** An intersession is offered during the December break. Enrollment is limited, and work is in laboratory courses only.

In a term preceding a student's enrollment in intersession, the student must enroll in J 392: Intersession Colloquium (1) for the lecture portion of the intersession course.

Students who wish to do some of their work in December intersession should make arrangements for enrollment with the instructor of the intersession courses as the fall term begins.

**INDEPENDENT STUDY** J 309: History of American Journalism (3) and J 380: High School Journalism (2) are offered by correspondence for students who have completed at least 60 hours of college work. Students pursuing the BJ degree are required to take J 309 on campus. Students who are interested

in high school journalism but are unable to attend summer school are urged to take this course through the Center for Independent Study.

A maximum of six hours credit, approved in advance by the dean of the School of Journalism, may be earned through independent study and accepted as partial fulfillment of the requirements for upperclass arts and sciences.

**GRADUATE-LEVEL COURSES** Undergraduate students should not be enrolled in 400-numbered courses, which are intended for graduate students only. The exception is undergraduates who have dually enrolled in journalism and the Graduate School.

Students may dually enroll if they are in the top half of their class, are within 15 hours of graduation and have the approval of both associate deans.

# Student Services

**ADVISING** Prejournalism students have a full-time academic adviser in the Journalism School. Students admitted to the school also have a full-time academic adviser as well as a faculty adviser from their selected sequence. Students are expected to seek the advice of their academic adviser and faculty adviser in the selection of appropriate courses.

The school provides advising checklists on which students are expected to maintain their record of academic course work. The forms will be used by the student and adviser to plan the student's program.

Students are responsible for determining an appropriate schedule of courses each semester; however, the course schedule should be approved by the student's adviser. The responsibility for meeting the admissions and graduation requirements rests with the student.

**CAREER SERVICES** The School of Journalism maintains a placement center to help its graduates find jobs. The office coordinates on-campus interviews for students with newspapers, magazines, advertising agencies, corporations and press associations and helps students get two hours credit for their summer internships. The school is proud of the placement of its graduates in journalism-related jobs. The placement center maintains a job line board and mails out a job bulletin to alumni. The School of Journalism does not guarantee placement, but does assist in every way possible graduates seeking employment.

# Student Organizations

**Advertising Club** is an affiliate of the American Advertising Federation, the largest advertising trade association in the world. The advertising honorary, Alpha Delta Sigma, was founded at the University and is now administered by AAF. The club schedules speakers and sponsors visits to major advertising centers such as New York and Chicago. The club competes in the annual AAF student case study competition.

**Alpha Delta Sigma** is a national honorary society that recognizes outstanding scholastic achievement among students of advertising. Founded on this campus in 1913, the society now is sponsored by the American Advertising Federation and honors those students who have demonstrated distinct talent and ability in their academic endeavors.

**Kappa Alpha Mu,** a national professional photojournalism honor society, was founded April 20, 1945, at the University of Missouri-Columbia to promote better photographic journalism. A grade of C or better in all other subjects, a probationary period of pledgeship and a grade of B in photographic work are required.

**Kappa Tau Alpha** is an honorary national society for journalism students. Membership is based on scholastic standing, with the top 10 percent of students eligible. The object of the society is the promotion of scholarship and high ideals among students preparing for journalism careers. Kappa Tau Alpha was founded March 31, 1910, at the University of Missouri-Columbia. This chapter is now named the Frank Luther Mott Chapter. Each year the national fraternity presents the Frank Luther Mott Kappa Tau Alpha Award for Printed Research in Journalism. The national headquarters of Kappa Tau Alpha is located at the School of Journalism.

**Magazine Club** sponsors speakers, workshops and projects designed to deepen the experience in and understanding of magazines among magazine students at both undergraduate and graduate levels.

**Multicultural Journalism Association** is a student organization designed to provide academic and professional support for minorities majoring in journalism or related disciplines. Participation enriches the education experience through contact with professionals, workshops, seminars and other programs and activities. Membership is open to all students.

**Society of Professional Journalists** was founded at DePauw University on April 7, 1909. The Missouri chapter was installed February 22, 1913. SPJ defined the term journalism to include the following: the direction of the editorial policy of, editing of, and the writing of news and opinion for newspapers, magazines, press or syndicate services, professional or business publications, and radio or television stations.

**University of Missouri Journalism Students Association Inc.** was granted a state charter on May 13, 1922. All students regularly enrolled in the School of Journalism automatically become members of the association, with administrative officers elected annually.

# Financial Aid to Students

Financial aid to students enrolled in residence at MU is offered in the form of fellowships, scholarships, assistantships, student loans, student grants and employment.

***Students in need of financial aid should apply directly to the Office of Student Financial Aids, 11 Jesse Hall, Columbia, MO 65211.***

In addition to financial aid given through the campus financial aids office, the School of Journalism has an excellent scholarship foundation program. More than $250,000 is awarded annually. Most of the awards require recipients to be enrolled full time in the School of Journalism.

The school also employs many of its students as assistants in the school's media or to assist the faculty in conducting the non-media laboratory courses. Applications for assistantships should be made to the faculty members who supervise the work.

# Scholarships

In addition to grants open to all students, the scholarships, fellowships, prizes and loan funds listed on the following pages are offered each year for students in journalism. Scholarships are available based on academic merit and financial need. Applications should be submitted to the school's scholarship committee before Feb. 1.

Verification of financial aid is made through the Office of Student Financial Aids, 11 Jesse Hall. The forms must be on file to conform with the School of Journalism deadline of Feb. 1. Students do not apply for individual scholarships; a faculty committee matches students with appropriate scholarships.

School of Journalism scholarship applications are available at http://www.sfa.missouri.edu/

**Mahlon Aldridge Memorial Scholarship Fund** The fund provides scholarships to students enrolled in the School of Journalism who are members of one of the intercollegiate athletic teams.

**Frances Gunsenhouser Babcock Memorial Scholarship** is income from a bequest of her sister, M. Geraldine Hunie. One or more awards are given annually.

**Bernstein-Rein Multicultural Scholarship** This scholarship is

for full-time students enrolled as juniors in the School of Journalism, majoring in advertising. The students must have a minimum GPA of 2.75.

**Oliver K. Bovard Memorial Journalism Scholarship** Weekly stipend, plus summer employment on the *St. Louis Post-Dispatch,* awarded annually to a student who has completed the first year in journalism.

**Bob Broeg Journalism Scholarship Fund** One or more annual awards shall be made to students in the School of Journalism, with first preference given to scholars in journalism. Recipients shall be outstanding writers in any of the School's writing sequences which shall include, but not be limited to, students who have shown an outstanding ability in sports writing.

**Bryan and Marla Burrough Scholarship** One or more annual awards shall be made to minority students enrolled in the School of Journalism. Preference shall be given to the student with the greatest degree of financial need.

**Philip B. Carpenter Memorial Scholarship** One or more annual awards are given to full-time students. There shall be no stipulation as to race, ethnic origin, sex or religion of the recipients.

**The Tilghman R. Cloud Memorial Scholarship** This is an annual award made possible by the family and friends of the late Missouri publisher Tilghman R. Cloud of Pleasant Hill, a journalism alumnus.

**The Olive Coates Memorial Scholarship** This is an award paid annually to undergraduate or graduate students from income on a gift of $50,000.

**William O. Daniel Scholarship** One or more scholarships for junior- or senior-level students in the School of Journalism who have shown high promise for successful careers in newspaper journalism.

**Leslye Dawn Davis Memorial Scholarship Fund** One or more annual awards shall be made to outstanding Broadcast Journalism students enrolled in the School of Journalism.

**The Glenn H. Doughty Scholarship Fund** Income from more than $31,000 provides scholarship awards to students enrolled in the School of Journalism.

**James H. Dowling Scholarship** Presented to international graduate student.

**The Cliff & Vi Edom Scholarship Fund** The fund was established by friends and former students of Professor Emeritus Cliff Edom and his wife, Vi. An annual award of not less than $1,000 is made to an undergraduate or graduate student meeting the requirements for entry into the School of Journalism as a photojournalism major. To apply, a student must present a portfolio, three letters of recommendation and be in financial need. Deadline for application is May 15. Applications are available from the dean of the School of Journalism, P.O. Box 838, Columbia, MO, 65205.

**Earl and Ceola English Scholarship** To provide one or more scholarships for students in the School of Journalism. Preference shall be given to students wishing to pursue community journalism or those who are planning a career teaching high school journalism.

**The Eugene Field Scholarship** The scholarship, open to all students in journalism, is awarded annually to one who is well-equipped in professional ideas and in general newspaper-making ability.

**The Ann M. Frank Scholarship** A stipend is offered annually to a student in the Washington D.C. Reporting Program of the School of Journalism from a gift by Mr. and Mrs. Maurice Frank.

**The Benjamin Franklin Scholarship** A stipend is offered annually to a student in journalism. The scholarship is endowed by the late John P. Herrick in memory of Benjamin Franklin.

**Jerry W. Friedheim First Amendment Scholarship** Goes to students who will be senior news-ed majors. Preference is given to applicants who demonstrate an understanding of and appreciation for the protections of the first amendment.

**Fuji Photo Scholarships** Six photojournalism students receive these awards annually.

**Wilbur E. Garrett Scholarship Fund in Journalism** A scholarship given to a photojournalism student.

**Meredith and Winifred Garten Scholarship** The scholarship is given by the daughters and their husbands to honor the late Mr. and Mrs. Garten of Pierce City, Mo. The award shall be made to a full-time, second-semester journalism student with a grade point average of 3.0 or above and an interest in political reporting.

**Margaret Ann Wheeler Gilbert Memorial Scholarship** A $1,000 stipend goes to a third- or fourth-year undergraduate student in the School of Journalism who has attained a 3.5 grade point average or higher.

**The Bob Goddard Memorial Scholarship** The scholarship is income from a fund established by friends of the longtime *St. Louis Globe-Democrat* columnist, an alumnus of the School of Journalism. The stipend goes to an undergraduate majoring in print journalism.

**Charles and Grace Gorry Photojournalism Scholarship** One or more annual awards shall be made to full-time photojournalism students in the School of Journalism. Neither financial need nor grade point average is to be considered when selecting recipients for this fund. It is the desire of the donors that the recipient be a student who shows exceptional skill in the field of photojournalism and has a potential for success in this field. Preference shall be given to United States citizens.

**Gridiron Scholarships** These are available to graduate students.

**David Halvorsen Memorial Scholarship** Students who are enrolled or plan to enroll in the School of Journalism. Preference given to incoming freshman students who have shown high promise for successful careers in journalism.

**Laura Stephens Harris Scholarship** Students studying journalism who have financial need, promise of academic achievement and good character.

**Robert W. Haverfield and Betty Luser Haverfield Memorial Scholarship Fund** Presented to full-time students who have financial need and demonstrate leadership abilities and academic achievement.

**The John P. Herrick Scholarships** Stipends are offered annually to students entering the School of Journalism. Residents of New York state are given preference.

**The Mrs. John Pierce Herrick Scholarships** Stipends are awarded annually, based on financial need, to young women enrolled in journalism.

**The Virginia B. Hilton Memorial Scholarship Fund** One or more annual awards shall be made to students in the School of Journalism. First preference shall be given to news editorial students who graduated from a high school in the state of Texas. If in any given year there are no students who are graduates of high schools in the state of Texas, preference and special considerations shall be given to students who demonstrate courage and compassion, which were so characteristic of Virginia Hilton, and who approach life and career with a sense of humor.

**The Hullie G. Award in Journalism** A monetary award is granted to an undergraduate student in the School of Journalism chosen on the basis of excellence in journalism and striving to adhere to the Journalists' Creed as established by Walter Williams.

**Robert F. Hyland Memorial Scholarship** Given to full-time broadcast majors.

**The Robert M. Ibrahim Scholarship** Income from a grant of $10,000 is awarded annually to an undergraduate student who demonstrates interest in work in Asia or the Middle East.

**The Robert M. Ibrahim Scholarship Fund in Journalism** The recipients of such scholarships shall be undergraduates who shall be in need of financial assistance in order to attend the University sufficient students applying for or requiring financial assistance to use the funds available at such time, then and in such event the University may use the balance of such available funds for stipends for other worthy students.

**Inchon Scholarship** One or more annual awards go to full-time Korean students in the School of Journalism.

**The Robert M. Jackson Scholarship** A $500 scholarship is awarded once a year to a graduate student in journalism.

**Morris E. Jacobs Fellowship** Scholarship given to graduate students.

**The Harry S. Jewell Scholarship** A $2,500 endowment as a bequest of Jean McGregor Jewell provides scholarships for students in the School of Journalism who are graduates of high schools in Springfield, Mo.

**The H.S. Jewell Scholarship** This is awarded annually to assist a student in journalism.

**The John W. Jewell Scholarship** A $2,500 endowment as a bequest of Jean McGregor Jewell provides scholarships for

students in the School of Journalism who are graduates of high schools in Springfield, Mo.

**The John W. Jewell Scholarship** This is paid from the income on a $5,000 gift. It is awarded annually to a student in journalism.

**Brent Johnson Memorial Fellowship Fund** One or more annual awards shall be made to graduate students in the School of Journalism, with preference given to a student who has a passion for investigative reporting.

**Charles E. Jones Memorial Scholarship** One award to a student in any media sequence who is in the upper third of the class and graduated from a public high school. Preference to students from a town with a population of less than 30,000.

**The Journalism Alumni Scholarship** This is open to all students in the School of Journalism and is awarded annually to a student chosen on a basis of meritorious class work.

**Journalism Divisional Alumni Scholars Fund** Given to a journalism student.

**Kansas City Press Club Scholarship** An award of $1,600 is made annually by the Kansas City Press Club, professional chapter of Sigma Delta Chi, to a junior in journalism.

**David Kaplan Fellowship Fund** Awarded to second-year graduate students enrolled in the Producer option in the Broadcast News Department.

**Daniel J. Kerlick Scholarship Fund** One or more annual awards shall be made to students in the School of Journalism. First preference shall be given to an advertising student who exhibits the highest standards of vision, leadership and drive for the advertising industry for humanitarian reasons and who desires to help others. Additional preference shall be given to students who are working to put himself/herself through school. Any year when there are no qualified advertising majors, the award may be given to students in any area of study in the School of Journalism who exhibit the criteria stated above.

**Klein Memorial Fellowship Fund** One or more annual awards are given to full-time students in the School of Journalism with lively minds and broad interests, without regard to financial need. Preference is given to graduate students.

**Robert P. Knight Memorial Scholarship** Preference is given to those who participated in AHANA or MIPA workshops.

**Kodak Scholarships** The scholarships are awarded to photo majors based on grade point average and other qualifications.

**Leslie Kotfila Scholarship** This scholarship is awarded to one or more female students and is renewable.

**Hal Lister Scholarship** This is awarded to one or more news-editorial students with preference to those over age 30.

**The Besse Marks Memorial Journalism Scholarship** This is awarded annually to students in journalism or who are entering the school, with half of the annual stipend of $600 paid at the beginning of each semester. Preference is given to applicants from Wayne County, N.Y., and Kansas City, Mo.

**Glenn M. McCaslin Memorial Scholarship** One or more awards to needy and deserving students enrolled in the School of Journalism.

**Sarah McClendon Endowed Scholarship Fund** This award goes only to graduate students in the Washington program.

**Florence A. McCombs Memorial Endowment Fund** One or more annual awards shall be made to full-time students enrolled in the School of Journalism at the University of Missouri-Columbia who are majoring in Broadcast Journalism.

**Florence A. McCombs Memorial Scholarship** One or more awards to full-time students majoring in broadcast journalism.

**The O.O. McIntyre Fund** This scholarship is awarded to a graduate student enrolled in the School of Journalism. Recipients shall be of moral and intellectual integrity, with religious ideals, and shall be in need of financial assistance.

**Lous Myers McNuttg Endowment Fund** This scholarship is presented to the female junior journalism student who displays humor in her writing. Grades are not a factor. The award will pay up to $6,000 toward the recipient's room, board and tuition.

**The John McSkimming Memorial** This annual award is granted to a full-time student enrolled in the School of Journalism based on financial need and enrollment in advertising courses.

**Maurer Scholarship** This is awarded to seniors, with preference given to print journalists, from Benton and Cass counties in Missouri or Nyack, N.Y.

**Ronald E. Meek Memorial Scholarship Fund** Awarded to juniors or seniors who graduated in the top 15 percent of their high school class and keep their grades up. This is a renewable scholarship, if given to a junior.

**The Carol Jean Cherry Mehlberg Memorial Scholarship** An endowment is offered to a member of the Alpha Mu chapter of Kappa Alpha Theta.

**Nelson Heath and Agnes Immele Meriwether Scholarship** To full-time students who are enrolled or plan to enroll in the School of Journalism. Preference given to incoming freshman students who have shown promise for successful careers in newspaper journalism.

**Joseph Morton Jr. Scholarship Fund** Presented to full-time students who are Missouri residents. Given in increments of $2,500.

**The Frank Luther Mott Historical Research Graduate Award** One or two $1,000 awards are granted each year to an outstanding student who is working on a thesis relating to the history of journalism.

**The Edward R. Murrow Scholarship** The endowment is from the Fund for Higher Education on behalf of Ed Asner. A broadcast student is the recipient.

**Ronald D. Naeger Memorial Fund** One or more annual awards shall be made to a student(s) majoring in Broadcast Journalism in the School of Journalism. The selected recipient(s) shall be committed to the profession and embody these characteristics: "going beyond the call of duty," "to give so much time to the improvement of yourself that you have no time to criticize others." Preference shall be given to students from rural locations, married students, and students with financial need.

**Richard Oliver Trust** One or more scholarships are awarded annually to photo students.

**Margaret Tomlin Owens Writer's Scholarship** This scholarship is presented to full-time students concentrating in the news-ed or magazine sequences, who are U.S. citizens. Preference will be given on the basis of financial need, a 3.0 GPA, and out-of-state student status.

**Ann Palmeri Memorial Fund** *Women of China,* a magazine in Peking, shall designate a Chinese journalist as the recipient of this award. The dean shall also determine if the recipient shall be admitted as a degree candidate. If a recipient is not designated, it is then presented to journalism students whose primary interest is in writing about women's issues.

**Saul Pett Scholarship Fund** One or more annual awards shall be made to students who are enrolled or plan to enroll in the School of Journalism. Preference shall be given to incoming freshman students who have shown high promise for successful careers in Journalism.

**Corona Ann Powers Scholarship Fund** Given to any student, with preference given to women, those with financial need and those who display excellence in academics.

**Mary S. Pryor Scholarship** The endowment provides scholarships to students in the School of Journalism whose intention is to work on a newspaper in a news capacity, with preference given female students.

**John Louis Raglin Scholarship** One or more awards. Students must demonstrate financial need.

**Jeanne (Moon) and David Rees Scholarship Fund** One award shall be made to a summer school student enrolled in the School of Journalism. Selected recipients shall be in the news and/or editorial sequence(s) of the School.

**Frances Adams Rentchler Trust** One or more scholarship awards are granted to students enrolled in the School of Journalism, graduate or undergraduate, who are of moral and intellectual integrity and who have a need of financial assistance.

**The Bruce Rice Scholarship** A $1,500 stipend is granted by the Bruce Rice Scholarship Committee to a junior who plans a career in broadcast journalism or music at MU. The scholarship may be renewed for the senior year. Preference is given to

applicants from the Kansas City area.

**The Inez Callaway Robb Scholarship** Interest on $10,000 is awarded to students enrolled in the School of Journalism.

**Theodore Roosevelt Scholarships** Stipends are offered annually to students in journalism. The scholarships are endowed by John P. Herrick in memory of Theodore Roosevelt.

**Raymond J. Ross Scholarship** One or more students enrolled in the School of Journalism with financial need.

**Dorothy Hoskins Rothschild Scholarship** Student enrolled in the School of Journalism.

**J. Richard Sage Scholarship** An annual scholarship is given to a student enrolled in the School of Journalism with preference to seniors with financial need.

**St. Louis Post-Dispatch Scholarships** Up to four awards are made each year to minority students. The *St. Louis Post-Dispatch* selects a senior resident in an accredited high school or junior college in Jefferson, St. Charles, St. Louis counties or the city of St. Louis, or Madison or St. Clair, counties, Ill. The $1,800 scholarships are renewable, based on a satisfactory scholastic record.

**The Virginia McElroy Schwartz Scholarships** These are awards made annually from the income on gifts from Robert P. Schwartz and from the estate of Mrs. Robert P. Schwartz.

**Albert T. and Lilla W. Scroggins Jr. Scholarship Fund in Journalism** One or more $500 awards with preference given to those from Alabama.

**Seoul Press Foundation Scholarship** Full-time Korean students enrolled in journalism.

**The Eugene W. Sharp Scholarship** This fund was established by journalism alumni in honor of Professor Sharp, who was a member of the faculty for 45 years.

**John H. Shea Memorial Fund** This is a $200 scholarship established by Mrs. John Shea in honor of her late husband, the former publisher of the *Lexington Advertising-News,* and MU Journalism School alumnus. It is awarded to academically qualified journalism students who are from Lafayette and Macon counties in Missouri.

**Teddy Sherwood Scholarship** One or more awards to women in photojournalism who show promise and commitment to the ideals of documentary photojournalism.

**Ralph Joseph Shoemaker Scholarship Fund** Given annually to worthy students of the School of Journalism.

**Cindy Morrison Sotto Memorial Fund** Presented to journalism students majoring in news-ed on the basis of academic ability, financial need and activities.

**Sowers Scholarship in Journalism** This award goes to full-time juniors or seniors who hold 3.0 GPAs. Preference is given to those enrolled in the news-ed sequence, and those who graduated from any Phelps County, Mo., high school. Given in $1,000 increments.

**Dale Spencer Memorial Scholarship Fund** This goes to a student who excels in Communications Law.

**Harry W. and Helen M. Stoneciper Scholarship** Awarded to undergrads with career interest in newspapers and outstanding academic ability.

**The Estill B. Sullivan Scholarship in Journalism** This income from a bequest of $120,000 is granted to students enrolled in the School of Journalism with high scholastic standing and financial need. Mr. Sullivan was a 1927 graduate of the School of Journalism.

**Jay L. Torrey Scholarship** This is awarded annually to a woman student in journalism considered well prepared to do the work of a journalist.

**Norman Hurst Trenholme Journalism Scholarship** The income from a gift of $5,000 is awarded annually to a junior, senior or graduate student in journalism.

**The Steve Trenkman Award in Television News** This stipend from a memorial endowment recognizes excellence in television news work in the School of Journalism.

**Stephen A. Trenkman Memorial Fund** This is an endowment from various friends of Stephen A. Trenkman. It is awarded to graduate or undergraduate students at the School of Journalism and shall be based on merit and not on need.

**Vance Publishing Corporation Scholarship** This is an annual scholarship awarded to an undergraduate student in the School of Journalism based on the individual's financial need, personal character and scholastic effort. The individual should be a major in the news-ed or advertising sequence with career interests in print media.

**Rose Van Dine Memorial Scholarship** This is a scholarship in memory of Rose, a native of New York, who was a graduate student in the School of Journalism at the time of her death. It is to be awarded to an out-of-state graduate student with combined academic merit and financial need.

**Myron S. Waldman Scholarship** One or more annual awards to National Merit Semifinalists who are enrolled or plan to enroll in the School of Journalism. Priority is given to print journalism.

**Ted Warmbold Scholarship Fund** Awarded to a student of Hispanic descent, preferably one from the San Antonio Community College or the south Texas area.

**Valerie Wiener Scholarship** One or more awards to undergraduate or graduate students, with preference given to students in broadcast journalism and to students from the state of Nevada.

**Samuel Wiley Webb Jr. Scholarship Fund** The $170,000 bequest of Myrtle E. Webb in memory of her husband endows one or more annual awards to students in the School of Journalism who show financial need and superior journalistic aptitude.

**Sara Lockwood Williams Scholarship** This is an annual stipend paid from interest on a bequest by Mrs. Walter Williams, who was a member of the faculty. In consideration of her keen interest in women in journalism, the scholarship committee gives preference to women students.

**The Lafayette Young Scholarships** These are two $1,000 stipends offered annually to students upon entering the School of Journalism.

### Fellowships

**Roy Fisher Fellowship Fund** One or more annual awards shall be made to full-time School of Journalism graduate students who intend to report out of the Washington Program bureau. Criteria for selection shall be merit and financial need. Each award shall be a minimum of the amount required to waive out-of-state tuition fees for one semester.

**The Ernest W. and Frances Patton Landen Fellowship Fund** One or more annual awards are given to full-time graduate or undergraduate students in the MU School of Journalism.

**O.O. McIntyre Fellowships** These fellowships of $10,000 are awarded for a period of one year. Applicants must have completed a master's degree or PhD in journalism within the previous year.

**The Frank L. Martin Fellowship in Freedom of Information** The fellowship is an annual award granted to a graduate student enrolled in the School of Journalism whose area of study is in the field of freedom of information.

**Larry J. Waller Fellowship in Investigative Reporting** One or more annual awards shall be made to graduate students for expenses related to on-location investigative reporting. Awards shall include, but not be limited to, investigative reporting in business, sports and politics. Preference shall be given to students studying print journalism. Broadcast students shall not, however, be excluded from receiving awards.

**Dr. Mary E. and Ruth Williamson Fellowship for Women Ph.D. Students** One or more annual awards shall be made to women Ph.D. students in the School of Journalism.

### Prizes and Awards

**James Atwater Writing Prize** An annual prize for the best writing submitted by a student in the School of Journalism.

**Shawn Balthrop Memorial Scholarship** Awarded to the top *Missourian* editing student. It is a prize. This is not an endowed fund.

**The W.B. Bickley Award in Newspaper Editing and Design** This is income from a fund established by alumni and friends honoring Professor Bickley, a member of the journalism faculty from 1941 until his death in 1973. It recognizes excellence in newspaper editing.

**The Cowgill Blair Annual Incentive Award** This is an award for a senior journalism student in editorial writing or newspaper management. The award is income from a gift of $7,000 established in memory of the former chairman and president of the Joplin Globe Publishing Co. and former member of the Board of Curators of the University of Missouri System.

**The Sam Bronstein Prizes in Journalism** These are six prizes awarded annually for the three best news features written by students in Journalism 307 and the three best written by students in Journalism 306.

**Jack Buck Award** One or more annual awards are presented to full-time students pursuing a career in sportswriting, preferably baseball. Preference is given to students from the St. Louis area.

**Samuel A. Burk Journalism Award** This is awarded to students whose professional goal is news gathering and reporting for radio broadcast, who maintain at least an average grade, and have good knowledge of American history and governmental structure, including all levels of court system and law enforcement.

**The Chinese-American Essay Prize** The income from $4,000 is awarded annually in cash for the best essay on Chinese-American affairs under conditions announced annually by the School of Journalism. Eligible for competition are regularly enrolled MU journalism students of America or Chinese nationality.

**The Tom Duffy Feature Award** This annual prize of $100 from a gift of a former student honors the late Professor G. Thomas Duffy. The winner is chosen on the basis of performance in feature writing for the *Columbia Missourian.*

**Robert F. Hyland Awards** Annual awards are given in the name of longtime KMOX Radio general manager Robert F. Hyland for Overall Excellence, Outstanding Spot News Reporting and Outstanding Feature Reporting in the KBIA newsroom.

**The Kappa Alpha Mu Prize** This annual prize of $40 is given to a graduating senior in recognition of outstanding individual progress in photographic work.

**The Edward C. Lambert Award** This is income from a fund established by alumni of the broadcast program of the school. The winner is the student who promises the most potential in broadcast management.

**Sam Mobley Fund Broadcast Journalism** This is a prize presented to students entering their senior year in the broadcasting sequence, decided by the broadcast faculty.

**Rebecca B. and James R. Ogle, Jr., Fund** An annual prize for news reporting to an outstanding broadcast student.

**Donald George Romero Award Fund** One or more annual awards are given for magazine majors with at least sophomore standing. Recipients are determined by committee in Washington, D.C.

**Jacob Scher Fund** A prize given to graduate students.

### Special Funds

There are a number of loan funds available to students enrolled in the School of Journalism. Some of them are listed below.
*More information may be obtained from the associate dean.*

**The Mary Jo Rigler Clendenon Loan Fund** This is a $500 fund established by Mrs. Helen G. Rigler.

**The Dorothy Flynn Loan Fund** This is a gift of $1,500 from the family and friends of Mrs. L. Doral Flynn.

**The Clara Virginia Forrest Loan Fund** This award provides grants of $100 each from a $500 gift from the estate of Clara V. Forrest. Students are requested to repay the money without interest after graduation.

**The Clarence Dodds Lockwood Memorial Student Loan Fund** This is a $50,000 bequest of Earline A. Lockwood.

**The Reader's Digest Travel Fund** A gift of $1,500 from the Reader's Digest Foundation pays journalism students' travel expenses to gather material for feature stories, magazine articles and research in connection with their class work. The expenses must be deemed necessary.

**The Stern Placement Loan Fund for Magazine Majors** This $3,000 fund, established by the Philip M. Stern Family Fund, makes interest-free loans to magazine majors who are about to graduate and who need financial assistance to find employment in the field of journalism.

# School of Nursing

## Administration

**Rosemary Porter,** dean

**DEGREES** BSN, MS and PhD in nursing

The Charles and Josie Smith Sinclair School of Nursing at the University of Missouri-Columbia dates back to 1901 when the Parker Memorial Hospital Training School was established. The University assumed full responsibility for nursing education in 1920 when the Department of Nursing was established within the School of Medicine. In 1940, the Board of Curators approved a curriculum leading to the degree of bachelor of science in nursing. In 1954, nursing became a school within the School of Medicine and continued until 1973 when the Board of Curators established the School of Nursing as an independent division. The program for a master's degree in nursing began in 1968 and the doctoral program admitted its first six students in the winter of 1994. The continuing education program has been offered since 1956.

The School of Nursing is **approved** by the Missouri State Board of Nursing and **has national accreditation.**

The faculty is committed to the three major missions of the University — teaching, research and service. Nursing is a practice science and an art entrusted by society to provide specialized helping services to improve the health and well-being of people. Nursing focuses on people's capabilities and limitations in meeting their health-care requirements. Nursing is conducted in accordance with the practice standards and ethical codes of the nursing profession. Nursing is grounded in theory and research that direct and validate clinical practice decisions and actions, and generate and organize knowledge for practice. The School of Nursing accepts self-care deficit nursing theory as the general theory of nursing practice and nursing education. We believe self-care deficit nursing theory is applicable where nursing is needed and can make a contribution to the health and well-being of people.

The graduate of the baccalaureate program is a generalist in the practice of nursing, able to design, implement and evaluate nursing systems for individuals, families and small groups. As a generalist, the graduate uses a general concept of nursing as a framework for integrating and organizing specific knowledge in nursing, the sciences and the humanities. In so doing, the graduates begin their professional careers with a focused nursing perspective and, along with other professional health providers, assume their responsibility for meeting the health needs of our society.

## Admission

The first two years (freshman and sophomore) are designated as the nursing major and the second two years (junior and senior) are designated as the clinical nursing major. Approximately 45-60 semester hours of prerequisite course work are required before the student may expect to gain admission to the clinical nursing major leading to the bachelor of science in nursing. Application forms are available in the academic adviser's office (S235).

Nursing major students will be admitted to the clinical nursing major on a competitive and space-available basis when the prerequisite courses have been completed.

***For information regarding admission to the University, see that section in this catalog.***

## Maximum Enrollment

A student with a cumulative grade point average below 3.0 must obtain permission from the associate dean to enroll in more than 16 hours.

## Satisfactory/Unsatisfactory Grading System

Only elective courses may be taken S/U.

## Student Services

**ADVISING** The academic adviser's office is in room S235 of the School of Nursing Building, (573) 882-0277. In addition, each clinical nursing major is assigned a faculty adviser who is available for consultation about academic or professional matters.

**HEALTH** Information about Student Health Services is in the University section of this catalog. Nursing students participate in a variety of on- and off-campus educational experiences. The School of Nursing does not assume responsibility for health-care expenses incurred in either setting. Students assume responsibility for all health care for illness and injury, including emergency treatment.

## Required Work in Residence

Students must complete the last 24 hours of the degree program in residence.

## Student Organizations

**Nursing School Steering Committee (NSSC)** The purpose of the NSSC is to make the Sinclair School of Nursing more community oriented and allow all students to be more involved. Students who are interested in becoming a member of the NSSC can apply either as pre-clinical or clinical nursing majors. There are approximately 25 members of the NSSC, and they are advised by the undergraduate academic adviser. To obtain more information about the organization, please contact the Student Affairs Office of the Sinclair School of Nursing. The office is located in S235 School of Nursing.

**Nursing Student Council (NSC)** All undergraduate nursing students are members of the NSC. Council meetings are open to all students, and all NSC members have voting privileges. The NSC gives nursing students a voice in affairs affecting their academic and social lives, serves to enhance students' educational and social environment, improves communications among students, faculty and administrators, assists in the development and improvement of selected nursing school policies and coordinates the various student activities in the school. A copy of the charter is given to each student on request.

**Student Nurses' Association (SNA)** Students may join the National Student Nurses' Association (NSNA). Local (MU SNA), state (MONSA) and national membership, as well as many programs and benefits, are provided through a membership fee.

Participation in the SNA gives student nurses a chance to connect with thousands of other nursing students and the opportunity to have their voices heard in state and national legislatures, nursing organizations and communities.

Local officers are elected each spring and there is opportunity to run for state and national office at annual conventions. Activities on the local level include bi-monthly meetings with programs, community service projects, fund-raising activities, and scholarship opportunities.

Delegates are sent in the fall to the annual state convention and national mid-year conference and in the spring to the annual national convention. All nursing major and clinical nursing major students are encouraged to become involved.

**Sigma Theta Tau** The Alpha Iota Chapter of Sigma Theta Tau, the national honor society of nursing, was installed at MU on December 12, 1964.

The purposes of the society are to:

- Foster high professional standards
- Encourage creative work
- Promote maximum development of the individual and, thus, increase one's capacity to serve the profession, and through it, society
- Promote the spirit of fellowship among members of the nursing profession
- Develop an abiding interest in the advancement of nursing
- Promote continuous participation as responsible members of the profession

Candidates for membership must possess desirable personal qualifications and demonstrate both leadership qualities and the capacity for professional growth. Candidates must rank in the upper 35 percent of their class and must have a cumulative GPA of 3.0 (A=4.0). On initiation, the member may purchase a key, the emblem of the society. The chapter has two regular meetings each year that are of an educational or scientific nature.

# Awards

**Alumni Organization Awards Certificate and Plaque** An award for an outstanding junior and senior.

**Janet "Joy" Thompson Award** Presented to a graduating senior who shows "achievement and ability to bring solace to those in his or her care." Based on faculty nominations and selection. Awarded at May convocation to a December or May graduate.

**Women's Auxiliary to the Boone County Medical Society Nurses' Award** Presented to a student who shows academic achievement and financial need.

# Scholarships

**Aird-LeMone** An endowed scholarship for one or more annual awards made to students enrolled in any of the programs of the School of Nursing. Preference shall be given to the nontraditional student with financial need. It is not necessary that the selected recipients have the highest grade point average of those who apply.

**Carney Endowed Pediatric Nursing Scholarship** An annual award given to a senior or graduate student enrolled in nursing who plans to practice in the field of pediatrics or care of children.

**Betty Crim Scholarship** Awarded to a full-time undergraduate nursing student with financial need enrolled in or completing the first clinical course; preference to first generation college student.

**Phyllis Drennan Endowed Scholarship** Awarded to a full-time student enrolled in the School of Nursing, based on academic achievement and financial need.

**Eitzen Scholarship Fund** For an undergraduate nursing student with financial need who meets scholarship qualifications for the School of Nursing.

**William and Mary Fingland Scholarship** Recipient must be enrolled in the School of Nursing and have a demonstrated financial need. First preference will be given to students from Pettis County, Mo. Second preference will be given to students who reside in the state of Missouri.

**Funk Fund for Nursing** Awarded based on scholarship or financial need.

**R.E. and Cedelle Gillette Scholarship** Award based on scholarship and financial need.

**Helen Hapke Scholarship** Provides financial aid to a student enrolled or to be enrolled in the School of Nursing, or, if no such need exists, to provide unrestricted support to the nursing program.

**Annette McClannahan Harrison Scholarship** Given to a full-time undergraduate nursing student enrolled in the School of Nursing who has demonstrated financial need. Priority given to Missouri residents.

**Irene and Charles Keller Endowed Scholarship** Awarded to a full-time student in the School of Nursing.

**Myrtle Longenbach Memorial Scholarship** For an undergraduate nursing student with scholastic qualifications and financial need.

**Dorothy Gillette Meyer Memorial Scholarship** Preference given to graduate of St. Charles, Mo., public high school. Failing to find such qualified recipients, the School of Nursing may select graduates of other public high schools of Missouri.

**Verna Adwell Rhodes International Travel Award** An annual competitive award granted to an undergraduate or graduate student at the Sinclair School of Nursing. The award shall be made to allow the recipient to participate in or attend a course or conference in another country that has stated goals, objectives and outcomes and is pertinent to the student's area of study. For students with cumulative GPAs of 2.50 or greater and nursing GPAs of 3.0 or greater, juniors currently enrolled in N160 or seniors currently enrolled in N184. Both juniors and seniors may apply with finalization of award subject to successful completion of course requirements. Additional criteria: student attitudes and commitment to the nursing profession.

**School of Nursing Alumni Scholarship** Based on scholarship and financial need.

**Service League Auxiliary Scholarship** Full tuition for a full-time junior or senior clinical nursing major who is employed part-time at MU Hospitals. Based on financial need and scholarship.

**Merle Dozier Strange Scholarship** Provides financial assistance and scholarship.

**John Sullivan Waggoner Memorial Nursing Scholarship** For students studying nursing at any University of Missouri campus.

**Jane L. Watson Nursing Scholarship** This annual award is given to a student enrolled in the undergraduate nursing program. First preference to graduate of Hickman High School of Columbia, Mo. Second preference to graduate of Rock Bridge High School in Columbia, Mo. If no student is selected from these high schools, a student from any high school in Boone County, Missouri, can be selected.

**Alicia C. Wilson Scholarship** Full tuition to full-time junior or senior clinical nursing major who is employed part-time at MU Hospitals. Based on financial need and scholarship.

**Mary Butler Woods Nursing Scholarship** Awarded to a full-time student enrolled in the School of Nursing. Preference to students who are members or descendants of Daughters of the American Revolution.

### Loan Funds

**Margaret C. Gooch Emergency Loan Fund** Students in the School of Nursing may borrow up to $100 in emergency funds on a short-term basis.

**Susan Hanson Memorial Loan Fund** Recipient must demonstrate an emergency financial need and be enrolled in the School of Nursing.

**Voiture 292. 40 et 8 Student Loan Fund (American Legion)** For students enrolled in the School of Nursing or veterans of any armed forces of the United States enrolled in the University.

# Professional Opportunities

Professional opportunities in nursing continue to be excellent nationwide. The average beginning salary for bachelor's graduates is $27,000-$30,000.

Graduate students or undergraduate RN students must obtain licensure in Missouri.

***For more information, write to the State Board of Nursing, P.O. Box 656, 3605 Missouri Blvd., Jefferson City, MO 65109, or call (573) 751-0681.***

**APPLICATION TO THE CLINICAL NURSING MAJOR**

Applications for admission to the clinical nursing major are evaluated by the Student Admissions and Progression Commit-

tee each March for fall semester admission and each October for winter semester admission.

Minimum requirements for application include the following:
- Minimum cumulative GPA of 2.5 for all college/university course work
- Successful completion of a minimum of 45 graded credit hours in required prerequisite courses. Students applying for clinical nursing major must have successfully completed two upper-level science courses with lab at the time of application.
- Minimum GPA of 2.5 for any nursing prerequisite courses
- Evidence of capacity to uphold the practice standards and ethical codes of the nursing profession

Additional requirements for international students:
- Test of Written English (TWE) score of 4 acceptable
- Test of Spoken English (TSE) score of 50 or higher
- TOEFL score of 550 (paper-based), 213 (computer-based)
- Successfully passed English Language Support Program Test prior to applying for clinical nursing major

Transfer students:
- Appropriate GPA for credit hours attempted
- Approval from Associate Dean's Office

**Each student must satisfy the MU general education requirements applicable for the year during which he or she was first a full-time college student in order to graduate.**

**SPECIAL ADMISSION OF DISADVANTAGED AND RURAL STUDENTS** The MU School of Nursing recognizes the need for increased representation of minority groups in the nursing profession. It welcomes applications from disadvantaged groups, which include racial and ethnic minorities, among others.

For special admission, the school considers those students who have demonstrated unusual motivation toward a nursing career and whose backgrounds demonstrate substantial economic or cultural disadvantages.

Admissions emphasize socioeconomic background, deprivation of equal education opportunity, work or other experience indicating the capacity for sustained effort, personal recommendations or other indications that traditional academic criteria do not accurately reflect the student's ability and potential.

Because MU has a special commitment to rural health care, the School of Nursing will strive to admit students from rural areas. Efforts will be made to ensure that the student body includes qualified students who are minorities, non-traditional students, and students who live in rural areas.

**LICENSED REGISTERED NURSES (RNs) RN/BSN** Registered nurse applicants must meet the same admission standards except that RNs are exempt from the biology, anatomy and chemistry requirements. They must be currently licensed to practice nursing.

The length of the program for registered nurse students varies, depending on the number of college credits previously earned and the successful completion of advanced-standing credit examinations. The program requires 120 credit hours, including 63 hours of foundation courses and 27 hours of nursing credits. A maximum of 33 hours may be earned through advanced standing exams.

**RN/BSN and RN/BSN/MS** programs are for registered nurses who have earned a diploma or associate's degree in nursing. RN/BSN courses are offered via the Internet with limited trips to campus for each nursing course. For information on these programs, call (887) 687-6276 or consult the School of Nursing Web site.

**TRANSFER OF CREDIT FROM OTHER COLLEGES** Students transferring to MU from another accredited institution of higher education or other schools and colleges within the University are subject to the regulations established by the MU Faculty Council concerning transfer of credit. Transfer of credit is described in the academic regulations section of this catalog. ***For more information regarding the School of Nursing's transfer guidelines, call (573) 882-0277.***

**CREDIT BY EXAMINATION** Students may earn advanced-standing credit in some courses by satisfactorily completing examinations in certain subjects. Those who elect not to take the examinations or who fail to achieve satisfactory results are required to enroll in the courses. The cumulative grade point average is not affected by examination results.

A student who has a record of enrollment in a support course with a grade lower than a C shall not be eligible later for credit on the basis of an examination covering the same subject.

The student may acquire advance standing by subject CLEP examination in general education courses and required support courses. If no CLEP examination is offered, department examinations may be available.

**NURSING MAJOR CURRICULUM REQUIREMENTS**
56-59 hours are required. Curriculum is based on prerequisite of one year of high school biology with lab and grades of C or better. All MU general education requirements must be met to graduate.

**General Courses**
English 20: Exposition and Argumentation (3)
*History: one course in American History or American Government (3)
Humanities/Fine Arts (9)
College Algebra (3)
Upper-level behavioral science (3)
** Stat 25: Introduction to Statistics (3) (MP)
Subtotal: 24 credit hours

**Foundation Courses**
Bio 1: General Biology (3)
Chem 15: Atoms and Molecules (3)
Anat 201 and 203: Elementary Anatomy Lecture and Elementary Anatomy Laboratory (5)
Physio 201: Elements of Physiology (5)
Microbio 205: Fundamentals of Medical and Public Health Microbiology (4)
***HDFS 150: Principles of Human Development (3) (WI)
NS 238: Diet Therapy for Health Professionals (3)
Pharmacology 204: Elements of Pharmacology (3)
Psych 1: General Psychology (3)
Soc 1: Introduction to Sociology (3)
Subtotal: 35 credit hours
59 Total

**CLINICAL NURSING MAJOR CURRICULUM REQUIREMENTS** 64 hours

**Professional Courses**
Nurs 90: Nursing as a Profession (3)
Nurs 96: Introduction to Nursing: Theory/Research (3)
Nurs 110: Methods of Assisting I (3)
Nurs 112: Methods of Assisting II (2)
Nurs 130: Pathology and Therapeutics I (5)
Nurs 155: Foundations for Nursing in Health and Illness (6)
Nurs 160: Nursing of Women and Newborns (5)
Nurs 162: Nursing of Adults I (7)
Nurs 172: Nursing of Children (5)
Nurs 173: Mental Health Nursing (6)
Nurs 174: Nursing Ethics and the Law (3)
Nurs 184: Nursing Issues/Leadership/Management (3)
Nurs 186: Nursing of Adults II (7)
Nurs 188: Nursing in Communities (6) (WI)
Total Required: 120
Grand total: 126-129
**Required by State Law for graduation*

***Math 10 required if ACT math subscore is 25 or less. Math 5 required prior to Math 10 if ACT math subscore is 17 or less. One Math Reasoning Proficiency (MP) course must be completed*
****Two Writing Intensive courses required for graduation*

Clinical majors must be prepared to provide their own transportation to clinical agencies. In addition, they must hold a valid CPR certificate, have yearly TB tests, have a hepatitis B series, and have the School of Nursing medical form showing current immunizations on file in the academic adviser's office.

Clinical practicums (patient/client care) are an integral part of the curriculum. Students have the opportunity to practice in a variety of health care and related agencies, including University of Missouri Health Care, Boone Hospital Center, Truman Veterans Hospital, Fulton State Hospital, Mid-Missouri Mental Health Center, multiple county and city health departments, long-term care facilities, day-care centers and schools (K-12).

# Progression Criteria

**NURSING MAJORS** Freshmen and sophomores/four semesters, lower division

- A satisfactory academic standing for nursing majors is a minimum semester GPA of 2.0 and a cumulative GPA at or above the standards listed below.
  Freshman — 1st semester (one to 15 hours) 2.3
  Freshman — 2nd semester (16-30 hours) 2.5
  Sophomore — 3rd semester (31-45 hours) 2.5
  Sophomore — 4th semester (46-60 hours) 2.5
- A 2.0 average or better is required for the following courses: anatomy, biology, chemistry, English 20, human development, microbiology, nutrition, pharmacology, physiology, zoology, nursing courses and Writing Intensive courses. Students may repeat a course in which an unsatisfactory grade has been earned. If less than a 2.0 is earned on repetition of a course, students are ineligible to continue enrollment in the School of Nursing.
- Nursing majors who withdraw in good standing for any reason must contact the Director of Undergraduate Program for readmission.

**CLINICAL NURSING MAJORS** Juniors and seniors/four semesters, upper division

- Progression into the next semester's nursing courses is contingent on the completion, with a 2.0 average or better, of all of the previous semester's courses.
- A satisfactory academic standing for clinical majors is a minimum semester and cumulative GPA of 2.0.
- A 2.0 average or better is required for all nursing courses. Repetition of nursing courses is permitted one time. Students who earn less than a 2.0 average on repetition of a nursing course are ineligible to continue enrollment in the School of Nursing.
- Clinical nursing majors who withdraw in good standing for any reason must contact the Director of Undergraduate Program for readmission.

# Probation and Academic Dismissal

The faculty of the School of Nursing has established criteria governing nursing probation and dismissal.

**NURSING MAJORS** Freshmen and sophomores/four semesters, lower division:

- Students who do not meet the requirements set forth in the progression criteria will be placed on academic probation and must attain the cumulative grade point average required for their classification, as outlined, within two semesters, or they will be ineligible to re-enroll in the School of Nursing. This constitutes dismissal from the School of Nursing.
- Students whose semester GPA falls below 1.0 are ineligible to re-enroll at MU.

**CLINICAL NURSING MAJORS** Juniors and seniors/four semesters, upper division:

- Students who do not meet the requirements set forth in progression criteria will be placed on academic probation.
- Students on academic probation must obtain a cumulative GPA of 2.0 within two semesters or will be ineligible to re-enroll in the School of Nursing.
- Students who have been dismissed may reapply through the established admissions procedure for all students and petition the Faculty Assembly Student Admissions and Progression Committee. Students who are readmitted will be guided by the rules in operation for the class they join.
- Clinical nursing majors who have been dismissed from the School of Nursing for a second time may not reapply for admission.

**GRADUATION REQUIREMENTS** The completion of all requirements for graduation is the responsibility of the student. The bachelor of science in nursing is granted to candidates who have satisfactorily completed all of the following prescribed requirements:

- Completed a minimum of 120 semester hours of credit, including the required general education and foundational courses and nursing clinical major courses
- Acquired a minimum cumulative GPA of at least 2.0
- Completed a minimum of the last 24 semester hours in residence at the University of Missouri-Columbia
- Earned no more than 30 credit hours through independent study or extension courses
- Completed all MU general education requirements

**LICENSURE BY THE MISSOURI STATE BOARD OF NURSING** On receipt of the bachelor of science in nursing degree, students are eligible to write the NCLEX examination for licensure as registered nurses. A license to practice is granted by the Missouri State Board of Nursing to persons who meet the policies and regulations contained within the Nursing Practice Act Chapter 335.011 to 335.096.

# School of Social Work

Social work is a dynamic and growing human service profession that plays an increasingly important and visible role in our everyday lives. The major educational objective of the School of Social Work undergraduate program is to prepare students for competent and skillful first-level professional social work practice.

A myriad of social problems, rapid social change, the breakdown of community life and individual maladjustment beset contemporary society. Social work addresses these conditions by assisting in the prevention of community breakdown, by facilitating the restoration of individuals to health and more fulfilling lives, and by developing resources to meet needs and to improve social conditions.

The Bachelor of Social Work (BSW) professional program is built upon a rigorous liberal arts foundation that prepares students for general practice in social work. Within this framework, students are prepared to apply a configuration of knowledge, values, and skill to a variety of individual, family and community problems to affect positive change.

The School of Social Work is accredited by and a charter member of the Council on Social Work Education. Students receiving a BSW are eligible for membership in the National Association of Social Workers.

## Admission

Incoming students who declare a major in social work when admitted to the University are assigned to an adviser in the School of Social Work.

Admission to the BSW Professional Program, however, is competitive and by application. Students who have completed at least 45 hours by the application deadline and will have completed 55 hours before the beginning of the first semester of the BSW Professional Program Social Work Core may apply early in the winter semester for fall admission.

BSW Professional Program applicants must have a GPA of 2.5 on all college-level course work and must have completed specific liberal arts prerequisite courses. Other criteria for admission include demonstrated interest in and motivation for the profession as well as the quality of the personal statement and professional references.

Application forms are available from the Undergraduate Secretary, 724 Clark Hall. The application submission deadline is February 1 (or the first business day thereafter, if February 1 is a weekend or University holiday) by 4 p.m.

## Professional Opportunities

The career prospects for BSW graduates are quite good. Employment data from the Bureau of Labor statistics indicate that jobs in social work are expected to grow faster than average into the 21st century. Job opportunities exist in the fields of child welfare, community development, corrections, counseling, education, family services, juvenile justice, mental health, physical health and private business.

## Graduation Requirements

A minimum of 120 semester hours and a GPA of 2.5 are required for graduation. Social Work Core courses must be taken in sequence, requiring a minimum of three semesters to complete the Professional Program. During the third (fall) semester of the Social Work Core, students spend three days a week in a social service agency for supervised field instruction.

# Departments & Courses

The Departments and Courses Section lists and describes all courses approved by the academic departments at MU. The schedule of courses, available during registration each semester, lists the specific courses offered that semester, the time of meeting, and building and room number where the course meets.

The University reserves the right to cancel, without notice, any course listed in the undergraduate catalog or in the schedule of courses for any semester, or withdraw any course that does not have an adequate enrollment at the close of the registration period.

**COURSE LISTINGS** Courses offered at MU are listed alphabetically in this section by department or field of learning.

**COURSE NUMBERS** Each course bears a distinguishing number that identifies it within the department and indicates its academic level, according to the following table.

**Course Number/Type of Course**

**1 to 99** primarily for freshmen and sophomores

**100 to 199** primarily for undergraduates (no graduate credit)

**200 to 299** for undergraduates, appropriate professional students and graduate students (except those whose graduate major is in the department in which the course is offered)

**300 to 399** for undergraduates, appropriate professional students and graduate students

**400 to 499** primarily for graduate students and appropriate professional students; undergraduate students are admitted to 400-level courses only with the approval of the dean of the division in which the course is offered

**500 to 600** Law, Medicine and Veterinary Medicine courses

**The letter L** following a course number indicates that it is a professional course in the school of Law. Some of these courses are not open to graduate students. The letters GH and EH following a course number designate General Honors and Education Honors, respectively. These courses are restricted to undergraduate students who qualify for admission to the Honors College or to the College of Education honors courses.

**CREDIT** The unit of credit at MU is the semester hour, which represents a subject pursued one class period weekly for the entire semester. In general, a course valued at three semester hours meets three periods weekly for one semester.

The number of credit hours for a course is given in parentheses following the course title. If the credit is to be fixed in consultation with the instructor, the fact is shown by "(cr. arr.)," credit arranged, or by "(2-8)," which indicates the course can be taken for a minimum credit of two hours and a maximum of eight hours.

**PREREQUISITES** Often, prior to enrolling in a certain course, other courses must be completed or other requirements fulfilled. These prerequisites are listed after the course description.

If the prerequisite course is in the department being described, its number will be given. The prerequisite of Accountancy 37 is Accountancy 36 and is shown "Prerequisite: 36." Prerequisite courses from other MU departments are listed by the name of the department and course number. One of the prerequisites for Finance 203 is Statistics 150. It is shown "Prerequisites: Statistics 150."

General prerequisites are listed "Prerequisite: 10 hours organic chemistry," meaning the student must have earned at least 10 semester credit hours in organic chemistry classes.

An academic standing prerequisite is stated by class. Freshmen have accumulated between 1 and 29 semester hours; sophomores between 30 and 59 hours; juniors between 60 and 89 hours; seniors more than 90 hours; and graduate students must have been admitted to the Graduate School. "Prerequisite: junior standing" means the student must have at least 60 semester hours.

A minimum grade requirement in a prerequisite course is specified by a capital letter and the course designation. "Prerequisite C in Math 10" means a grade of C- or better must have been earned in Math 10. GPA refers to grade point average.

Courses listed as "Co-requisite" or "Concurrent with" are to be taken in the same semester as the course desired. Nursing 432 lists "Concurrent: 434," so a student enrolling in 432 must also enroll in 434.

**SEMESTER OFFERED** The lower case letters after the credit hours or at the end of a course description indicate which semester the course is generally offered. When no letter follows the course description, the course may be offered during any session. The letter "f" indicates the course usually is offered in the fall semester; "w" indicates the second or winter semester; "s" indicates the summer session, and; "ss" indicates an intersession, a period between regular sessions.

The abbreviations alt. f. or alt. w. indicate the course will be offered during alternate fall or alternate winter semesters. The year is indicated by odd years or even years; therefore "alt.w., odd yrs." means the course is offered during the winter semesters of odd-numbered years.

**COURSES BY CORRESPONDENCE** The abbreviation cor. after a course listing indicates it also is available through the Center for Independent Study through correspondence.

## Accountancy (SCHOOL)

**College of Business**
**312 Middlebush Hall (573) 882-4463**
*For additional information on the school, see the College of Business section of the catalog.*

**DIRECTOR** E. Wilson
**DIRECTOR, 150-HOUR AND MASTER OF ACCOUNTANCY PROGRAMS** C. Pearson
**PROFESSORS** J. Francis, L. Nikolai, E. Wilson
**ASSOCIATE PROFESSORS** V. Arunachalam, J. Prather-Kinsey, I. Khurana
**ASSISTANT PROFESSORS** T. Atwood, B. Bettinghaus, M. Kim, E. Mauldin, R. Pexeira
**ADJUNCT ASSISTANT PROFESSOR** B. Cunningham
**PROFESSORS EMERITI** W. Haseman, R. Kvam, J. Parker, J. Stallman, E. Zieha
**ASSOCIATE PROFESSOR EMERITUS** R. Skelly
**DIRECTOR EMERITUS** R. Dockweiler

**DEGREES** BS Acc, M Acc, PhD

The bachelor of science and master's degree programs in accountancy have been merged into an integrated 150-hour curriculum to provide high-quality preparation for a career as a professional accountant in public accounting, business or government. MU's accountancy program has long been nationally recognized for its excellence. This excellence is manifested in the outstanding accomplishments of its faculty and alumni, and in the active recruiting of its graduates each year. MU accountancy alumni have achieved high-level positions in many organizations, including partners and executive officers in international accounting firms and "Fortune 500" corporations. MU accountancy faculty have published leading textbooks and research articles, and have served at high levels in numerous professional accounting associations.

The **BS in Accountancy** degree is awarded along with the **Master of Accountancy** degree upon satisfactory completion of the 150-hour integrated curriculum. In this integrated program, a minimum of 24 semester hours of accountancy courses at the 300-level or above must be completed at MU.

**150-Hour Curriculum Requirements**

**General Education** (72 hours)
Humanistic Studies (nine hours)
Algorithm Design and Programming I (three hours)
Economics (12 hours)
Physical or Biological Sciences (nine hours)
Oral and Written Communications (six hours)
Social Sciences (nine hours)
Mathematics and Statistics (12 hours)
Electives (12 hours) (six hours must be taken as 200 level or higher general education electives or 300 level business electives)

**Core Business Education** (39 hours)
Introductory Accounting (six hours)
Business Computer Systems (three hours)
Management (six hours)
Business Law (three hours)
Finance (three hours)
Marketing (three hours)
Business Practices/Policies (six hours)
Electives (nine hours)

**Professional Accounting Education** (39 hours)
Accounting Information Systems (three hours)
Financial Accounting (six hours)
Cost/Managerial Accounting (three hours)
Taxation (three hours)
Governmental Accounting (three hours)
Auditing (three hours)
Accounting and Business Strategic Analysis (three hours)
Electives (15 hours)

**COURSES**

**36—Accounting I (3).** First half of two-part course on the business environment and the uses of managerial and financial accounting information for business decision making. Introduces business organization and planning for corporate operations. Prerequisite: sophomore standing. cor.

**37—Accounting II (3).** Second half of two-part course on the business environment and use of managerial and financial accounting information for business decision making. Emphasizes use of accounting information within and external to corporations. Prerequisite: 36. cor.

**136GH—Honors Accounting I (3).** First part of two-part course focusing on the nature and use of managerial and financial accounting information for decision making in various business settings. Prerequisites: sophomore standing, 3.3 or higher, or Honors College.

**137GH—Honors Accounting II (3).** Continuation of 136GH. Prerequisite: C or better Accountancy 136GH.

**200—Independent Readings (1-3).** Independent readings and examination under the supervision of an accountancy professor. Prerequisites: instructor's consent and departmental consent.

**258—Computer-Based Data Systems (3).** Introduces computer and computer-based systems. Includes historical background, systems design, programming concepts, and business applications. Prerequisite: Accountancy 36.

**301—Problems in Accounting (1-3).** Independent investigations, reports on approved topics. Prerequisites: instructor's consent and departmental consent.

**305—Financial Accounting Concepts (3).** Current issues in the financial reporting of business corporations to external parties. Not open to accountancy majors. Prerequisite: 37.

**310—Managerial Accounting (3).** Financial and cost accounting concepts. Processes for collecting, recording, and summarizing financial and cost data. Use of accounting data for position reporting, income determination, planning and control. Prerequisites: MBA or MSPA candidate, or departmental consent.

**326—Financial Accounting Theory and Practice I (3).** Institutional structure, conceptual framework, and reporting standards and practices of financial accounting, with special emphasis on accounting for assets. Prerequisite: 37 or 137GH.

**328—Accounting Information Systems (3).** Introduction to accounting information systems, including transaction and file processing, database management, control concepts and security systems design, evaluation, and implementation. Prerequisite: 258.

**346—Financial Accounting Theory and Practice II (3).** Continuation of 326, with special emphasis on accounting for liabilities and ownership equity. Prerequisite: 326.

**347—Cost and Managerial Accounting (3).** Activity based and traditional job order and process cost systems for service, merchandising, and manufacturing companies; standard costs and variances. Prerequisites: 37 or 137GH and 258.

**353—Introduction to Taxation (3).** Introduction to taxation, emphasizing the U.S. federal income tax on individuals, including underlying concepts and tax planning issues. Prerequisite: 37 or 137GH.

**358—EDP Systems Analysis and Design (3).** Modern information systems analysis and design, focusing on transaction processing. Prerequisite: 258.

**365—Governmental Accounting and Budgeting (3).** Introduction to government and not-for-profit accounting. Principles of fund accounting, budgeting, auditing, and financial reporting in government and not-for-profit entities. Prerequisite: 326.

**373—Taxation of Business Entities (3).** Federal income taxation of corporations and shareholders, partnerships, and S corporations. Prerequisite: 353.

**384—Auditing Theory and Practice I (3).** Introduction to the auditing profession, attest function, and generally accepted standards for conducting audits. Prerequisites: 328 and 346.

**390—Professional Accounting Internship (3).** Provides full-time professional accounting work experience of at least eight weeks duration. Completion of first 105 hours of 150-hour accountancy curriculum (or equivalent) and consent of Internship Coordinator. Graded on S/U basis only.

**401—Problems in Accounting (1-3).** Independent investigations, reports on approved topics. Prerequisite: instructor's consent.

**408—Accounting Information Systems Theories and Concepts (3).** Theories and concepts in accounting information systems with emphasis on expanding analytical and communicative skills. Prerequisite: 328.

**414—Information Systems Assurance and Control (3).** A combination of control theory, concept application, demonstration of actual practice, and student research to develop an understanding of the concepts and practices used in the design, development or assurance of information systems (IS) controls. Prerequisites: 328 and 384.

**419—International Accounting (3).** Introduction to accounting regulations and practices outside of the U.S., accounting regulations for foreign registrants on the NYSE and NASDAQ, international accounting standards and international management control issues. Review of cultural frameworks; transfer pricing methods and international accounting standards. Prerequisites: Accountancy 346 and 347.

**423—Tax Research and Planning (3).** Applied tax research using print and electronic data bases; heuristic biases in tax judgments; responsibilities of professional tax practices. Prerequisite: 373.

**425—Accounting for Governments and Other NonProfit Entities (3).** Role of accounting information systems in planning, managing, and controlling nonbusiness organizations; reporting to external parties; concepts of governmental auditing. Prerequisites: 365 or instructor's consent.

**428—Data Warehousing and Data Mining (3).** Applications development in information systems with software engineering. Prerequisite: CECS 103 and departmental consent.

**434—Applications of Auditing Concepts (3).** Application of auditing concepts and techniques in various phases of audit engagements. Prerequisite: 414

**436—Financial Accounting Theory and Practice III (3).** Continuation of 346. Addresses a series of special financial accounting topics including income taxes, pensions, leases, business combinations, consolidated statements, and foreign currency translation. Prerequisite: 346.

**437—Strategic Cost Analysis (3).** Analysis to support organizational strategy including cost management, performance evaluation, and control of responsibility centers. Prerequisites: 347, Math 61 and Statistics 250, or the equivalent.

**444—Seminar in Auditing (3).** Auditing in society; auditor's responsibilities; methodology, techniques, and procedures; planning and administration of an audit; collection and evaluation of evidence; reporting; and new audit directions and perspectives. Prerequisites: doctoral candidacy or instructor's consent.

**446—Application of Financial Accounting Pronouncements (3).** Development, content and application of authoritative pronouncements in financial accounting. Problems and case studies. Prerequisite: 436.

**448—Issues in Accounting Systems Development (3).** Selected current topics in the development and use of accounting information systems. Prerequisite: 408.

**450—Accounting and Business Strategic Analysis (3).** Capstone course in the Master of Accountancy program. Emphasis on case analysis to develop critical thinking and analytical skills in performing strategic financial analysis. Prerequisites: Accountancy 346 or equivalent and graduate standing.

**453—Tax Issues and Analysis (3).** Introduction to tax policy issues and analysis with emphasis on major areas of current tax debate. Prerequisite: 373

**455—Seminar in Governmental Auditing (3).** Topics related to external and internal auditing of governmental organizations and programs. Prerequisites: 384 and 365, or instructor's consent.

**457—Quantitative Methods in Accounting (3).** Application of mathematics and statistics to managerial and financial accounting problems. Prerequisites: 337, Mathematics 60 and 61 and Statistics 250.

**466—Financial Accounting Theory II (3).** Role of theory in defining fundamental accounting and reporting concepts; contemporary theoretical developments; role of theory in accounting research. Prerequisite: doctoral candidacy or instructor's consent.

**467—Seminar in Managerial Accounting (3).** Critical review of the managerial accounting research literature with emphasis on issues and research methods. Prerequisite: doctoral candidacy or instructor's consent.

**491—Research in Accounting (cr.arr.).** Each student is under direction and guidance of an accountancy professor in writing a dissertation. Periodic seminars discuss research projects. Graded on a S/U basis only.

# Aerospace Studies

**(AIR FORCE ROTC)**
**College of Arts and Science**
**217 Crowder Hall (573) 882-7621**
**PROFESSOR** A. J. Briding
**ASSISTANT PROFESSORS** T. Donelson, S. Herrmann, C. Johnson, W. Mosely

Air Force Reserve Officer Training Corps (AFROTC) offers a number of opportunities for MU students who wish to become commissioned officers in the U.S. Air Force. Job availability on completion of a degree include pilot, navigator, intelligence officer, non-rated operations, and technical and non-technical positions of responsibility. Opportunities in the Air Force also are excellent for students in health related and legal professions. Jobs are available in over 30 non-technical career fields requiring backgrounds in personnel management, business, accounting, political science, criminal justice, as well as numerous other academic majors.

Students can apply for either a four-, three- or two-year program. Qualified students are eli-

gible for four-, three-, or two-year scholarships that include full tuition, $480 a year for books and lab fees and $200 per month.

To enroll in the General Military Course (GMC), or Basic Course, students in the four-year program must register for Aerospace 11: The Foundation of the United States Air Force (2). Students in the three-year program may enroll concurrently in the freshman and sophomore classes, Aerospace Studies 11 and 21: The Evolution of USAF Air and Space Power (2).

Two-year students complete only the last two years of AFROTC but must attend a five-week field training session instead of the four-week session attended by the GMC students. Non-scholarship students are not obligated to military service until their junior year.

Students usually attend summer field training prior to their junior year, before elevation into the Professional Officer Course (POC). Entrance into the POC, which is the last two years of AFROTC studies, is based on an extensive evaluation and selection process during the student's sophomore year.

Members of the POC receive an allowance of $200-$400 per month regardless of scholarship status. Cadets who complete the POC in good standing and earn degrees are commissioned as second lieutenants and serve on active duty for four or more years depending on their selected Air Force career. They are also eligible to receive an additional $1,725 per semester if qualified.

Upon graduation and commissioning as an officer in the Air Force, students fulfill their military obligation by agreeing to retain their commission for four years active duty. Pilots incur a 10-year active duty commitment after completing undergraduate pilot training. Navigators incur an eight-year active duty commitment after completion of undergraduate navigator training.

The AFROTC unit at MU is organized as a cadet wing with group and squadron staffs and several flights. Freshman and sophomore cadets are assigned to one of the flights. They receive instruction from POC cadets in basic military customs and courtesies, drill movements and many other facets of Air Force operations. Additionally, they are offered the opportunity to visit Air Force bases and discuss career opportunities with Air Force members. Junior and senior cadets are assigned and rotated through various leadership positions, gaining experience in management procedures.

A minor in aerospace studies is available on completion of 15 semester hours, of which 12 hours are taught by Aerospace Studies. The additional three hours will be approved by the department from either the history, political science or peace studies area.

### COURSES

**11—The Foundations of the United States Air Force (2).** Introduces the Air Force and Air Force ROTC. Topics include professional appearance, military customs and courtesies, core values, equal opportunity and treatment, officer opportunities, group leadership problems. Applies communicative skills. Leadership lab.

**12—The Foundations of the United States Air Force (2).** Continues the introduction to the Air Force and Air Force ROTC. Topics include Air Force origins, organizations, major commands, installations, sister services (Army and Navy), group leadership problems. Applies communicative skills. Leadership lab.

**21—The Evolution of USAF Air and Space Power (2).** A survey course designed to facilitate the transition from Air Force ROTC cadet to Air Force ROTC officer candidate. Explores Air Force heritage, Air Force leaders, and Air Power doctrine. Applies communicative skills. Leadership lab.

**22—The Evolution of the USAF Air and Space Power (2).** Continues the transition from cadet to officer candidate. Expands leadership topics through the use of group leadership problems. Applies communicative skills. Leadership lab.

**231—Air Force Leadership Studies (3).** An integrated leadership and management survey course emphasizing development of the individual as an Air Force leader. Special topics include situational leadership, principle centered leadership, corrective supervision and counseling. Leadership lab.

**232—Air Force Leadership Studies (3).** Quality Air Force principles are examined from the foundation developed in Aerospace Studies 231. Ethical decision making, personal core values, and character development are discussed. Military evaluation systems are outlined. Leadership lab.

**241—National Security Affairs/Preparation for Active Duty (3).** Examines the national security process, regional studies, Air Force and joint doctrine. Special topics include the military as a profession, and civilian control of the military. Continued emphasis on communicative skills. Leadership labs.

**242—National Security Affairs/Preparation for Active Duty (3).** Examines civilian control of the military, officership, the military justice system, and current issues affecting military professionalism. Continued refinement of communicative skills. Leadership laboratory.

# Agricultural Economics

**College of Agriculture, Food and Natural Resources (CAFNR)**
**200 Mumford Hall (573) 882-3545**
**Fax (573) 882-3958**
**http://www.ssu.missouri.edu**

**UNIT LEADER** M. Nolan
**DEPARTMENT CHAIR** T. Prato
**PROFESSORS** M. Blase, M. Bredahl, J.B. Bullock, M. Cook, B. Deaton, N. Hein, T. Johnson, S. Matthews, D. Osburn, R. Plain, T. Prato, K. Schneeberger, A. Womack
**ASSOCIATE PROFESSORS** B. Bjornson, J. Dauve, N. Kalaitzandonakes, M. Kaylen, R. Massey, F. McCamley, M. Monson, K. Moore, R. Rudel, D. Van Dyne
**ASSISTANT PROFESSORS** G. Adams, D. Brown, E. Dunn, C. Fulcher, L. McCann, S. Monson, J. Parcell, V. Pierce, C. Poulos, M. Sykuta, C. Valdivia, P. Westhoff
**INSTRUCTOR** D. Lehman
**PROFESSORS EMERITI** M. Bennett, R. Bevins, C. Braschler, H. Breimyer, T. Brown, C. Cramer, G. Devino, R. Finley, G. Grimes, H. Hagan, C. Headley, J. Ikerd, E. Kiehl, V.J. Rhodes, P. Warnken, H. Workman

**DEGREES** BS in agribusiness management and BS, MS and PhD in agricultural economics

See the CAFNR listing for general education requirements or the handbook available at the above World Wide Web address.

**Minor** A minor in agricultural economics requires 18 hours of agricultural economics course work with at least nine hours at the 200 level or above. No more than 3 hours can be substituted from economics courses.



**Agribusiness Management** The degree in agribusiness management offers the student a general business background while emphasizing applications to various types of food and agricultural businesses. This program is designed to prepare students to eventually assume leadership roles in business. The broad background is designed to allow maximum flexibility when entering the job market. Critical thinking and effective decision making are characteristics enhanced in the students pursuing this degree. An honors program is available.

**Agricultural Economics** Programs in agricultural economics focus on understanding and solving problems in the production, distribution and use of agricultural goods, services and natural resources. Emphasis is placed on courses in management, finance, marketing and production, as well as on courses covering economic principles and computer skills. Students transferring into agricultural economics from other departments at MU or from other colleges or universities must have a 2.5 cumulative grade point average for all work attempted. An honors program through AF&NR allows greater flexibility for students who achieve academically.

Substantial career opportunities exist in food processing and manufacturing, international production, development and trade, biotechnology, agricultural and natural resource management, as well as aspects of agribusiness.

For more information you can peruse the undergraduate handbook on the Agricultural Economics Web page at http://www.ssu.missouri.edu/AgEcon/.

**The department is also home to several programs and research centers:**

**Agricultural Electronic Bulletin Board** (AgEBB) is a clearinghouse for information related to farming and production agriculture.

**The Agribusiness Research Institute** (ARI) is an agribusiness research program that is unique in its focus on interactive problem solving and learning. ARI is also home to internationally recognized research and education programs such as the Graduate Institute of Cooperative Leadership (GICL), the Economics and Management of Agrobiotechnology Center (EMAC), the Missouri Institute of Cooperatives (MIC) and AgBioForum, an online professional and scholarly journal.

**Center for Agricultural, Resource and Environmental Systems** (CARES) is an intercollegiate research and education center. CARES was established in 1992 with the purpose of helping people better understand and address agricultural, natural resource and environmental issues using knowledge and information technologies.

**The Community Policy Analysis Center** (CPAC) is committed to providing research, out-

reach and training that supports improved policy decisions in Missouri communities. CPAC's objectives include enhancing quality of community information; improving access to information for all interested citizens; increasing capacity for "what-if" analysis and forward planning; and broadening participation in community decision making.

**The Economics and Management of Agrobiotechnology Center** (EMAC) is a research institute with a focus on applications of biotechnology on agriculture and food production and distribution. EMAC provides rigorous, data based analysis of economic, management, and policy issues affecting decision-making in agrobiotechnology.

**The Food and Agricultural Policy Research Institute** (FAPRI) is a Congressionally-enacted institute whose mission is to provide objective analysis of food, agricultural, nutritional and environmental issues. FAPRI analysis has been used by members of Congress writing farm legislation, by negotiators working on trade agreements, and by agribusiness, farmers, and the general public.

**The Rural Policy Research Institute** (RUPRI) conducts policy-relevant research and facilitates public dialogue to assist policymakers in understanding the rural impacts of public policies and programs.

**Agribusiness Management Major**
**Agribusiness Management** In addition to the course requirements of CAFNR, the following courses are required within this major:
**Major Field**
AgEcon 40: Food and Agriculture in the Macroeconomy (3)
AgEcon 41: Economics of Food and Agriculture (3)
AgEcon 123: Introduction to the Mathematics of Agricultural Economics (3)
AgEcon 183: The Agricultural Marketing System (3)
AgEcon 251: Agricultural Prices (3)
AgEcon 256: Agribusiness and Biotechnology Law (3)
AgEcon 282: Agribusiness Finance (3)
AgEcon 319: Agri-Food Business and Cooperative Management (3)
AgEcon 320: Agri-Food Business Management Strategy (3)
AgEcon 360: Capstone Seminar (3)
**Supporting Courses**
Econ 229: Money and Banking (3)
Mgmt 202: Fundamentals of Management (3)
Stat 150: Introduction to Probability and Statistics I (3)
Acct 36: Accounting I or 136GH: Honors Accounting I (3)
Acct 37: Accounting II or 137GH: Honors Accounting II (3)
Ag 111: Computing and Programming Concepts (3) or Comp Sci 75: Introduction to Computing (3) or Acct 258: Computer Based Data Systems (3)
Plant Sci 110: Plant Growth and Culture (3) or Bio 12: General Botany (5) or approved Forestry
AnSci 11: Animal Science (3) or approved Fish and Wildlife
Math 60: Finite Mathematics (3)
Business Core of at least six hours in one of the following areas: accounting, finance, management, or marketing.
Six hours of agricultural production courses not to be in agricultural economics, rural sociology, biochemistry or agriculture.
23 Elective hours

**Agricultural Economics Major**
**Farm and Ranch Professional Option** In addition to the course requirements for the CAFNR, the following courses are required within this option:
**Major Field**
AgEcon 40: Food and Agriculture in the Macroeconomy (3)
AgEcon 41: Economics of Food and Agriculture (3)
AgEcon 123: Introduction to the Mathematics of Agricultural Economics (3)
AgEcon 183: The Agricultural Marketing System (3)
AgEcon 251: Agricultural Prices (3)
AgEcon 257: Rural and Agricultural Law (3)
AgEcon 260: General Farm Management (3)
AgEcon 282: Agribusiness Finance (3)
AgEcon 294: Commodity Marketing (3)
AgEcon 312: Planning and the Farm Business (3)
AgEcon 360: Capstone Course (3)
**Supporting Courses**
Econ 229: Money and Banking (3)
Stat 150: Introduction to Probability and Statistics I (3)
Acct 36: Accounting I or 136GH: Honors Accounting I (3)
Acct 37: Accounting II or 137GH: Honors Accounting II (3)
Ag 111: Computing and Programming Concepts (3) or Comp Sci 75: Introduction to Computing (3) or Acct 258: Computer Based Data Systems (3)
Plant Sci 110: Plant Growth and Culture (3) or Bio 12: General Botany (5) or approved Forestry
An Sci 11: Animal Science (3) or approved Fish and Wildlife
Math 60: Finite Mathematics (3)
12 hours of agricultural production courses not to be in agricultural economics, rural sociology, extension education or agriculture
23 Elective hours

**Agricultural Economics Option** In addition to the course requirements for CAFNR, the following courses are required within this option.
**Major Field**
AgEcon 40: Food and Agriculture in the Macroeconomy (3)
AgEcon 41: Economics of Food and Agriculture (3)
AgEcon 123: Introduction to the Mathematics of Agricultural Economics (3)
AgEcon 183: The Agricultural Marketing System (3)
AgEcon 251: Agricultural Prices (3)
AgEcon 282: Ag Business Finance (3)
AgEcon 360: Capstone Seminar (3)
AgEcon Field 1 (9) see handbook
AgEcon Field 2 (9) see handbook
**Supporting Courses**
Econ 229: Money and Banking (3)
Stat 150: Introduction to Probability and Statistics I (3)
Acct 36: Accounting I or 136GH: Honors Accounting I (3)
Acct 37: Accounting II or Acct 132: Honors Accounting
Ag 111: Computing and Programming Concepts (3) or Comp Sci 75: Introduction to Computing (3) or Acct 258: Computer Based Data Systems (3)
Plant Sci 110: Plant Growth and Culture (3) or Bio 12: General Botany (5) or approved Forestry
An Sci 11: Animal Science (3) or approved Fish and Wildlife
Math 60: Finite Mathematics (3)
Six hours of agricultural production courses not to be in agricultural economics, rural sociology, extension education or agriculture
23 Elective hours

## COURSES

**10—Introduction to Agribusiness Management (1).** Management concepts and techniques. Coordination of business activity, motivation, and decision-making approaches used by industry leaders in global food chain. Unique aspects of managing enterprises in the agriculture-food sector. f.

**11—Survey of Global Agribusiness (1).** Economic, social and political forces and trends and the impact on U.S. and global agribusinesses. Global production, consumption trade, and investment patterns in agriculture-food sector. Developing management strategy in changing economic- political environment. w.

**40—Food and Agriculture in the Macroeconomy (3).** Introduction to macroeconomic principles and their application to agriculture-food sector and natural resource issues. Using macroeconomic principles in decision-making and in evaluating national and regional economic problems and issues. f.

**41—Economics of Food and Agriculture (3).** Introduction to the microeconomic principles and their application to decision-making in agribusinesses. Consumer decision analysis, producer goals and optimization and the market environment where they meet and trade. Applications to current issues. w.

**50—Agricultural Economics (5).** Introduces certain fundamental principles of economics; emphasis on application to agriculture. Adjustment to forces by farmers, businessmen in planning, producing and marketing products. Prerequisite: 16 hours completed.

**70—Introduction to Ecological Economics (3).** (same as Environmental Studies 70). Examines current environmental and natural resource issues using a systems perspective and key economic concepts. Explores connections between the environment and the economy based on problems at the local, national, and international levels. w.

**123—Introduction to the Mathematics of Agricultural Economics (3).** Familiarize students with the use of calculus and other quantitative tools in developing and analyzing fundamental economic concepts. Prerequisites: Ag Econ 41 and Math 60. f.

**150—The World Food and Agriculture System (3).** Study of global food and agricultural systems. Analysis of economic, geographic, biologic, social and institutional factors influencing world food and agricultural production, marketing, consumption and trade. Prerequisites: Agricultural Economics 40 and 41, or Economics 5 and 14 or equivalent.

**156—Introduction to Environmental Law (3).** Environmental issues from a legal perspective, using current controversies from both the USA and other countries. Major environmental laws dealing with water, air, noise, endangered species, waste disposal, and land use.

**183—The Agricultural Marketing System (3).** Analysis of marketing system that transforms agricultural products into

food products. Examines functions and institutions in marketing and distributing food from both micro and macro perspectives. Prerequisite: Agricultural Economics 41 and English 20. f,w.

**190—Practicum in Agricultural Economics (1-3).** Off-campus integrated working and learning experience for Departmental majors and minors. Application of economic concepts in business or government. Prerequisites: 6 credit hours Agricultural Economics, 3 credits communications, and 30 total University credits. Graded on S/U basis only. f,w,s.

**200—Problems (cr.arr.).** Supervised study in specialized phase of agricultural economics. Prerequisite: introductory course in Agricultural Economics. f,w,s.

**223—Agricultural Sales (3).** Principles of salesmanship in agricultural input and output markets; buyer motivations; time and territory management; communication models and techniques; planning and executing sales calls; after-sale service. Prerequisites: Agricultural Economics 41 and junior standing. f,w.

**224—New Products Marketing (3).** Learning experience to develop skills in marketing new ag products. To include: market analysis, goals and objectives, action plan, financial and monitoring and measurement. In small groups, students will develop complete marketing plan for a new product. Prerequisites: 41 and English 20. f,w.

**225—Statistical Analysis (3).** Elementary statistical inference. Prerequisite: Mathematics 10 or equivalent.

**230—Agricultural and Rural Economic Policy (3).** Study and analysis of past and present government policies affecting agriculture and rural economy. Prerequisite: Agricultural Economics 40 and 41. f.

**241—Cooperative Business Organizations (3).** Cooperative business organizations; importance; principles; economic problems. Organizational procedures. Operational practices. Prerequisite: Agricultural Economics 183.

**250—Economics of Agricultural Production and Distribution (3).** Examines current national and international issues affecting agriculture. Applies economic principles to agricultural problems. Prerequisites: 50 or Economics 51 & Mathematics 10 or equivalent.

**251—Agricultural Prices (3).** Variations in prices of agricultural products; underlying factors. Prerequisites: Agricultural Economics 123, 183 and Statistics 150. f.

**256—Agribusiness and Biotechnology Law (3).** Legal concepts applicable to agribusiness and biotech firms. To include contracts, torts, product liability, warrenties, corporate farming laws, UCC, corporations/partnerships/limited liability companies, labor laws, patent copyrights/trademark laws, international and ethical perspectives. Prerequisites: 3 hours of Ag Economics or Economics.

**257—Rural and Agricultural Law (3).** Everyday practical legal problems facing rural residents, farmers, agribusiness, and local government. Laws include statutes, common law (cases), customs, and administrative regulations. Topics include corporate/contract farming, right-to-farm, leases, fence laws, estate planning and water rights. Prerequisites: 3 hours of Ag Economics or Economics.

**260—General Farm Management (3).** Economics and management principles applied to planning and operating farm businesses. Includes enterprise combination, resource acquisition, water management, profit maximizing techniques and annual adjustments to changing conditions. Prerequisite: Agricultural Economics 41. f,w.

**270—Conservation and Use of Protected Areas s (3).** Evaluation of socioeconomic, cultural and ecological values influencing the establishment, development and management of publicly-owned protected areas including national parks and forests, wildlife refuges, wilderness and wild/scenic rivers. Prerequisites: 41 or 70 or Economics 4 and introductory Natural Resources courses or instructor's consent.

**271—International Agricultural Development (3).** Examines world food problem; analyzes its causes; economic and noneconomic policy alternatives for modernizing agriculture in less-developed countries. Prerequisites: Agricultural Economics 40 and 41 and junior standing. w.

**272—International Food Trade and Policy (3).** Examines food trade; develops economic analyses of trade impacts of domestic agricultural policies; examines international trade agreements; and interface of trade and environment. Prerequisites: Agricultural Economcis 40 and 41 or Economics 4 and 5. f.

**280—Financing the Farm Business (3).** Financial management of farm business. Operational methods of credit institutions serving agriculture. Prerequisites: 41 and Accountancy 37.

**282—Agribusiness Finance (3).** Application of the concepts and methods of finance to the management of agribusiness firms, including cooperatives. Special attention is given to the working capital needs of agribusiness and to the specialized lending institutions in the agricultural economy. Prerequisite: Ag Econ 41 and Accountancy 37. w.

**294—Commodity Marketing (3).** Theory and applied decision making in marketing grain and livestock with emphasis on both cash and futures markets. Prerequisite: Agricultural Economics 183. w.

**301—Topics in Agricultural Economics (1-6).** Current and new topics not currently offered in applied and/or theoretical areas in Agricultural Economics.

**310—In-Service Course in Agricultural Economics (2-10).** A. Profit Maximizing Principles B. Farm Planning C. Farm Records and Analysis D. Business Management E. Using Computers in Farm Management Decision Making Basic principles of farm management. Applications of principles and subject matter in successful classroom presentation primarily for high school teachers. Course is offered in sections A-E as listed, for 2 hours each. Prerequisites: 10 hours credit in Agricultural Economics, including 260, or instructor's consent.

**312—Planning the Farm Business (3).** Economic analysis and planning of the farm business and its organization. Applications of computerized management techniques to farm business including resource acquisition, tax management, enterprise analysis, and business analysis through farm records and budgets. Prerequisites: Agricultural Economics 260 or Agriculture 111 or equivalent. w.

**314—Farm Business Analysis (3).** Techniques of analyzing a farm business. Methods of resource acquisition, record analysis, tax management principles, and organizational structure of the farm business are principal topics covered. Prerequisites: 260.

**319—Agri-Food Business and Cooperative Management (3).** Risk management in the global agrifood chain, including managing the unique uncertainties of biological production processes, global market analysis, and government intervention, of risk mananagement tools and institutions unique to strategic decision making in agribusiness and cooperative firms. Prerequisites: Agricultural Economics 183 and 256, Management 202. w.

**320—Agri-Food Business Management Strategy (3).** Analysis of industry forces in Agriculture and food sector. Assessing risks and firms capabilities. Development of firm's competitive strategy, including vertical integration, diversification, international business option, and financial planning and performance measurement. Prerequisites: Agricultural Economics 183 and 282 and Agriculture 111. f.

**321—Economic History of Agriculture (3).** Emphasizes Europe and U.S. historical interpretation; usefulness in evaluating present and probable future developments in agriculture.

**338—Rural Real Estate Appraisal (3).** (same as Agricultural Engineering 338). Principles, techniques, practices of rural real estate appraisal. Field trips. Prerequisites: 260 and Agronomy 100.

**355—Economics of Agricultural Production and Distribution (3).** Applies economic principles to agricultural production including price theory, linear programming and uncertainty. Prerequisites: Economics 251, Mathematics 207, Statistics 207 or equivalent.

# Agricultural Economics

**356—Environmental Law and Policy (3).** Legislative, administrative, and common law dealing with the environment. Introduces the fundamental concepts and classic issues underlying the body of law and policy dealing with the environment. Includes air and water quality, endangered species preservation, land use, and waste disposal. Prerequisites: Ag Econ 256 or 257, or graduate standing, or instructor's consent.

**360—Senior Seminar (3).** Applications of economic concepts to formulate positions on issues. Includes discussion sessions, student team presentations and guest lecturers. Prerequisite: senior standing. w.

**382—Agribusiness Investment (3).** Theory of valuation as financial metric by which firm performance is measured and managed. Using financial analysis and pro forma techniques to assess strategic investment option impacts on firm performance and value. Prerequisite: 282. w.

**390—Internship Experiences in Agricultural Economics (cr.arr.).** Combines study, observation, and employment in a public agency or private firm in marketing, farm management, or credit. Staff supervision and evaluation. Reports required. Prerequisites: 75 hours of course work and instructor's consent. f,w,s.

**400—Problems (cr.arr.).** Supervised study, research in specialized phases of agricultural economics. Prerequisite: instructor's consent.

**401—Designing Agricultural Economics Research (3).** Explores roles of theory and methods in agricultural economics research. Students critique published research, identify researchable topics, estimate values of research, develop a program of research, and write research proposal. Prerequisite: graduate standing. w.

**410—Seminar (1).** Lectures, reports on economic problems in agriculture. f,w.

**415—New Institutional Economics (3).** This course expands upon the fundamental principles of neo-classical economics by relaxing traditional behavioral and informational assumptions and by introducing the importance of transaction costs and institutions for economic analysis.

**420—Theory of Markets (3).** Development of theories of monopolistic, monopolistic competition; application to agricultural markets. Market structure influence on price, nonprice competition in buying, selling of farm products and inputs. Prerequisites: 16 hours economics, including Economics 351. w.

**422—Organizing and Adjusting the Farm Business (3).** Applies principles of economics and management in organizing and adjusting farm business units to keep abreast of changing conditions. Normally offered at selected off-campus locations. Prerequisite: instructor's consent.

**424—Advanced Production Economics (3).** Production function analyses and advanced theory of the firm as applied to agricultural production problems. Concepts of input demand, production supply, quality, time and technology, dynamic analysis and production under uncertainty. Prerequisites: Mathematics 80, 205 or 207; Ag Economics 355; Economics 405 or 451; and Statistics 385 or Economics 472. w.

**430—Advanced Price Analysis (3).** Applies economic theory and quantitative methods to analyze agricultural price issues. Examines problem formulation, estimation, and model evaluation applied to demand and supply situations. Prerequisites: Economics 405 or 472; Statistics 385. f.

**435—Advanced Farm Management (3).** Recent changes in agriculture and their impacts on farm management. Techniques in farm management research, teaching and exten-

sion; new theories; selected current literature analyzed. Prerequisites: 312 or 314. alt. f, even years.

**441—Rural Economic Growth and Development (3).** Covers new growth theories, migration, cumulative causation, agglomeration economies, increasing returns, human capital, social capital, new economic geography, and new trade theories. Prerequisites: Economics 351, 353, and matrix algebra. f.

**442—Regional Economic Theory and Methods (3).** Theory of spatial economics: Central place theory, spatial labor markets, location theory, social accounting matrices, input-output, computable general equilibrium, geographic information systems and regional econometric models. Prerequisites: Econ 351, 353, and matrix algebra. w.

**450—Research (cr.arr.).** Independent investigation of advanced nature. Report required.

**451—Economics of Marketing Livestock and Livestock Products (3).** Current economic problems in marketing livestock and livestock products. Methods of solving marketing problems. Prerequisites: 220 and 250. w.

**454—Welfare and Consumption Economics (3).** Introduces welfare economic principles; application to problems of resource allocation. Appraises economic policies, programs; consumers' choice; measurement of consumption; living standards; household decisions and markets relation. Prerequisites: 12 hours Economics.

**458—Economics of Marketing (3).** Advanced principles of agricultural economics from standpoint of market system. Theory of the time, space, and form dimensions of economic activity. Topics include location theory, price discovery, price determination, and the role of information in operation of markets. Prerequisites: Economics 405 or 451; a course in Econometrics desirable. f.

**462—Economics of Agribusiness Organization (2).** This course builds on transaction cost-based theories and tools to study the economic underpinnings of intra-firm organization, firm boundaries, and the structure of inter-firm transactions. Prerquisite: 415. f.

**463—Economics of Agribusiness Strategy (2).** Relationships of neoclassical and new institutional economics to designing organizational strategy and structure. Internal coordination and structure, organizational boundaries, and competitiveness and sustainability of food system organizations. Prerequisite: 415. w.

**465—Current Economic Aspects of Agriculture (3).** An application of the theory of welfare economics to analysis of agricultural policy alternatives. Historical perspective of U.S. agricultural policy is examined along with an economic analysis of current issues of domestic agricultural programs and trade policies. Prerequisites: Economics 405 or 451. w.

**467—Development and Management of Natural Resources (3).** Evaluation of economic rationales and alternative programs for public natural resource management. Static and simple temporal natural resource allocation models. Benefit cost analysis. Prerequisites: Economics 351 or 251 and instructor's consent. f.

**468—Resource Economics and Development (3).** Methods and criteria of choice in public investment decisions, emphasizes natural resource development. Temporal allocation of resources and its relation to economic development. Economic theory is applied in both a static and dynamic framework to analyze natural resource or problems. Prerequisites: Economics 370, 405 or 451; Mathematics 80, 205 or 207. alt. w, even year.

**472—International Agricultural Development Policy (3).** An analytical review of economic policies directed toward stimulating agricultural development in the world's low income countries. Prerequisites: Economics 351 and 353 or instructor's consent.

**474—Mathematical Modeling for Social Scientist (3).** Introduction to mathematical programming, emphasizing problem formulation and solution interpretation. Computer applications are stressed. Prerequisite: Statistics 385 or instructor's consent.

**475—Econometrics I (3).** (same as Economics 475). Emphasis is given to special estimation problems which occur in integrating the theory with various types of economic data.

**476—Econometrics II (3).** (same as Economics 476).

**480—Research Methodology (3).** A detailed study of the scientific method and the research process covering the seven major steps in the process-problem definition, hypotheses specification, research design, measurement, data collection, data analysis, and generalization. f.

**485—Advanced Topics in Economics (3).** Analyzes economic logic problems. Current agricultural economic problems. Prerequisite: graduate standing. w.

**490—Research (cr.arr.).** Independent investigation of advanced nature, leading to dissertation. Graded on a S/U basis only.

# Agricultural Education

**College of Agriculture, Food and Natural Resources**
**121 Gentry Hall (573) 882-7451**
**Fax (573) 884-4444**
**http://www.ssu.missouri.edu/SSU/AGED/**
**UNIT LEADER** M. Nolan
**DEPARTMENT CHAIR** R. Birkenholz
**PROFESSORS** R. Birkenholz, P. Vaughn
**ASSISTANT PROFESSORS** J. Dyer, B. Garton
**INSTRUCTOR** J. Riley

**DEGREE** BS Ag in agricultural education

**PROGRAM DESCRIPTION** Students pursuing a degree in Agricultural Education may choose between two options. The **Teaching Option** prepares students to meet state teacher certification requirements and teach agriculture in public schools at the secondary and adult levels. In addition to courses in agricultural education, the curriculum includes courses in general education, technical agriculture (agricultural economics, agricultural business and management, animal science, plant science, agricultural systems management, horticulture and natural resources) and professional teacher certification courses offered through the College of Education. The capstone experience involves a 16-week student teaching internship.

The **Leadership and Communication Option** focuses on the development of leadership and communication skills in agriculture, food and natural resources. Students are encouraged to develop a diverse background in agriculture with an emphasis on communication, leadership and human relation skills. Students have the opportunity to specialize in an area of interest by completing course work in one or more agriculture, food or natural resource disciplines. In addition to agricultural education course requirements, students complete course work in agricultural economics, agricultural sales and marketing, plant science, agricultural systems management, natural resources, and food science. The capstone experience involves a supervised educational internship with an agricultural business, public or private agency, or commodity organization.

**MINOR** The minor in Agricultural Education focuses on teaching and learning processes in agriculture, food and natural resources. Requires a 2.5 GPA and 15 credit hours in Agricultural Education courses. Required courses include: Agr Ed 220, Agr Ed 250 or 255, Agr Ed 370, and Agr Ed 380. Additional courses should be selected from the following: Agr Ed 250, Agr Ed 255, Agr Ed 280, Agr Ed 300, Agr Ed 301, or Agr Ed 360.

**TRANSFER POLICY** Students transferring into Agricultural Education from other academic degree programs at the University of Missouri or from other colleges and universities must have a 2.3 cumulative GPA for all courses attempted.

**CURRICULUM**

**General Education**

Communications (9): Eng 20, Comm 75, elective
Mathematics (6): Math 10, Stat 207 or elective
Physical and Biological Science (11): Bio Sci 1 and 2, 10, 12, or 42, Chem 15, BioChm 100 or 105
Social and Behavioral Sciences (9): Ag Ec 40 and 41 and Pol Sci 1 or 11 or Hist 3 or 4
Humanistic Studies and Fine Arts (9): electives
Two Writing Intensive Courses (one in the major) [WI]
Math Reasoning Proficiency Course [MP]
Computer Information Proficiency [CIP]

**TEACHING OPTION**

**Major Field**

Agr Ed 100: Orientation to Agricultural Education (1)
Agr Ed 280: Teaching Farm and Personal Financial Management (2)
Agr Ed 360: Rationale and Structure of Agricultural Education Programs (3)
Agr Ed 361: Integrated Field Experience I (1)
Agr Ed 370: Designing Curriculum and Instruction in Agriculture (3)
Agr Ed 371: Integrated Field Experience II (1)
Agr Ed 380: Teaching Agriculture Subjects (3)
Agr Ed 395: Internship Seminar (3)
Agr Ed 399: Student Teaching Internship in Agriculture (12)

**Education**

ED200: Inquiry into Learning I (4)
ED201: Inquiry into Learning II (4)
ED304: Inquiring into Schools, Community and Society I (3)
ED306: Inquiring into Schools, Community and Society II (2)
C&I T316: Teaching Reading in the Content Areas (2)

**Agricultural Economics**

Ag Ec 183: Agricultural Marketing System (3) or
Ag Ec 224: New Products Marketing (3)

**Animal Science**

An Sci 165: Intro to Ruminant Livestock Production (3)
An Sci 175: Intro to Monogastric Livestock Production (3)

**Plant and Soil Science**

Plnt Sci 110: Plant Growth and Culture (3)
Soils 100: Introduction to Soils (3)

**Agricultural Systems Management**

Ag SM 63: Intro to Agricultural Systems Management
Ag SM 210: Advanced Agricultural/Industrial Materials and Processes (3)

**Horticulture**

Elective (3)

**Natural Resources**

Nat Res 60: Ecology and Conservation of Living Resources (3) or
Nat Res 160: Contemporary Issues in Natural Resources (3)

**Agriculture**

Agric 111: Computing and Information Systems

I (3)
Agriculture Electives (9)

**LEADERSHIP AND COMMUNICATION OPTION**

**Major Field**

Agr Ed 100: Orientation to Agricultural Education (1)
Agr Ed 220: Verbal Communication in Agriculture, Food, and Natural Resources (3)
Agr Ed 250: Professional Leadership Development (3)
Agr Ed 255: Team and Organizational Leadership (3)
Agr Ed 280: Teaching Farm and Personal Financial Management (2)
Agr Ed 370: Designing Curriculum and Instruction in Agriculture (3)
Agr Ed 380: Teaching Agriculture Subjects (3)
Agr Ed 390: Internship in Agricultural Education (4)
Agr Ed 395: Internship Seminar (3)
Psych 1: General Psychology (3)
Agric 111: Computing Information Systems I (3)
Ag Jrn 201: Effective Print Communication: Design and Photography (3)

**Agricultural Economics**

Ag Ec 223: Agricultural Sales (3)
Ag Ec 183: Agricultural Marketing System (3)
or
Ag Ec 224: New Products Marketing (3)
Ag Ec Elective (3)

**Animal Science**

Elective (3)

**Plant and Soil Science**

Plnt Sci 110: Plant Growth and Culture (3)
Soils 100: Introduction to Soils (3)

**Agricultural Systems Management**

Ag SM 330: Agricultural Safety and Health (3)

**Natural Resources**

Elective (3)

**Food Science & Human Nutrition**

Elective (3)

**Agriculture, Food and Natural Resources**

Electives (9)

**COURSES**

**100—Orientation to Agricultural Education (1).** Overview of the discipline of agricultural education including: career opportunities, certification requirements, professional development, and current issues. f.

**220—Verbal Communication in Agricuture, Food and Natural Resources (3).** Application of verbal communication skills used in the dissemination of information related to agriculture, food, and natural resource topics. Acquisition of interpersonal communication skills and small group, impromptu and professional presentation skills. Prerequisite: sophomore standing.

**250—Professional Leadership Development (3).** Review of the principles and practices associated with effective professional leadership. Students will examine and practice interpersonal skills that contribute to leadership success. Prerequisite: English 20 and sophomore standing. f, w.

**255—Team and Organizational Leadership (3).** Principles and practices in planning, developing, conducting, and evaluating leadership programs for agricultural groups. The course focuses on helping students better understand themselves and others, improving group communications; becoming effective leaders and members of groups; improving leadership and personal development skills; assessing leadership situations, determining and administering appropriate leadership strategies, and evaluating results.

**280—Teaching Farm and Personal Financial Management (2).** Principles of farm and personal financial management. Topics include record keeping, depreciation, tax management, credit management, and budgeting. Emphasis on teaching financial management concepts. f.

**300—Problems (cr.arr.).** Supervised and independent study of problems and issues in Agricultural Education at the undergraduate level. Prerequisite: instructor's consent. f,w,s.

**301—Topics in Agricultural Education (1-3).** Courses on specialized topics offered on a trial basis until the course has been assigned a course number. f,w,s.

**360—Rationale and Structure of Agricultural Education Programs (3).** This course provides future agricultural educators with a comprehensive overview of a complete Agricultural Education program involving classroom instruction, supervised experience, and personal development. Prerequisite: junior standing. f.

**361—Integrated Field Experience I (1).** A field-based experience that provides students with comprehensive experience directed toward the planning, supervision, and evaluation of Supervised Agricultural Experience Programs in secondary agriculture programs. Prerequisite: concurrent enrollment in Agr Ed 360. Graded on S/U basis only.

**370—Designing Curriculum and Instruction in Agriculture (3).** Instructional methodology course focused on analyzing the principles of learning and teaching and designing curriculum and instruction for teaching agriculture subjects in formal and informal educational settings. Prerequisites: Agricultural Education 360 or junior standing. w.

**371—Integrated Field Experience II (1).** A field-based experience that examines the integration of Supervised Agricultural Experience and Career Development Events into the secondary agriculture curriculum. Investigates the use of advisory committees and graduate follow-up data in curriculum planning. Prerequisite: concurrent enrollment in Agr Ed 370. Graded on S/U basis only.

**380—Teaching Agriculture Subjects (3).** Instructional methodology course focused on teaching approaches and methods, problem-solving teaching techniques, and managing learning environments for teaching agriculture subjects in formal and informal settings. Prerequisite: Agricultural Education 370. f.

**390—Internship in Agricultural Education (1-4).** Field-based learning experience that combines study, observation, and employment with an agricultural business, industry or government agency in the area of education, training, and development. Individual internship plans are developed by a student, faculty supervisor, and an industry cooperator. Prerequisite: Internship Coordinator's consent. f,w,s.

**395—Internship Seminar (3).** Seminar focused on the problems of practice and developing skills needed for a career in teaching agriculture at the secondary level. The core of the seminar is on coordinating experimental learning and leadership development activities, managing the complete program, and professional development. Prerequisite: concurrent enrollment in Agr Ed 399.

**399—Student Teaching Internship in Agriculture (cr.arr.).** A field-based learning experience that combines observation and practice in a secondary/adult agriculture program. The purpose of the internship is to provide an opportunity to apply teaching and learning concepts in a practical context. Prerequisite: Internship Coordinator's consent. w.

**400—Problems (cr.arr.).** Prerequisite: instructor's consent. f,w,s.

**410—Seminar (cr.arr.).** Prerequisite: departmental consent.

**415—College Teaching of Agriculture (3).** A course designed to assist current or future college faculty who wish to improve their teaching skills. Topics include theories, principles and practices associated with effective teaching and learning in higher education.

**420—Induction Year Teaching I (1-2).** Continuing education course for the professional development of first-year teachers of agriculture. The course focuses on the pedagogical knowledge, skills, and attitudes and managerial skills needed by beginning teachers of agriculture. Prerequisite: instructor's consent. f.

**421—Induction Year Teaching II (1-2).** Continuing education course for the professional development of second-year teachers of agriculture. The course is a continuation of Ag Ed 420 and focuses on the pedagogical knowledge, skills, and attitudes and managerial skills needed by beginning teachers of agriculture. Prerequisite: Agr Ed 420. f.

**425—Inservice Course in Agricultural Education (cr.arr.).** Professional development course which focuses on enhancing the technical, administrative, or management skills of agricultural educators.

**426—Farm Business Management Analysis I (2).** Provides the basic background and knowledge for an instructor to develop and implement the Farm Business Management Analysis program in the local community.

**427—Farm Business Management Analysis II (2).** Provides the basic background and knowledge for an instructor to work with farm business managers in analyzation and charting their business operations.

**430—Grant Proposal Writing (3).** Preparation of proposals designed to solicit grant funding to support teaching, research or outreach programs. Emphasis on proposal development, identifying funding sources, and proposal review processes.

**440—Student and Teacher Development in Agricultural Education (3).** Examines planning and supervising career exploration, experiential learning, and leadership development activities of secondary agriculture students. The professional development of the secondary agriculture teacher is also examined. Prerequisite: Agr Ed 360 or equivalent.

**445—Distance Learning with Adults in Agriculture (3).** A course examining the princpals of learning as they relate to delivering education at a distance. Prerequisite: Agr Ed 380 or instructor's consent.

**450—Research (cr.arr.).** Independent research activities that culminate in a written research report but not a thesis. Prerequisite: instructor's consent.

**455—Preparing Manuscripts for Publication (1).** An introduction to planning, preparing, and submitting research based articles for publication in professional journals and research proceedings.

**460—Program Leadership and Administration (3).** Principles of admininstration and organization and their applications to extension work. Prerequisite: instructor's consent.

**470—Program Development and Evaluation (3).** (same as Rural Sociology 403). Program development principles, teaching plans and evaluation principles applied to extension program development. Prerequisite: instructor's consent.

**480—Improving Instruction in Career and Technical Education (3).** Explores the principles and psychological aspects of teaching and learning; teaching strategies, methods, and techniques; curriculum organization; evaluating student learning; motivating students; managing the learning environment; use of technology; and personal teacher bahaviors that influence learning. Prerequisite: Agr Ed 380 or instructor's permission.

**490—Research (cr.arr.).** Prerequisite: instructor's consent. Graded on a S/U basis only.

# Agricultural Education
# Agricultural Journalism

# Agricultural Journalism

**(INTERDIVISIONAL PROGRAM IN THE COLLEGE OF AGRICULTURE, FOOD AND NATURAL RESOURCES AND THE SCHOOL OF JOURNALISM)**

**1-98 Agriculture Building (573) 882-2487**
**Fax (573) 882-8007**

**INSTRUCTORS** M. Cummins, J. Curley, G. Laur, J. Vale, S. Wood-Turley,

**PROFESSORS EMERITI** D. Dailey, R. Lee

**DEGREES** BS in agricultural journalism

The College of Agriculture, Food and Natural Resources, in cooperation with the School of Journalism, offers a degree program in agricultural journalism. The curriculum provides students with training to enter a wide variety of occupations in the magazine and newspaper fields, radio and television, photography, public relations, advertising and Web-based communications. Students must have 60 hours of credit and a 2.75 grade point average to take classes in the School of Journalism.

**DEPARTMENTAL REQUIREMENTS** 56 hours

**Major Field**

**Journalism,** 36 hours required
J 105: News (3)
J 110: Editing (3)
J 200: Principles of American Journalism (3)
J 304: Communications Law (3)
J 306: Reporting (3)
J 310: Newspaper Editing (3) or J 363: Magazine Editing (3)
J 319: Principles of Strategic Communication
Plus 15 hours of journalism electives.

**Agricultural Journalism,** eight hours required
AgJ 160: Introduction to Agricultural Journalism (2)
AgJ 310: Senior Practicum (3)
AgJ 320: Agriculture and the Media (3)

**Business and/or Economics** six hours

**Agriculture Science** six hours

Students also may select one of the School of Journalism options—advertising, magazine, news-editorial, newspaper publishing, photojournalism, or broadcast news.

Courses to fill departmental requirements are selected by students and their advisers. Basic typing and computer skills are required for journalism and agricultural journalism courses.

The flexibility in the curriculum permits students to obtain a broad background in agriculture, food and natural resources as well as journalism, plus some specialization in any of these fields if they so desire. Internship experience is strongly encouraged.

**COURSES**

**150—Problems (1-6).** For undergraduates majoring in agricultural journalism. May be repeated. Instructor's consent. f,w,s.

**160—Introduction to Agricultural Journalism (2).** Overview of agricultural issues in the media; career opportunities; speakers from print and broadcast agricultural media. f.

**201—Topics in Agricultural Journalism (1-3).** Instruction in select subject matter areas in the field of communications. Prerequisite: sophomore standing. f,w, s.

**210—Fundamentals of Communications (3).** Mass communications media and visual teaching aids available to professionals serving agriculture. Prerequisite: junior standing. f,w.

**240—Communicating on the Web (2).** Learn to make a useful, content-driven web site using web authoring software (this is not a programming class). This course emphasizes informative content and functional design. Prerequisite: sophomore standing. f,w.

**300—Problems/Senior Practicum (1-4).** Opportunity to apply journalism skills to agricultural subjects; opportunity to integrate communication processes within single medium or across media. Prerequisites: junior standing, and/or instructor's consent. Section 1: Senior Practicum; Section 2: Topics. May be repeated. f,w,s.

**306—Internships (1-3).** Prerequisite: instructor's consent. May be repeated for credit. f,w,s.

**310—Senior Practicum (3).** Students will write for CAFNR publications, develop a media research project, and learn to market their writing skills. Prerequisites: Majors: Journalism 306 or 351 and 110 or 352. Nonmajors: Agricultural Journalism 160, 210. Instructor's consent required.

**320—Agriculture and the Media (3).** (Agricultural Journalism capstone course). Provides background, knowledge of trends and experience with agricultural media. Prerequisites: 15 hours Journalism, 105; 12 hours Agriculture; junior standing; and/or instructor's consent. w.

# Agricultural Systems Management

**College of Agriculture, Food & Natural Resources**
**207 Agricultural Engineering Building**
**(573) 882-2731**

**ASM PROGRAM CHAIR** W. Downs
**PROFESSOR** W. Downs
**ASSOCIATE PROFESSORS** D. Baker, S. Borgelt, C. Fulhage, L. Schumacher, A. Thompson
**ASSISTANT PROFESSORS** W. Casady, J. Hoehne, K. Sudduth, J. Zulovich
**PROFESSORS EMERITI** D. Brooker, J. Carpenter, H. Currence, L. Day, J. Frisby, F. Harris, W. Hires, K. McFate, S. McKibben, N. Meador, D. Pfost, D. Sievers

**DEGREES** BS Ag in agricultural systems management

Agricultural Systems Management integrates physical systems with agricultural science and management skills to provide graduates with abilities to function in sales, service and maintenance management positions in agribusiness industries. The uniqueness of agricultural systems management graduates lies in their knowledge of the principles of physical systems that are the backbone of modern agricultural and food industries.

**DEPARTMENTAL REQUIREMENTS**

**Agricultural Systems Management Courses:** 31 hours

**These two courses are required:** 6 hours
ASM 80: Phys Principles for Ag Appl (3)
ASM 363: Agricultural Systems Mgt (3)

**At least four courses from the following list are required:** 12 hours
ASM 103: Agr/Ind Structures (3)
ASM 165: Mobile Hydraulics (3)
ASM 201: Surface Water Management (3)
ASM 202: Water Quality and Pollution Ctl (3)
ASM 215: Electricity: Wiring and Equip (3)
ASM 240: Ag. Equipment and Machinery (3)

**Select courses from the following list to accumulate a minimum of 31 hours in ASM courses:**
ASM 1: Internal Combustion Power (3)
ASM 198: Pesticide Application Equipment (3)
ASM 210: Advanced Agricultural/Industrial Materials and Processes (2-3)
ASM 286: Materials Handling and Conditioning (3)
ASM 300: Problems (1-5)
ASM 301: Topics in Agricultural Systems Management (3)
ASM 320: Irrigation and Drainage (3)
ASM 330: Agricultural Safety and Health (3)
ASM 390: ASM Internship (3)

**Required Supporting Courses:** 6 hours
Soils 100: Intro to Soils (3) or An Sci 11 or 65 (3) or Plt Sci 110: Plt Growth and Culture (3)
Computer Course (application software preferred) (3)

**Business/Economics Courses** 21 hours required:

**Suggested Courses**
AgEcon 40: Food and Agriculture in the Macroeconomy (3)
AgEcon 41: Economics of Food and Ag. (3)
Acct 36: Accounting I (3)
Acct 37: Accounting II (3)
AgEcon 183: The Agricultural Marketing System (3)
Mkt 204: Principles of Marketing (3)
Mgt 202: Fundamentals of Management (3)
AgEcon 260: General Farm Management (3)
Fin 123: Principles of Finance (3)
AgEd 280: Farm and Personal Financial Mgt (3)
Mgt 204: Introduction to Business Law (3)
AgEcon 257: Rural and Agricultural Law (3)

**Elective Courses:** 25-27 hours
In consultation with their adviser, students may select elective courses to bring their total credit hours to the 128 minimum. Typically electives are chosen to provide emphasis in one of the following areas:

**Natural Resource and Environment, Materials Handling and Crop Processing, Power and Machinery Systems, Production Agriculture.**

**John Deere Mentor Program**

The ASM program has an educational affiliation with the John Deere Co. Students who participate in the John Deere Mentor Program will take a comprehensive sequence of courses in Ag. Systems Management and Ag. Business Management. John Deere Co. participates in curriculum development and student mentoring. Each student is expected to plan and complete an internship with a sponsoring dealer. Up to 5 hours credit may be earned.

**MINOR IN AGRICULTURAL SYSTEMS MANAGEMENT** 15 semester hours of ASM courses. (Of the 15 hours, only three hours may be below the 100-level.)

**COURSES**

**1—Internal Combustion Power (3).** Basic internal combustion engine principles, mechanisms, combustion cycles, fuels, fuel injection, electrical systems, engine testing. f.

**63—Introduction to Agricultural Systems Management (3).** Introductory course that acquaints students with the general technical areas of Agricultural Systems Management (ASM). A systematic problem-solving approach is applied to problems derived from each of the technical areas within ASM.

**80—Physical Principles for Agricultural Applications (3).** Introductory survey course to help students to: formulate problems; understand units/accuracy; learn basic definitions; understand simple machines, power transmission, fluid statics, electricity, heat-flow, and temperature/moisture relationships. Prerequisite: Mathematics 10. w.

**103—Agricultural/Industrial Structures (3).** Structural component selection, materials of construction, heat and moisture control. In the main, a problem-solving course. Prerequisite: Mathematics 10. f.

**165—Mobile Hydraulics (3).** Basic power hydraulic theory. Hydraulic systems, components and circuits. Prerequisite:

Mathematics 10; sophomore standing. f.

**198—Pesticide Application Equipment (3).** Principles of pesticide application; sprayer hydraulics and spray atomization; calibration, mixing calculations and compatibility of tank mixes; personal and environmental protection; pesticide labels and regulations. w.

**201—Surface Water Management (3).** Topics include hydrology; soil erosion precautions; elementary surveying; selection and layout of ponds, terraces and water control structures. Prerequisites: Mathematics 10 and Junior standing. w.

**202—Water Quality and Pollution Control (3).** Applies scientific principles to a variety of water quality problems arising from activities associated with nonpoint pollution, agricultural chemicals, land disposal of wastes, on-site sewage disposal and individual drinking water systems. Prerequisites: general Inorganic Chemistry, Mathematics 10, and junior standing. f.

**210—Advanced Agricultural/Industrial Materials and Processes (2-3).** Primarily for students majoring in agricultural education. Applies shop principles to the design and construction of projects. Prerequisite: instructor's consent. f.

**215—Electricity: Wiring and Equipment (3).** Home and agricultural electricity; emphasis on proper selection and use of electrical wiring materials and equipment. Basic electrical theory. Prerequisite: junior standing. f.

**240—Agricultural Equipment and Machinery (3).** Operation of agricultural machinery. Selection and management of equipment. Prerequisite: junior standing. w.

**286—Material Handling & Conditioning (3).** Principles required for processing and handling food and feed materials; selection of machines; analysis and development of systems for processing and handling grain. Prerequisite: Mathematics 10, junior standing or instructor's consent. w.

**300—Problems (1-5).** Supervised independent study at the undergraduate level. Prerequisite: instructor's consent. f,w,s.

**301—Topics in Agricultural Mechanization (3).** Current and new technical developments in agricultural mechanization. Prerequisites: 6 hours in Agricultural Engineering or instructor's consent. f,w,s.

**310—In-Service Course in Agricultural Mechanization (1-8).** A. Farm Power and Machinery B. Farm Buildings and Conveniences C. Soil and Water Management D. Rural Electrification and Processing E. Agricultural Construction and Maintenance Basic principles relating to agricultural mechanization. Applies principles and subject matter in successful classroom presentation at the high school level. Prerequisites: 10 credits from courses 1, 20, 80, 103, 201, 210, 215 and 240; a B.S. degree in Agriculture or instructor's consent. s.

**320—Irrigation and Drainage (3).** Soil, water, plant relationships. Selection and layout of irrigation and drainage systems. Prerequisites: 201 or instructor's consent. f.

**330—Agricultural Safety and Health (3).** Analysis, organization and implementation of agriculture safety and health programs. Physical and economic impacts of accidents, standards and liabilities. Role of man in the man-machine system. Prerequisite: instructor's consent. w.

**363—Agricultural Systems Management (3).** Capstone course required of Agricultural System Management majors. Team project involving extensive use of the students education and requiring comprehensive written ond oral reports are required. It includes selection, replacement and cost calculation of machine systems; an introduction to linear programing project scheduling; and an introduction to maintenance management techniques. Prerequisites: 15 semester hours of ASM courses (100-level or above) and senior standing. f.

**390—Agricultural Systems Management Internship (2-5).** Problem course following prior approved internship work experience. Problem selected by internship company representative, faculty problem advisor and student. Supervised by faculty problem advisor and presented in technical report form. Prerequisite: senior standing. f,w,s.

**400—Problems (cr.arr.).** Supervised individual study at the graduate level.

**490—Thesis Research (cr.arr.).** Independent investigation to be presented as a thesis. Graded on as S/U basis only.

# Agriculture

**(INTERDISCIPLINARY AGRICULTURE COURSES IN THE COLLEGE OF AGRICULTURE, FOOD AND NATURAL RESOURCES)**

**2-64 Agriculture Building (573) 882-8301**

**DEGREES** BS

Courses offered for special needs and interests of CAFNR students.

**COURSES**

**5—University Learning Development (2).** Designed to facilitate skill acquisition and establishment of career expectations by freshman. Purpose of a liberal education, writing skills, overview of a land grant university, development of a four-year plan, management skills, international agriculture and ethics are course components. Prerequisite: freshman only; instructor's consent required. f.

**111—Computing and Information Systems I (3).** Provide students with a basic understanding of microcomputer usage, electronic communications, and use of the Internet. Topics include operating systems, word processing, database management systems, spreadsheets, electronic mail, online library searches, and the World Wide Web.

**112—Computing and Information Systems II (3).** Designed for students who excelled in Agriculture 111. The course is project oriented and includes further instruction on the subjects taught in Agriculture 111.

**150—Agricultural Travel Course (cr.arr.).** General travel course designed to broaden perspective of agricultural students. Prerequisites: one course in each of the following areas: agricultural economics, animal science, plant science, and instructor's consent. Cost of course is borne by the student. s.

**191—International Agriculture Experience (cr.arr.).** This course is designed to provide credit for students involved in international activities through the College of Agriculture, Food and Natural Resources. These activities may include course work at another institution internationally, professional and personal development activities, working on special projects, and cultural awareness. The course requires consent of the student's advisor; and instructor's consent. f,w,s.

# Animal Sciences

**College of Agriculture, Food and Natural Resources**
**S108 Animal Sciences Center (573) 882-1381**
**Fax: (573) 884-4606**
**http://www.asrc.agri.missouri.edu**

**UNIT LEADER** G. Jesse

**PROFESSORS** G. Allee, R. Belyea, J. Firman, H. Gaverick, G. Jesse, D. Keisler, M. Kerley, B. Lamberson, R. Prather, R. Roberts, M. Smith, B. Steevens, T. Veum, J. Williams

**ASSOCIATE PROFESSORS** K. Fritsche, D. Ledoux, W. Loch, M. Lucy, D. Patterson, J. Spain, D. Spiers

**ASSISTANT PROFESSORS** E. Antoniou, E. Berg, M. Carlson, W. Herring, E. Rucker, T. Safranski

**DEGREES** BS, MS and PhD in animal sciences

**ANIMAL SCIENCES MINOR**

- Student must complete a minimum of 15 hours of course credit in animal sciences.
- Students must complete a minimum of nine hours of course work in animal sciences courses numbered 200 or above.
- Students may select any combination of animal sciences courses excluding problems and internships to meet the above requirements; however, all students will be expected to meet prerequisites of animal sciences courses.

Animal sciences is a broad field centered on the study of agriculturally important animals and their products.

**PROGRAM OVERVIEW/DESCRIPTION:** Graduates in the animal sciences have employment opportunities in many areas including the following:

- Agribusiness (feed industry; animal health, meat, dairy and poultry products; marketing and sales; public relations; product formulation; research; and management)
- Breed associations
- State and federal governmental agencies (regulatory, market development and reporting, FDA, USDA, State Department of Agriculture)
- Educational institutions working in extension, teaching, research and international programs
- Production and management (farming; managers of livestock, dairy and poultry operations; consultants; and technical service representatives)
- Graduate and professional school

Students seeking admission into graduate and professional schools usually take more courses in the sciences than students in production and management, who select more business-related courses. Students and their faculty advisers select those courses that fit the students' needs, interests and objectives. The most specialization occurs at the advanced degree (MS and PhD) levels.

**GENERAL EDUCATION REQUIREMENTS** (50-52 credits)

**Communications** (9 credits)
English 20 (3 hrs)
Communications 75 (3 hrs)

**Elective** (3 hrs)
English 162
Ag Journalism 130, 201, 210
Communications 241, 271, 272, 275 or 276
Theater 44
Communication Science & Disorders 11
Foreign Language
Rural Sociology 225
Agricultural Economics 220
Agricultural Education 220
Agriculture 191

**Mathematics** (6 credits)
Math 10 or higher (3 hrs) (i.e. 14, 61, 80, 108)
Statistics or math (3 hrs)

**Physical and Biological Sciences** (13 to 15 credits)
Biology 1 & 2 or 42 (5 hrs)

Chemistry 31 & 32 (5 hrs)
Biochemistry (3-5 hrs)
Chem 205
Chem 210 & 212 or
Biochem 100 or 105 or 193
**Social and Behavioral Sciences** (9 credits)
Ag Econ 40 and 41 or (equivalent macro/micro) (6 hrs)
Rural Soc or Soc or Psych (3 hrs)
**Humanistic Studies and Fine Arts** (9 credits)
Approved humanistics studies or fine arts credits (9 hrs)
**State Law Requirement** (3 credits)
History 3 or 4 or Political Sci 1, 11 or 102

**DEPARTMENTAL REQUIREMENTS** (50 credits)
**Freshman Year** (6 credits)
AnSci 11: Intro to Animal Sciences (3 hrs)
AnSci 65: Lab Practicums (3 hrs)
**Sophomore Year** (8 credits)
AnSci 111: Sophomore Seminar (2 hrs)
AnSci 165: Ruminant Production (3 hrs)
AnSci 175: Monogastric Production (3 hrs)
**Junior Year** (15 credits)
AnSci 202: Prin of Animal Nutrition (5 hrs)
AnSci 254: Phys of Domestic Animals (5 hrs)
AnSci 213/323: Genetics (5 hrs)
**Senior Year** (21 credits)
**AnSci Production Systems** 6 hrs
*Select two courses from:*
AnSci 305: Beef Production & Mgmt
AnSci 315: Adv Dairy Production
AnSci 325: Horse Production
AnSci 345: Sheep Production & Mgmt
AnSci 355: Swine Production & Mgmt
AnSci 375: Poultry Production & Mgmt
**AnSci Products Course** (3 hrs)
*Select one course from:*
AnSci 204: Adv Meats
AnSci 231: Adv Dairy Products
**AnSci Electives** (12 hrs)
*Select from:*
AnSci 302: Monogastric Nutr
AnSci 304: Reproductive Physiology
AnSci 332: Ruminant Nutr
AnSci 384: Reproductive Mgt
AnSci: Production Systems Course(s) (305, 315, 325, 345, 355, 375)
AnSci: Products Course (204, 231)
**Elective Hours** (27-29 credits)
All students are required to complete a minimum of two writing intensive courses with at least one course being in the College of Agriculture, Food and Natural Resources.

**ANIMAL SCIENCES HONORS PROGRAM**

- Students must earn six hours of animal sciences honors credit by successfully completing either an internship or undergraduate research or a combination of both.
- All honors programs must be approved by a three-member departmental honors committee.
- A written and oral report will be required.
- A student must be a junior or senior to participate in the honors program.

It should be understood that these guidelines are in addition to the College of Agriculture, Food and Natural Resources guidelines for the honors program.

**COURSES**

**11—Animal Science (3).** Principles of animal science including importance of animal agriculture, genetics, anatomy, physiology and nutrition. f.

**65—Animal Science Laboratory Practicum (3).** This class will include two 3-hour labs and 1 hr RSD per week. An introductory course in skills related to the care and management of livestock and poultry plus a section dealing with research methods. Students will be expected to participate in hands-on development of fundamental skills of animal husbandry.

**95—Horse Training and Management (3).** Prerequisite: Animal Science 65.

**104—Meat Classification, Grading and Judging (2).** (same as Food Science and Nutrition 104). Factors affecting quality; classification, grading, judging of beef, pork and lamb. Field trip.

**105—Livestock Judging (3).** Comparative judging and evaluation; various classes of farm animals; particular reference to utility. Reference reading; illustrated lectures. Prerequisites: 15, Food Science 214 or concurrent enrollment.

**110—Global Animal Agriculture (2).** Animal Agriculture as influenced globally by political, religious cultural, economic and climatic factors. Prerequisite: sophomore standing. f.

**111—Sophomore Seminar: Societal Issues Facing Animal Agriculture (2).** Course designed to introduce students to key issues facing animal agriculture. Assignments will focus on reading current publications associated with issues affecting the animal agriculture industry. Prerequisites: sophomore standing, English 20. Graded on A/F basis only. w.

**115—Dairy Cattle Judging (2).** Diary breeds, comparative judging, selection. f.

**125—Horse Selection and Evaluation (2).** Techniques of selecting and evaluating horses based on conformation and performance characteristics. Effects of conformation on soundness. Includes learning to organize observations on the relative merits of a group of horses into an oral presentation. Prerequisite: 65. f.

**140—Companion Animals (3).** (same as Veterinary Medicine and Surgery 140). Focus on companion dog, cat, and horse owners concerns re: health zoonoses, legal responsibilities, inbreeding, choice of breeds, behavioral problems and loss of companion animals.

**145—Selecting and Grading of Poultry (2).** Includes breeds and varieties of poultry, production judging, flock selection and testing, and grading of eggs and live and dressed poultry. Prerequisite: 65. f,w.

**165—Introduction to Ruminant Livestock Production (3).** This is an introductory theory course which provides fundamental understanding of ruminant livestock - beef cattle, diary cattle and sheep, production, management and associate industries. Prerequisite: Animal Science 65. Graded on A/F basis only. f.

**175—Introduction to Monogastric Production (3).** Introductory course which provides fundamental understanding of hogs, horses and poultry. Prerequisite: Animal Science 65. Graded on A/F basis only. w.

**200—Problems (1-5).** Library and laboratory study of assigned problems in animal breeding, nutrition, physiology or production and management. Planning, conduction and reporting to be in consultation with instructor. Prerequisite: instructor's consent. f,w,s.

**202—Principles and Application of Animal Nutrition (5).** Fundamentals of animal nutrition and their application to livestock industry. The laboratory portion of the course will be devoted to ration formulation, feed evaluation and identification. Prerequisite: Biochemistry 100 or Organic Chemistry 205 or 210 and Mathematics 10 or equivalent. f.

**204—Principles of Meat Science (3).** (same as Food Science and Nutrition 204). Study of the principles involved in the conversion of living animals to meat and by-products; efficient utilization of meat as a food. Laboratory stresses the application of scientific principles in the meat industry. Prerequisite: one course in Biology. w.

**213—Genetics of Agricultural Plants and Animals (3).** (same as Plant Science 213). Concepts of molecular, transmission, and population and quantitative genetics. Special emphasis given to breeding and biotechnological applications in plant and animal agriculture. Prerequisites: Biological Sciences 1, 2 or 10, Mathematics 10. w. 9 weeks.

**231—Principles of Dairy Foods Science (3).** (same as Food Science & Human Nutrition 231). Technology, chemistry and microbiology related to milk and its transformation into fluid milk products, fermented dairy foods and spreads. (2 hours of lecture and two hours of laboratory per week.) Prerequisite: organic chemistry. f.

**254—Physiology of Domestic Animals (5).** Basic concepts of physiology and anatomy as related to domestic animals are covered in lecture and laboratory classes. Enrollment limited. Prerequisites: Biology 1 and 2, or 10; Chemistry 31, 32; Organic Chemistry and/or Biochemistry. f.

**275—Meat Animal Evaluation (2).** Meat animal evaluation highlights the relationships and limitations that exist when evaluating market and breeding animals and develops an appreciation for carcass excellence as it relates to production, merchandising and consumption. Some travel time and commitments will be necessary. Prerequisites: 104 and 105.

**285—Advanced Dairy Cattle Judging (2).** Continuation of 115. Includes field trips. Prerequisite: 115. w.

**300—Problems (1-6).** Current problems in animal breeding, nutrition, livestock production and management, meats. Assigned topics. In some cases student may undertake a project by outlining objectives, planning work, keeping records and summarizing results in written report. f,w,s.

**301—Topics (1-4).** Various courses offered on a preliminary basis to determine need for such offering prior to submission as a numbered course. Various topics, credit arranged. Instructor's consent.

**302—Monogastric Nutrition (3).** (same as food science and human nutrition and nutrition 302). Principles of nutrition, feed formulation and recent research in poultry feeding. Prerequisites: 202, Biochemistry 193 recommended. Letter grading only. w.

**304—Physiology of Reproduction (3).** Principles of animal reproduction with emphasis on endocrine control of reproductive processes. Prerequisites: Biology 10, Animal Science 254 or equivalent. f,w.

**305—Beef Production and Management (3).** Systems of beef production: breeding, feeding, management of commercial and purebred beef cattle. Prerequisites: Animal Science 65, 202 and 323. Non majors: Animal Science 11. Plant Science 273 and Animal Science 304 are recommended.

**315—Advanced Dairy Production (3).** Applied dairy science; emphasis on nutrition and management; herd health, labor-saving equipment, buildings, quality products, organization of dairy enterprise, business and economic aspects. Prerequisites: Animal Science 65 and 202 or equivalent. f.

**323—Applied Livestock Genetics (2).** Genetic principles applied to improvement of farm animals. Covers selection, prediction of genetic merit and mating systems. Prerequisite: Animal Sciences 213. 6 wks. w.

**325—Horse Production (3).** Systems of horse production: breeding, feeding and management of horses. Prerequisites: Animal Science 202, 213, 304 and 323. cor.

**332—Ruminant Nutrition (3).** Physiology, chemistry, microbiology and pathology of ruminants. Emphasizes the digestion, absorption, metabolism and utilization of nutrients. Prerequisites: 202.

**345—Sheep Production and Management (3).** Systems of sheep and wool production: breeding, feeding, management of commercial and purebred sheep. Prerequisites: Animal Science 202 and 304. w.

**355—Swine Production (3).** Systems of pork production: breeding, feeding, management of commercial and purebred swine. Prerequisites: Animal Science 202 and 213 and 304 and 323. f.

**375—Poultry Production (3).** Principles of housing systems, nutrition, management, business and production of commercial chickens and turkeys. Prerequisites: 65, 202. w.

**384—Reproductive Managment (3).** Reproductive management of cattle, swine and sheep; estrous synchronization; artificial insemination; embryo development and transfer; assisted reproductive technologies. Prerequisites: junior standing and Animal Science 304. f.

**390—Internship in Animal Science & Technology (cr.arr.).** Off-campus training to develop technical skills and understanding of an area of animal science. Written reports required. Prerequisites: junior standing, two 300-level Animal Science courses and instructor's consent. Graded on an S/U basis only.

**400—Problems (1-6).** Advanced independent studies in fields not directly related to thesis or non-thesis degree research program. Prerequisites: graduate standing and instructor's consent.

**401—Livestock Production and Management Research Methods (3).** Techniques of experimentation, with application to livestock production and management. Exercises in methods of planning, conducting, analyzing, evaluating and reporting research. Prerequisites: graduate standing, Statistics 395 or equivalent or instructor's consent. s, even yrs.

**410—Seminar (1).** Critical consideration of research and other selected subjects in animal breeding, animal nutrition, and livestock production and management. Students indicate at enrollment the area of study. f,w.

**413—Reproductive Biology Seminar (1).** (same as Biochemistry 413).

**414—Meat Quality (3).** (same as Food Science 414). Discussion of factors affecting meat quality in beef, pork, lamb and poultry. Prerequisites: Food Science 204 or equivalent. w, even yrs. Graded on A/F basis only.

**420—Endocrinology (3).** (same as Biological Sciences 420). Hormones of pituitary and endocrine glands; special reference to influence on growth, reproduction, milk secretion. f.

**423—Genetics of Populations (4).** Introduction to quantitative genetics with application to animal and plant breeding. Prerequisite: Statistics 395.

**427—Recent Advances in Environmental and Endocrine Physiology (1).** Seminar. Presentation, discussion, and critical evaluation of current status of selected topics in environmental and endocrine physiology. f,w.

**431—Nutritional Biochemistry of Lipids (3).** (same as Food Science and Human Nutrition 431). Current concepts in the nutritional regulations of lipid metabolism. Emphasis on integrating information and interpreting current research data. Prerequisites: Biochemistry 270 and 272.

**432—Ruminant Nutrition (3).** (same as Nutrition 432). Physiology, chemistry, microbiology, pathology of ruminants. Emphasizes digestion, absorption, metabolism, utilization of nutrients. Lecture, laboratory, assigned readings. Prerequisite: 402 or equivalent. alt. w, odd years.

**433—Gamete and Embryo Development (3).** A classical and molecular approach to spermatogenesis, oogenesis, fertilization and preimplantation development in the domestic species. Prerequisites: 304 or Biological Sciences 335 or equivalent. f, even yrs.

**434—Gonadal Function (3).** (same as Vet Biomed Science 434). Prerequisite: Animal Science 304 (Physiology of Reproduction) or equivalent, a course in endocrinology, and biochemistry or cell biology.

**435—Physiology of Cell Preservation (3).** Comparative physiological and biophysical changes occurring in cells, especially in spermatozoa, ova and bacteria, which are exposed to various storage environments including cryogenic temperatures and dehydration. w.

**437—Environmental Physiology (3).** Principles of environmental physiology and animal adaptation with emphasis on mechanisms of temperature regulation and related nutritional and metabolic-hormonal functions. w.

**438—Nutrient Regulation of Gene Expression (3).** (same as Nutrition, Animal Science & Biochemistry 438). This second semester of the graduate nutritional sciences core curriculum will cover nutritional biochemistry of minerals and on research literature, with an emphasis on in-depth coverage of several minerals that illustrate emerging themes in mineral nutritional biochemistry and nutrient regulation of gene expression. The course will be taught in tutorial format. Prerequisites: upper division nutrition course, Biochemsitry 270 and 272 and first semester of Graduate Nutrition core curriculum.

**440—Topics in Animal Science (cr.arr.).** Prerequisites: graduate standing and instructor's consent.

**442—Vitamins and Minerals (4).** Designed to provide students with an understanding of the chemical, metabolic, and functional role of vitamins and minerals in nutrition. While the primary focus will be on animals, comparative aspects to human nutrition will be discussed. Prerequisites: 202, Biochemistry 270, or equivalent.

**450—Research (cr.arr.).** Investigations in animal breeding, animal nutrition, livestock production and management. Written report required.

**452—Food Intake Regulation (2).** Giving an overview of major physiological processes that control food intake. Prerequisites: graduate level courses in physiology, and biochemistry, or instructor's consent. w, odd years.

**472—Amino Acid Metabolism (2).** An indepth study of amino acid metabolism and their relationship to animal nutrition. Prerequisites: Biochemistry 270, 272. w. even yrs.

**490—Research (cr.arr.).** Investigations in animal breeding, animal nutrition, livestock production and management. Thesis required. Graded on a S/U basis only.

# Anthropology

**College of Arts and Science**
**107 Swallow Hall (573) 882-4731**
**http://www.missouri.edu/~anthwww**
*For further information, consult the chair or the director of undergraduate studies.*

**CHAIR** R. L. Lyman
**PROFESSORS** R. Benfer, L. Furbee, R. Lyman, M. O'Brien, D. Pearsall, M. Robbins, R. Rowlett, R. Wood
**ASSOCIATE PROFESSORS** M. Flinn, L. Sattenspiel, C.Ward
**ASSISTANT PROFESSOR** K. Coe,
**PROFESSORS EMERITI** P. Gardner, R. Spier, S. Stout, C. Wilson

**DEGREES** AB, MA and PhD in anthropology

Anthropology is the study of humans and their cultures at different levels of social complexity, in different environments and at different times and places. Anthropologists view humanity comparatively and consider the interplay between biology and culture in forming human behavior. Anthropological study has four foci:

- Biological anthropology; the study of the evolution and biology of humans and other primates
- Cultural anthropology; the study of the various ways of life of recent and present-day peoples
- Archaeological anthropology; the study of past cultures through analysis of their material remains
- Linguistic anthropology; the study of language in its cultural context

Each of these contributes to a discipline that attempts to understand how and why humans look and behave the way they do.

An undergraduate concentration in anthropology results in a broad educational base that can be the core of a liberal arts education or the background for specific vocational or professional goals



of a student. Anthropology is of particular value to students planning professional careers in a world of cultural and ethnic diversity. Anthropology majors are required to take core courses in all four areas of the discipline, but may emphasize one or more of them in their remaining courses. Students may also develop an interdisciplinary program in cooperation with other departments or schools. The department also offers an anthropology minor to students who are concentrating in other departments and who will profit by more formal training in the discipline.

Undergraduate training in anthropology prepares students for work in government agencies (both in the United States and overseas), museum positions, field positions in, for example, archaeology, ethnography, human paleontology, or linguistic studies, and for graduate study leading toward college or university teaching of anthropology. An anthropology degree also provides good background for careers in business, journalism, health care, law, and many other fields. American Anthropological Association publications on career opportunities in anthropology are available in the department office.

The Department of Anthropology provides many opportunities for students to become involved in research and encourages all students to do so. Such experiences help a student to develop creativity, critical thinking skills, and skills in problem solving and writing.

Students who are interested in doing anthropological research have several options. The first research course most students will take is an introduction to the methods used by one or more faculty members, Research Skills (Anthropology 186). A student may independently choose a faculty mentor and arrange for course credit or can work with the department's Undergraduate Research Coordinator, who will try to match the student's interests with those of one or more faculty members. Students wishing to continue doing research of an independent nature may register for Undergraduate Research (Anth 285) or for Honors Research (Anth 298 or 299). See below for more information on the Honors BA.

The department is one of several cooperating in the South Asia Area Studies Program and is a participant in the campus cooperative linguistics program. Through biological anthropology there is an interchange with the Division of Biological Sciences, the School of Medicine and the College of Veterinary Medicine.

The Department of Anthropology offers three tracks for earning a bachelor's degree: pre-professional BA, liberal arts BA, or honors BA. Each has slightly different demands, expectations and implications for the student's career goals. The majority of anthropology majors pursue the pre-professional or honors BA degrees, while the liberal arts BA is ideally suited for students with a primary major in another discipline who wish to have anthropology as a second major. The Director of Undergraduate Studies or your departmental faculty adviser will discuss your interests and plans and help you to decide which track is best for you.

The undergraduate program in anthropology is designed to help students to develop an appreciation of other cultures and other world views and to gain an understanding of how and why the diversity in human culture and biology came about. We have identified several goals to help us in our endeavor to teach undergraduates about the nature of our discipline and how to think critically about what it is, what it means, and how it is useful in today's society. These goals include:

- To recognize the broad, cross-cultural generalizations that characterize anthropology;
- To recognize the value of a cross-cultural, comparative perspective;
- To acquire an understanding of the basic concepts in each of the four subfields of anthropology;
- To acquire advanced knowledge in one or more of the four subfields;
- To acquire an awareness of the interrelationship of the four subfields;
- To think critically about the nature and content of anthropological questions;
- To be able to assess the structure of an argument and evaluate the argument and its supporting information;
- To be able to communicate effectively in writing or through oral presentation;
- To strive for innovative and creative thinking;
- To think independently both within and outside anthropology.

Students are also encouraged to acquire experience in research design and methods (e.g., using the library and Internet effectively to gather information on a problem, understanding and using the methods of one or more subfield, etc.). To this end, the department provides abundant opportunities for students to work with faculty members on independent research projects.

**LIBERAL ARTS EMPHASIS** This program is designed for students who wish to study anthropology for its general education value. The course of study is 30 hours of anthropology, including Anth 149 or 150, 155 or 156, 153, 154, and 390 (labs optional) and at least eight hours in a related field.

**PREPROFESSIONAL EMPHASIS** This option is intended primarily for students considering graduate work in anthropology or a closely related field.

**A total of 30 hours of anthropology courses are required with the following course distribution:**

Anth 150: Introduction to Biological Anthropology (5) (or Anth 149 and Anth 151)
Anth 156: Fundamentals of Archaeology (4)
Anth 153: Cultural Anthropology (3)
Anth 154: Anthropological Linguistics (3)
Anth 390: Capstone Seminar in Anthropology (3)
One area course (e.g. Cultures of Asia) (3)
Two topical-theoretical courses (e.g. Plants and People and Psychological Anthropology) (6)
Methods or techniques (3) (e.g. Human Skeletal I.D.)

**MINOR IN ANTHROPOLOGY** An anthropology minor comprises 15 hours of credit in anthropology approved by the departmental minor adviser. At least six of the total must be in courses numbered 100 or above and at least nine hours must be from courses other than special readings, problems, or research.

**DEPARTMENTAL HONORS** The departmental honors program entails independent research during the senior year; Anth 298 (3) and Anth 299 (3) are recommended for this degree. Honors may be chosen either in conjunction with the liberal arts or the preprofessional option. For information, consult the anthropology honors director.

## COURSES

**1—General Anthropology (3-5).** General survey course in fields of anthropological concern: archaeology, cultural anthropology, physical anthropology, linguistics; emphasizes underlying concepts, principles. Examples from peoples of the world. Five hour sequence includes 3 lectures and 2 discussion meetings per week; three hour sequence deletes discussion sections, or includes 2 hours lecture and 1 hour discussion. cor.

**2—Field Anthropology (4).** Course is designed to introduce students to the fundamentals of doing anthropological fieldwork within and across the lines of the subdisciplines of the field; cultural anthropology, physical anthropology, and archaeology.

**20—Human Language (3).** (same as Linguistics 20 & Communication & Science Disorders 20) General introduction to various aspects of linguistic study. Elementary analysis of lanugage, data with some attention to application of linguistic study to other disciplines.

**40—Significant Discoveries of Archaeology (3).** Detailed consideration of approximately 20 archaeological discoveries and conclusions, from the field and the laboratory, which have been of surpassing importance for an understanding of human origins, behavior, culture and past experiences on earth.

**50—Deviance: A Cross-Cultural Perspective (3).** Cross-cultural studies of problem behavior with emphasis on violence, suicide, sexual misconduct, drug use and mental disorder.

**60—Monkeys, Apes and Humans (3).** For those with little or no background in anthropology. Surveys the ecology and behavior of major nonhuman primate groups, and how these relate to the evolution of human behavior.

**80—Multiculturalism: An Introduction (3).** Examines contemporary multiculturalism (and its origins) globally; introduces key concepts; uses diverse, extended cross-cultural and American examples; and emphasizes complexity of cultures, practicality of issues, and change.

**110—Civilization of India (3).** (same as History 110, South Asia Studies 110). The substance of Indian civilization as seen from traditional Indian and Western perspectives; Indian viewpoints are emphasized.

**131—Indigenous Religions (3).** (same as Religious Studies 131). Explores the central aspects of religious life in indigenous communities. Focusing on specific native communities, it considers individual and group identity and the meaning of the sacred. Prerequisite: sophomore standing or instructor's consent.

**142—Introduction to Field Research Archaeology (1-6).** Techniques of field research and laboratory analysis through field experience. Prerequisite: sophomore standing.

**149—Introduction to Biological Anthropology (3).** This course is a survey of biological anthropology. Primary emphasis on the biological evidence for human evolution. Major topics include human paleontology, primate behavior and human variation. Prerequisite: sophomore standing or instructor's consent. No credit for both 149 and 150. Biological Science credit only.

**150—Introduction to Biological Anthropology (5).** This course is a survey of biological anthropology. Primary emphasis on the biological evidence for human evolution. Major topics include human paleontology, primate behavior and human variation. Three hours lecture and two hours lab. Prerequisite: Math 10 with a grade in the C range or higher and sophomore standing or instructor's consent. No credit for both 149 and 150. Biological Sciences credit only.

**151—Biological Anthropology Laboratory (2).** Laboratory exercises dealing with human genetics, non-human primates, the human fossil record, and human variation. Prerequisites: 149 or equivalent and Math 10 with a grade in the C range or higher. Credit not given for students who have taken 150. Biological Sciences credit only.

**153—Cultural Anthropology (3).** Analysis of human cultures with emphasis on both constant and variable factors at different levels of social complexity; contact between cultures, and cultural influences on individual behavior. Prerequisites: sophomore standing or instructor's consent. cor.

**154—Anthropological Linguistics (3).** (same as Linguistics 154). Language in relation to other aspects of human behavior. Introduction to description and analysis of the basic units of language. Emphasis on non-Indo- European and preliterate languages. Prerequisites: sophomore standing or instructor's consent.

**155—Fundamentals of Archaeology (3).** Introduces the methodological and theorectical underpinnings of archaeology. The goals of archaeolgical research, and the techniques used to extract data from the archaeological record are discussed. Prerequisites: sophomore standing or instructor's consent. A student may not enroll in and earn credit for both 155 and 156.

**156—Fundamentals of Archaeology (4).** Introduces the methodological and theoretical underpinnings of archaeology. The goals of archaeological research, and the techniques used to extract data from the archaeological record are discussed. The lab involves hands-on experience with archaeological materials. Prerequisites: sophomore standing or instructor's consent. A student may not enroll in and earn credit for either 155 or 157 and 156.

**157—Fundamentals of Archaeology Lab (1).** Involves hands-on experience with archaeological materials. Prerequisite: must have completed Anthropology 155. Note: a student cannot enroll (or earn credit) for both 156 and 157.

**170—Evolution of Human Sexuality (3).** Biological and cultural aspects of human reproduction are examined from the perspective of evolutionary and ecological theory. Prerequisites: sophomore standing or instructor's consent.

**184—Introduction to Folklore (3).** (same as English 185). Introduces the study of folklore, including the methodology, approaches and genres of folklore. Prerequisite: 20. cor.

**186—Research Skills (1-3).** Participation in faculty research activities. Course coordinator matches students with participating faculty. Three hours of research activities per week per credit hour. May be repeated to a maximum of nine hours. Prerequisite: instructor's consent.

**201—Topics in Anthropology (1-3).** Problems, topics, issues or review of research in any area of anthropology and/or experimental development of new content areas. May be repeated to a maximum of 9 hours. Prerequisite: instructor's consent.

**215—Anthropology and the Arts (3).** This course considers visual and auditory arts in cross- cultural perspective. Genres include: graphic and plastic arts, poetry, music, and dance. Examples are selected from non- Western societies from various world regions and time periods. Prerequisite: sophomore standing or instructor's consent.

**220—Plants and People (3).** Explores the present and past interactions between people and the plant world, covering use of plants as foods, medicines, and in rituals, and reviewing the origin of major food plants. Prerequisites: sophomore standing.

**229—Cultures of Asia (3).** Survey of peoples and cultures of Asia; emphasis on native societies of area. Prerequisites: sophomore standing or instructor's consent.

**236—North American Indian Culture (3).** Comparative study of American Indians north of Mexico, emphasizes

eastern United States. Prerequisites: 153

**237—Native American Religions (3).** (same as Religious Studies 237). Investigation of religious lives of the native peoples of the Americas through cultural contact with modernity. Perspectives based on historical, anthropological and native texts. Prerequisite: Religious Studies 131 or sophomore standing.

**240—Aztec, Maya, and Inca Civilization (3).** Origin of native Americans and development of American civilizations emphasizing Aztecs, Mayas, and Incas; rise of these civilizations known from archeology, early European and early native American accounts, and the condition of the descendants today. Prerequisite: sophomore standing.

**254—Exploration in Human Biology (3).** A general survey of human biology, focusing on the development of the individual from infancy to adult and the biology of human populations. Prerequisites: one course in Anthropology or Biology. Biological Sciences credit only.

**255—Cultures and Civilizations of the World (3).** Systematic description and ordering of world cultures from foraging bands to nation states; culture contact, change and psychological responses. Prerequisite: sophomore standing or instructor's consent.

**260—The Third World: An Anthropological Perspective (3).** (same as Peace Studies 261). Consideration of problems in developing nations—neo-colonialism, peasant revolutions, over- population and under-industrialization—in the context of cultural change. Prerequisites: junior/senior standing.

**261—Cultures of Europe (3).** Examines ethnic, linguistic, and folk cultural backgrounds of contemporary Europe and the articulation of local sociocultural units with national society and culture. Prerequisites: sophomore standing or instructor's consent.

**270—Culture as Communication (3).** (same as Communication 270, Linguistics 270). Study of the influence of culture on communication processes. Examines topics as the impact of values, languages, adn nonverbal behavior on intercultural interaction. Prerequisites: junior or senior standing.

**275—Anthropology and the Concept of Race (3).** (same as Black Studies 275). The concept of race is deconstructed by examining models of human origins, genetics and racist ideas about crime, intelligence and achievement. Paper and examination required. Prerequisite: sophomore standing.

**280—Undergraduate Internship in Anthropology (3-6).** Students will work for a semester in a community-based organization (NGO, nonprofit, for profit, or governmental). They will conduct a research study in coordination with that agency. Upon completion of the research study, students will prepare a final report to be given to the agency and turned in for course credit. The course coordinator will help students identify and make contact with interested organization and oversee their progress during the internship. Prerequisites: junior standing, Anthropology major, coordinator's consent, 2.5 GPA. Graded on S/U basis only.

**284—American Folklore (3).** (same as English 285). Regional and ethnic American folklore, with emphasis on analysis of folklore in context. Book reports and two analytical papers based on student field research required.

**285—Undergraduate Research (2-8).** Research approved by and under the direction of a departmental faculty member. Prerequisite: 186 or instructor's consent.

**290—Culture and Thought (3).** Beliefs and world view of selected cultures; cosmology, myth, folk-tale, legend; magic, religion, science considered as aspects of human behavior; relation of beliefs to social structure, cognitive development, and the human cycle. Prerequisites: junior/senior standing or instructor's consent.

**298—Honors in Anthropology (3).** Individual study and research leading to Honors in Anthropology. In consultation with instructor, student works on Honors Thesis. Anthropology majors only. Prerequisites: junior or senior standing; Honors level GPA, instructor's consent.

**299—Honors in Anthropology (3).** Continuation of 298. Prerequisites: junior/senior standing; Honors level GPA, instructor's consent.

**305—Maya Hieroglyphs and Thought (3).** Introduction to the writing system of the ancient Maya and decipherment of hieroglyphic texts as an avenue to understanding important cultural themes of ancient Mayan life: religion, politics, composition of ruling families, scientific knowledge, prophesy, and agricultural activity. Prerequisites: junior standing or instructor's consent.

**308—Historical Linguistics (3).** (same as Linguistics 308). Methods of tracing the history of languages by glottochronology, and by comparative and internal reconstructions; cultural and linguistic implications of such reconstructions and of areal linguistics. Prerequisites: junior/senior standing or instructor's consent.

**310—Ethnographic Studies of Selected Cultures (3).** Specific content varies with student interest, faculty availability. Will concentrate on peoples and cultures of one area such as East Asia, South Asia, Africa, North America, Mesoamerica, Oceania, Europe. Amplifies ethnographic knowledge gained in lower-level survey courses. Prerequisites: senior/graduate standing or instructor's consent.

**312—Gender, Language, and Communication (3).** (same as Communication and Linguistics 312). Relationship among gender, language, nonverbal communication, and culture. Prerequisite: junior standing or departmental consent.

**320—Evolutionary Medicine (3).** Principles of modern evolutionary theory are applied to medical problems. Topics include: function of symptoms (fever, nausea, etc.); strategies of pathogens; senescence; cancer; phylogenetic constraints; mental disorders. Ideas will be actively discussed in class. Prerequisites: lower level course in Biology or Biological Anthropology, junior/senior standing or instructor's consent.

**321—Expert Systems (3).** (same as Sociology, Veterinary Medicine & Surgery and Computer Science 321). Introduction to the use of expert systems, designed for graduate students from any department. Students create prototype expert systems under close supervision by faculty experts. Prerequisite: departmental consent.

**322—Demographic Anthropology (3).** The major topics considered in this course are basic demographic analysis, including life tables, models for population growth and stable population theory; fertility analysis; disease and fertility; disease in human populations; and paleodemography. Prerequisites: Math 10 and junior/senior standing or instructor's consent.

**323—Medical Anthropology (3).** Cross-cultural study of belief systems concerning health and illness, practices of diagnosis and treatment, and roles of patients and practitioners. Several "non-Western" health care systems are studied in detail. Prerequisite: junior or senior standing or instructor's consent.

**324—Preindustrial Technology (3).** Technological pursuits of nonliterate peoples: stone working, basketry, pottery, metallurgy, etc. Description, analysis of technical, economic, social aspects. Prerequisites: junior/ senior standing or instructor's consent.

**325—Political Anthropology (3).** (same as Peace Studies 326). Cross-cultural analysis of the structure of power and authority; relationship of political processes to other aspects of culture; special reference to non-western societies. Prerequisites: junior/senior standing or instructor's consent.

**327—Cross-Cultural Health of Mothers and Families (3).** This course builds on tenets of female biology and takes a cross-cultural look at women's health, specifically gene-culture interactions and maternal cultural strategies for promoting health and well-being. Prerequisites: Anthropology 1, 153, or instructor's consent.

**328—Psychological Anthropology (3).** Examines cross-cultural approaches to the study of perception, cognition, and personality; methods for gathering and validating data; examples from non-Western societies. Prerequisites: Psychology 1 or instructor's consent.

**332—Comparative Social Organization (3).** Cross-cultural comparison, analysis of social structures. Role of kinship, age, sex, locality, economics, religion and other factors in determining relationships between individuals and groups in non-literate societies. Prerequisites: 153 or instructor's consent.

**333—Museological Process (3).** Traces the processing of museological materials and collection from their first entry into the museum through their accessioning and stabilization until the materials are used in exhibits and/or placed in reserve storage. Taught every fourth semester. Prerequisite: sophomore standing or higher.

**336—Paleoethnobotany (3).** Application of ethnobotanical approaches in archaeology; techniques to recover and interpret floral remains (macroremains, phytoliths, pollen); research questions in ethnobotany; integration of ethnobiological and archaeological data. Critique of original works in the field emphasized. Prerequisites: junior/senior standing or instructor's consent.

**337—Zooarchaeology (3).** Survey of specialized techniques for archaeological/faunal analysis, including zoo archaeological sampling, taphonomy study of paleoecology, and recognition of domestication. Prerequisites: junior/senior standing or instructor's consent.

**340—North American Archaeology (3).** Ancient peoples and development of American Indian culture. Prerequisites: 155/156 or 240.

**341—Archaeology of South America (3).** Development of culture in South America from the Pleistocene to European contact. Prerequisites: 155/156, or junior/senior standing.

**342—Field Methods in Archaeology (1-8).** Techniques of archaeological excavation; field surveying, recording, care and interpretation of materials. Prerequisites: 142 or equivalent, and instructor's consent.

**343—Environment and Archaeology (3).** Study of quaternary environments and cultural systems. Focuses on North American records emphasizing climate and biologic components of regional ecosystems; regional environmental reconstruction. Prerequisite: 155/156 (for non- majors, Geology 127 or equivalent).

**344—Prehistory of Mesoamerica (3).** Covers the archaeology and prehistory of Mesoamerica (Mexico and Northern Central America). Emphasis on archaeological evidence for development of human societies from late Pleistocene hunting bands to complex agricultural civilizations encountered by Europeans in 1500s.

**346—Language and Culture (3).** (same as Linguistics 346). Interrelations between language, thought, culture, and society; role of language in cognition; methods and concepts of linguistics in cultural analysis. Prerequisite: 154 or equivalent

**347—Mesolithic, Neolithic, & Bronze Age Archaeology (3).** Analysis of both hunter-gatherer and food-producing prehistoric sociocultural systems in western Eurasia and adjacent areas from the end of the Pleistocene until the development of iron metallurgy. Includes the symbolic material of these periods. Prerequisites: junior/senior standing or instructor's consent.

**348—Asiatic Prehistory (3).** Survey of the prehistory and early cultures of Asia excluding the Near East. Emphasis on Northern Asia, China, Japan, South and Southeast Asia and Oceania. Prerequisites: junior/senior standing or instructor's consent.

**349—Topics in Anthropology (3).** Problems, topics, issues, or review of research; experimental development of new contact areas. Specific content varies depending on needs of faculty or students and will be announced in advance. Prerequisite: instructor's consent.

**350—Special Readings in Anthropology (cr.arr.).** Directed readings in ethnology, linguistics, archaeology, or physical

anthropology not leading to thesis. Prerequisites: two courses in Anthropology and instructor's consent.

**352—History of Archaeology (3).** Growth of archaeology worldwide since AD 1700. Emphasis include intellectual and theoretical developments, field and laboratory techniques, and major figures in the history of the discipline. Prerequisites: 155/156 or instructor's consent.

**355—Human Skeletal Identification and Analysis (5).** Students interested in archaeology, physical anthropology, and law enforcement will learn human osteological methods of analysis applied to bioarchaelogical problems and modern forensic techniques for personal identification. Prerequisite: 150 or instructor's consent.

**356—Anthropology of Knowledge (3).** Examines appraches associated with cultural knowledge and ways of knowing and meaning. It considers them from the point of view of the achievement of cultural understanding and of obtaining theoretical explanation selected persistent issues in interpretive and cognitive frames. Prerequisite: junior standing.

**358—Celtic and Iron Age Archaeology (3).** Analysis of the pre-and protohistoric sociocultural systems of the Celts and other iron-using tribal cultures of western Eurasia from the inception of an iron based technology until the full historic period. Includes the symbolic material of these cultures. Prerequisites: junior/senior standing or instructor's consent.

**360—Stone Artifact Analysis (3).** Theory, methods, and techniques of studying lithic artifacts and deriving culturally meaningful interpretations. Emphasizes flaked artifacts. Includes physical examination, manufacture and experimentation with stone tools. Prerequisite: 3 hours Archaeology or Anthropology. Protective handgear and eyewear required.

**362—Cultural Evolution and Change (3).** The processes of culture: innovation, diffusion, integration, patterning, acculturation and others, examined in literate and non-literate contexts. Prerequisites: 153 or instructor's consent.

**363—Theories in Social and Interpretive Anthropology (3).** Critical examination of selected theories and methods concerning human society and psyche. Prerequisites: 153 or instructor's consent.

**364—Human Origins (5).** History and theory in the study of human paleontology. Prerequisites: 150 or instructor's consent. Biological Science credit only.

**365—Skeletal Biology (3).** This course is designed to provide students advanced and in-depth training in skeletal biology. Basic bone biology will be studied and advanced methods of skeletal analysis applicable to forensic anthropology and bioarchaeology will be explored. Prerequisites: 355 or equivalent background in osteology and/ or anatomy. Biological Science credit only.

**366—Human Biological Variation (3).** Human biological variation both among and within living populations. Evolutionary, genetic, ecological, demographic and especially cultural factors which contribute to biological variation. Prerequisites: 150 or Biology 1. Biological Science credit only.

**367—Ethnographic Methods I (3).** Relation of problems to techniques; surveys techniques of gathering data; discusses their limitations and potentials. Prerequisites: 9 hours Anthropology or instructor's consent.

**368—Old World Prehistory (3).** Beginnings of culture in the old world through the early Iron Age. Prerequisites: 155/156, or instructor's consent.

**370—Practical Phonetics for Fieldwork (3).** (same as Linguistics 370). Self-paced course using computer and tape recorded lessons from world's languages. Teaches practical articulatory and transcription phonetics. Weekly meeting with instructor to monitor progress, resolve questions. Prerequisites: junior standing or instructor's consent.

**372—Techniques in Linguistic Analysis (3).** (same as Linguistics 372, Romance Languages 372). Problems in analyzing data from various languages. Prerequisites: introductory course in Linguisitics or instructor's consent.

**377—Ethnographic Methods II (3).** Covers data collection (free lists, pile sorts, triad tests, paired comparisons, and frame substitution tasks) and analysis techniques (multidimensional scaling, cluster, correspondence and consensus analyses). Prerequisite: 367 or instructor's consent. Exam and research project required.

**384—Special Themes in Folklore (3).** (same as English 385). Intensive study in a selected area of folklore: folk narrative, folk song, myth, proverb, etc., folklore and literature, or the folklore of a particular group. May be repeated for a maximum of six hours. Prerequisite: instructor's consent for repetition.

**384A—Themes in African-American Folklore (3).** (same as English 385A and Black Studies 385A). Intensive study in a selected area of African-American Folklore: folk narrative, folk song, myth, proverb, etc., folklore and literature, or the folklore of a particular group. 385 and 385A may be repeated for a maximum of six hours with instructor's consent. Prerequisite: junior standing.

**385—Research (2-8).** Advanced research approved by and under the direction of a departmental faculty member. Prerequisites: junior/senior/ graduate standing and instructor's consent.

**390—Capstone Seminar in Anthropology (3).** Readings, discussions, and problems in the integration of the subfields of anthropology through theory and examples. Prerequisites: Anthropology major, at least second semester junior, or instructor's consent.

**393—Field Methods in Linguistics (4).** (same as Linguistics 393). Intensive training in collection and analysis of data taken from a native speaker of non-Indo-European language. Prerequisites: 6 hours Linguistics and instructor's consent.

**400—Problems (cr.arr.).** Directed research not leading to thesis or dissertation. Prerequisite: departmental consent.

**405—History of Anthropology I (3).** Development of anthropological theories, methods, perspectives, major figures and contributions in cultural and biological subfields. Prerequisite: graduate standing or instructor's consent.

**406—History of Anthropology II (3).** Development of anthropological theories, methods, perspectives, major figures and contributions in archaeology and linguistics. Prerequisites: graduate standing or instructor's consent.

**420—Independent Reading in Preparation for Comprehensive Exam-PhD (1-8).** Independent readings for Ph.D. comprehensives. Open only to Ph.D. candidates who have completed all but final semester of course work. Prerequisite: consent of major advisor.

**423—Seminar in Health Anthopology (3).** We survey the field of health behaviors from an anthropological perspective. We ask, what are health behaviors? and what models have social scientists proposed to account for such actions? Prerequisites: 323 or instructor's consent. Short essays and research project required.

**436—Seminar in Anthropological Methods (3).** Prerequisites: 9 hours Anthropology or instructor's consent. May repeat to 9 hours maximum.

**437—Seminar in Ethnohistory (3).** Introduction to the uses of historical documents and historical methods in anthropological research. Prerequisite: instructor's consent.

**442—Field Problems in Archaeology (2-8).** Prerequisite: 342.

**443—Seminar in Theory and Methods in Archaeology (3).** Application of theory and conceptual frameworks to archaeological studies drawn from both Old and New Worlds. Prerequisites: 155/156 or 153. May repeat to 6 hours maximum.

**444—Seminar in Archaeological Research (3).** Readings and critical evaluation of selected problems in archaeological research. Prerequisite: 12 hours Anthropology. May repeat to 9 hours maximum.

**446—Seminar in Anthropological Linguistics (3).** (same as Linguistics 446). Topics: Ethnolinguistics, linguistic prehistory, pidgin and Creole languages, linguistic theories and cultural and cultural analysis. French structural anthropology. May repeat for 9 hours maximum when content varies. Prerequisites: 308, 346 or instructor's consent.

**449—Topics in Anthropology (3).** Problems, topics, issues, or review of research; experimental development of new content areas. Specific content varies depending on needs of faculty or students and is announced in advance. Prerequisite: instructor's consent.

**450—Non Thesis Research (cr.arr.).** Original research not leading to the preparation of a dissertation.

**452—Seminar in Physical Anthropology (3-6).** Readings and discussion concerning current problems in human and infrahuman primate evolution, with emphasis on taxonomy, morphology, and behavior. Prerequisites: 366 or instructor's consent.

**461—Seminar in Psychological Anthropology (3).** Focuses on developments in psychological anthropology, cross-cultural psychology. Special attention on cognition, perception, socialization, personality assessment, psycho-cultural change, psycho-linguistics, psychometrics, within cross-cultural contexts. Prerequisite: instructor's consent. May repeat to 6 hours maximum.

**462—Seminar in Cultural Dynamics (3).** Prerequisites: 326 or 362 or instructor's consent. May repeat to 6 hours maximum.

**466—Seminar in Ecological Adaptation (3).** Relationships and interactions between humans and their environments, with emphasis on the physical and cultural adaptations to environment. May repeat to 9 hours maximum. Prerequisites: 8 hours Anthropology & instructor's consent.

**468—Seminar in Old World Archaeology (3).** Intensive studies in application of anthropological concepts to problems in Old World archaeology and prehistory. Prerequisites: previous course in cultural anthropology and in Old World archaeology. May repeat to 12 hours maximum.

**469—Seminar in Formal Anthropological Research Design (3).** Methods of fitting statistical and formal research designs to quantitative and qualitative data discussed and illustrated, with research by participants. Prerequisite: introductory course in statistics. May repeat to 9 hours maximum.

**480—Graduate Internship in Anthropology (3-6).** Students will work for a semester in a community-based organization (NGO, nonprofit, for profit, or governmental). They will conduct a research study in coordination with that agency and will use this research project to collect pilot data that they can use to develop, for a final class project, a grant proposal written in collabroration with the agency. The course coordinator will help students identify and make contact with interested organizations and oversee their progress during the internship. Prerequisites: graduate standing, coordinator's consent. Graded on S/U basis only.

**484—Studies in Folklore (3).** (same as English 485 and Religious Studies 475). Roots of folklore scholarship and methodology; their evolution in modern approaches to the study of oral, traditional, verbal genres; and their performance in natural folk groups. Prerequisites: graduate standing or permission of instructor.

**490—Research (cr.arr.).** Advanced work leading to thesis or dissertation. Prerequisite: consent of major advisor. Graded on a S/U basis only.

# Art

**School of Fine Arts in the College of Arts and Science**
**A126 Fine Arts Center (573) 882-3555**
**CHAIR** J. Brueggenjohann
**PROFESSORS** J. Berneche, B. Cameron
**ASSOCIATE PROFESSORS**
J. Brueggenjohann, J. Calvin, B. Clarke, B. Hawk, A. Hoard, J. Stealey
**ASSISTANT PROFESSOR** D. Hulesbergen
**PROFESSORS EMERITI** R. Bussabarger, L. Kantner, L. Rugolo, O. Schuchard, F. Stack

**DEGREES** AB, BFA, and MFA in art

The Department of Art, in the School of Fine Arts, offers studio courses at the undergraduate and graduate levels in drawing, painting, design

# Art

and graphic design, sculpture, printmaking, ceramics, fibers and photography.

The AB degree is intended for the student desiring a liberal education with a concentration in art, while the BFA provides for more professional training in the studio area. The BFA also is the required undergraduate degree for admission to most master of fine arts programs.

Students enrolled in either the AB or BFA degree program may not include within the area of concentration art department courses with a grade of D.

The Department of Art reserves the right to retain selective examples of student work for its collection.

**BACHELOR OF ARTS** Minimum studio course requirements for the AB degree include a core program plus an area of specialization consisting of at least 15 credit hours.

**Minimum Core Requirements**
Art 20: Basic 2D Design (3)
Art 21: Basic 3D Design (3)
Art 60: Beginning Drawing (3)
Art 177: Beginning Painting or Art 175: Beginning Watercolor (3)
Art 185: Beginning Sculpture (3)
**Crafts**
Art 140: Beginning Fibers (3) or Art 130: Beginning Ceramics (3)
Art 302: Senior Seminar (3) WI
Art History (9)
Elective Studio Art Courses (up to 18)
No more than 40 semester hours of studio art courses may be included in the AB curriculum.

**BACHELOR OF FINE ARTS** The College of Arts and Science requirements for the BFA degree are the same as for the AB degree, with the exceptions outlined in the Requirements for Graduation Section. Potential BFA candidates are encouraged to familiarize themselves with these differences prior to applying to the program. A grade point average of 2.0 in art courses is required for admission to the program.

Students accepted to the BFA program are assigned a departmental adviser. It is the student's responsibility to meet with the adviser as soon as possible and plan a program of study with emphasis in a major studio area.

**AREA OF CONCENTRATION** Normally 60-70 hours of studio art courses and 12 hours of art history courses are required. At least two art history courses must be upperclass level. The last two full semesters and at least 35 hours of upperclass work in the area must be completed in residence at MU.

**Minimum core requirements for the BFA degree:**
Art 20: Basic 2D Design (3)
Art 21: Basic 3D Design (3)
Drawing (9)
Art 177: Beginning Painting or Art 175: Beginning Watercolor (3)
Art 185: Beginning Sculpture (3)
Print Media (Photography, Intaglio, Litho, Serigraphy, Relief) (6)
Ceramics, Fibers (6)
Art 302: Senior Seminar (3) WI
Art History (12)
Elective Studio Art Courses (24-33)
**(Electives must include a minimum of 15 hours in ONE specialized area).**

## CAREER OPPORTUNITIES

**Teaching** Students who wish to teach on the elementary and secondary level normally pursue the BS in education degree. AB and BFA candidates may acquire an elementary or secondary art teaching certification by completing the additional art education requirements not already completed in their AB or BFA programs.

**Commercial Art** All students specializing in graphic design and photography may find employment with advertising agencies, newspapers and industries employing their own artists. According to the U.S. Department of Labor, employment opportunities for commercial artists should remain constant through the '90s.

**Other** Opportunities exist to establish private studios selling to the public, to do free-lance work for clients or to work in art galleries or museums.

## COURSES

**2—Introduction to Art (3).** Basic practice in drawing, painting, design. Exploratory course for beginners. Non-majors only. No credit given for students who have taken Art 5. Prerequisite to all other studio courses except 55 and 60. f,w.

**3—Appreciation of Art (3).** Illustrated discussion with examples from varied historic and contemporary art fields on nature of art, functions, methods of creative expression. One section is writing intensive each semester and the other is NON writing intensive each semester.

**101—Topics in Art (1-3).** Special studies in studio art; covers subjects not included in regularly offered courses. Prerequisite: instructor's consent. f,w,s.

**205—International Summer Study Abroad (3).** 4 week summer session. Students will produce original art work, keep a written journal, and participate in a variety of activities. Prerequisites: 60 and instructor's consent, Studio Art Class Abroad.

**280—Undergraduate Internship in Art (1-3).** Special learning situations not covered by coursework. Credit standards pre-arranged with dept. Prerequisites: junior standing & departmental consent. Open only to Art & Art Education majors. Limit on total hours of problems courses applies.

**305—International Summer Study Abroad (3).** Four-week summer session. Advanced study in chosen medium. Emphasis on individual creative expression. Prerequisites: graduate standing or instructor's consent of the Studio Art Class Abroad.

**410—Graduate Studio Seminar (1).** Practical and philosophical concerns of the visual artist. Man- dated for all MFA candidates. Prerequisites: graduate standing.

### ARTCRAFTS

**55—Artcraft Fundamentals (3).** Practical work in handling various craft materials. Encourages creative expression in artcraft activities. Expendable materials fee required. f,w.

### CERAMICS

**130—Beginning Ceramics (3).** Exploration of ceramic art as an expressive, communicative medium. Study of ceramic design, technique and historic and contemporary models within the context of the creative process. Group critiques, slides, demonstrations. Expendable materials fee. Prerequisite: instructor's consent.

**230—Intermediate Ceramics (3).** Continuation of 130 with emphasis on wheel throwing and the vessel format. Further exploration of glazing and firing techniques. Group and individual critiques, demonstrations, slide lectures and visiting artists. Expendable materials fee. Prerequisite: instructor's consent.

**331—Advanced Ceramics (3).** Continuation of 330. Includes advanced problems in firing, clay and glaze technology, forming and ornamentation. Payment of expendable materials expense is required. Prerequisite: 330, instructor's consent required and (if repeated) Chemistry 1. May be repeated to 12 hours maximum. f,w.

**332—Ceramics Sculpture (3).** Sculptural forms constructed of slabs, coils and wheel-thrown elements. Payment of expendable materials expense is required. Prerequisite: 331. May be repeated to 9 hours maximum. f,w.

**430—Graduate Ceramics (3).** Advanced study of ceramic technology and design concepts with emphasis on directed development of individual work. Payment of expendable materials expense is required. Prerequisite: 331. May be repeated to 12 hours maximum. f,w.

**431—Graduate Ceramic Sculpture (3).** Directed development of individual work. Payment of expendable materials expense is required. Prerequisite: 331. May be repeated to 12 hours maximum. f,w.

### COMPOSITION

**270—Experimental Media I (3).** Ordering and structuring materials into compositional forms, using various media, traditional as well as new. Subject matter will vary each semester. Prerequisites: 160 and 220 or instructor's consent. f,w.

**370—Experimental Media II (3).** Continuation of 270. Prerequisite: 270. f,w.

**371—Experimental Media III (3).** Continuation of 370. Prerequisite: 370. May repeat to 9 hours maximum. f,w.

**470—Experimental Media IV (3).** Advanced study of compositional organization at the graduate level. Prerequisites: 371 & graduate standing. May repeat to 9 hours maximum. f,w.

### DESIGN

**20—Basic 2-D Design (3).** Basic study of line, shape and texture; their use and control according to the basic variables and the principles of design. Two dimensional exercises employing a variety of tools and materials.

**21—Basic 3-D Design (3).** Preliminary studies of the elements of three-dimensional form as they are embodied in a variety of structural materials. Prerequisite: 20. Expendable materials fee required. f,w,s.

**215—Color Theory (3).** An investigation of various color systems and their application to art. Prerequisites: Art 20 or its equivalent, and sophomore standing. w.

**221—Space, Form and Structure (3).** Advanced study of three-dimensional form; basic structural systems and machine production emphasized. Prerequisite: 220. Expendable materials fee required. f.

**222—Space, Light and Color (3).** Advanced study of three-dimensional form with emphasis upon spatial effects of light and color. Prerequisite: 220. Expendable materials fee required. f

**320—Advanced Spatial Design (3).** Advanced study of three-dimensional design; practical application of spatial design. May repeat to 15 hours maximum. Prerequisites: 221 and 320. f,w.

**420—Graduate Spatial Design (3).** Comprehensive study of three-dimensional design; emphasis on creative expression based on original theoretical research. Prerequisites: 322 & graduate standing. May repeat to 15 hours maximum. f,w.

### DRAWING

**60—Drawing I (3).** Basic practice in fundamentals of drawing. Various approaches to drawing problems in black and white. Studies from the human figure and still life. Expendable materials fee required. f,w.

**160—Drawing II (3).** Continuation of Art 60. Emphasizes drawing the human figure in a variety of black and white media. Prerequisite: Art 60.

**173—Beginning Color Drawing (3).** Theory and practice in

the use of pastel working from still- life, landscape, and portrait. Expendable materials fee required. Prerequisites: 2, 60.

**260—Drawing III (3).** Continuation of 160. Emphasis in basic anatomical knowledge in drawing the human figure. Expendable materials fee required. Prerequisite: 160.

**261—The Comic Strip I (3).** Exploration of the drawn comic page as an expressive art medium, practical and technical aspects of comic art including newspaper panels and multi-page stories. Prerequisites: two semesters of drawing and/or instructor's consent. w.

**265—Anatomical Drawing (3).** Anatomical structure of human figure as it relates to art. Drawing from live model; emphasis on gross anatomy as defined by skeletal and muscular structure. Expendable materials fee required. Prerequisites: sophomore standing & two semesters of drawing.

**273—Intermediate Color Drawing (3).** Continuation of 173 with emphasis on design and organization. Prerequisite: 173.Expendable materials fee required.

**360—Drawing IV (3).** Continuation of 260, with increased emphasis on expressive drawing and composition. Repeatable to 15 hours. Expendable materials fee required. Prerequisite: 260. f,w,s.

**361—The Comic Strip II (3).** Advance work in comic art medium with emphasis on individual creative expression in content as well as technique. Prerequisites: 261 and instructor's consent. w.

**365—Advanced Anatomical Drawing (3).** Continuation of Art 265, Anatomical Drawing, with and emphasis on formal analysis of the figure in drawing based on superficial and deep anatomical structure. Prerequisites: Art 260 or 265 and graduate standing.

**373—Advanced Color Drawing (3).** Continuation of 273 with emphasis on the expressive properties of color in figural compositions. Prerequisites: 273 or instructor's consent. Repeatable to 15 hours. Expendable materials fee required

**460—Graduate Drawing (3).** Continuation of 360 with emphasis on individual creative expression. Prerequisites: 360 and graduate Art major. May repeat to 15 hours maximum. Expendable materials fee required. f,w,s.

**461—The Comic Strip III (3).** Continuation of 361 with added emphasis on professional methods and techniques. Prerequisites: 361 or instructor's consent. w.

**473—Graduate Color Drawing (3).** Continuation of 373 with emphasis on individual creative expression. Prerequisites: 373, instructor's consent or graduate standing. Repeatable to 15 hours. Expendable materials fee required

## FIBERS

**140—Beginning Fibers (3).** Exploration of various fiber and media including papermaking, weaving, surface design and sculptural techniques. Expendable materials fee required. Prerequisite: 20.f,w.

**240—Intermediate Fibers (3).** Continuation of 140 with emphasis on utilizing acquired technical processes in loom and off weaving, paper making and surface design and a means of developing visual statements. Expendable materials fee required. Prerequisite: 140.

**340—Advanced Fibers (3).** Exploration of aesthetic concepts, development of personal style and instruction in advanced fiber techniques within medium selected by student. Expendable materials fee required. Prerequisites: 240 or approved equivalents. May repeat to 15 hours maximum. f,w.

**440—Graduate Fibers (3).** Advanced technical and aesthetic study in medium of choice with emphasis on development of the individual student's ideas and goals. Expendable materials fee required. Prerequisites: 340 and graduate standing. May repeat to 15 hours maximum.

## GRAPHIC DESIGN

**28—Beginning Digital Imaging (1-3).** Class will cover the basic tools used in digital imaging software. A variety of different software may be offered. Course may be repeated for up to 18 hours with the consent of instructor. Course will be offered for 1 to 3 credits depending on the length of the workshop. Prerequisite: basic understanding of the Macintosh computer. f,w,s.

**128—Advanced Digital Imaging (1-3).** Class will cover the basic tools used in digital imaging software. A variety of different software may be offered. Course may be repeated for up to 18 hours with the consent of instructor. Course will be offered for 1 to 3 credits depending on the length of the workshop. Prerequisite: Art 28, and a basic understanding of the Macintosh computer. f,w,s.

**210—Introduction to Calligraphy (3).** Technical and historical instruction on five calligraphic alphabets. Application of hand lettering to both two and three-dimensional design projects. Emphasis placed on both technical mastery of letters and creative expression in projects. Prerequisite: 20, 60 or instructor's consent. f,w,s.

**225—Graphic Design I (3).** Emphasis on developing a design language and vocabulary. Projects explore visual images in two-dimensional space, each one focusing on a specific set of relationships. Introduction to methodological and research practices for designers. Payment of expendable materials fee is required. Prerequisite: 20, 60 f,w.

**226—Graphic Design II (3).** Introduction to the discipline, function and tradition of typography. Topics include evolution and anatomy of typography, communication, legibility/readability, language sequence and information hierachy. Introduction to graphic design software. Payment of expendable materials fee is required. Prerequisite: 225. f,w.

**310—Advanced Calligraphy (3).** Technical and historical instruction to calligraphic alphabets including Uncial, Fraktur, Copperplate and Neuland. Application of hand lettering in two and three-dimensional design projects. Emphasis placed on both mastery of letters and creative exploration in projects. Prerequisite: 210. f,w,s.

**325—Graphic Design III (3).** Further exploration of typographic form and manipulation of variables which affect content. Course includes letterform analysis and drawing, composition and book design with emphasis placed on research and independent study. Payment of expendable materials fee is required. Prerequisite: 226. f,w.

**326—Illustrations (3).** Exploration of editorial illustration from initial conception through layout design incorporating type. Practical and technical aspects of illustration, including black and white "line art", and "full-color" reproduction processes. Prerequisites: Graphic Design II and Drawing III

**327—Graphic Design IV (3).** Goal directed graphic design problem solving stressing the integration of theory and practical applications while sharpening conceptual, computer, and research skills. Topics include historical research, current design theory and advanced typographic study. Preparation of comprehensive portfolio and consideration of professional requirements. encountered by the designer. Payment of expendable materials fee is required. Prerequisite: 325. f,w

**425—Graphic Design V (1-5).** Directed research, study and critical analysis in graphic design. Complex projects including grid systems, design theory, history, symbolic systems, communication, methodologies and typographic form. Emphasis placed on research, writing, problem solving, aesthetic perception, conceptual thinking skills and technical proficiency. Payment of expendable materials fee is required. Prerequisite: graduate standing. f,w.

## PAINTING

**177—Beginning Painting (3).** Basic exploration of oil and acrylic painting techniques and methods. Still life, landscape and figure. Prerequisites: 20 and one semester of drawing. Expendable materials fee required. f,w,s.

**277—Intermediate Painting (3).** Continuation of 177 with the addition of portrait painting. Prerequisite: 177. Expendable materials fee required. f,w,s.

**377—Advanced Painting (3).** Advanced problems in oil and acrylic painting. Prerequisite: 277. May be repeated to 15 hours maximum. Expendable materials fee required. f,w,s.

**477—Graduate Painting (3).** Advanced study continued. Emphasis on individual creative expression. Prerequisite: 377 and graduate Art major. May repeat to 15 hours maximum. Expendable materials fee required. f,w,s.

## PHOTOGRAPHY

**235—Beginning Photography (3).** Basic photography as an art form; camera and darkroom techniques; surveys photographic history and esthetics. Camera with adjustable aperture and shutter required. Payment of expendable materials expense is required. Prerequisite: 8 hours Studio Art and instructor's consent required. f,w.

**236—Photography: Field Sessions (1-3).** On location, hands on experience in photography of landscape specific subjects. Unless otherwise indicated, all camera formats and black-white, color slide, or color print film are appropriate. Consult course/workshop announcements for specifics regarding locations, lodging arrangements, materials, whether or not a darkroom will be available and follow-up critiques. Required prerequisites will be indicated for each workshop.

**335—Intermediate Photography (3).** Continuation of 235 with emphasis utilizing acquired technical process to facilitate use of the camera as a means of developing awareness of immediate environment and the capabilities of Photgraphy as a communicative, documentary, and expressive medium. Payment of expendable material fee is required. Prerequisite: 235 or approved equivalent and consent required. f,w.

**336—Advanced Photography (3).** Exploration of aesthetic concepts, development of personal vision, and instruction in advanced technical process including fine B&W printing, negative and positive color, large format, zone system, and portfolios and book design to facilitate critical observation and personal expression through the medium of Photography. Payment of expendable materials fee is required. Prerequisites: 235 and 335 or approved equivalents, and consent required. May repeat to 15 hours maximum. f,w.

**435—Graduate Photography (3).** Advanced technical study with emphasis on development of the individual student's creative ideas. Payment of expendable materials expense is required. Prerequisites: 335 & graduate standing and consent required. May repeat to 15 hours maximum. f,w.

## PRINTMAKING

**290—Relief Printmaking (3).** Relief printing techniques in color and black and white; includes woodcut, mixed media. Prerequisites: 20 and 2 semesters of drawing. May be repeated to six hours maximum. Expendable materials fee required. f,w.

**291—Intaglio Printmaking (3).** Intaglio printing techniques, including etching, engraving and aquatint. Prerequisites: 20 and two semesters of drawing. May repeat to six hours maximum. Expendable materials fee required. f,w.

**292—Lithography (3).** Lithographic printing techniques from stone and metal plates. Prerequisite: 20 and two semesters of drawing. Expendable materials fee required. f,w.

**390—Advanced Printmaking (3).** Advanced study in relief, intaglio or lithographic printmaking with emphasis on individual creative expression. Prerequisites: 290 or 291 or 292 consent required. May repeat to 15 hours maximum. Expendable materials fee required. f,w

**490—Graduate Printmaking (3).** Graduate level study in relief, intaglio or lithographic printmaking with emphasis on individual creative expression. Prerequisites: 390 and graduate standing. May repeat to 15 hours maximum. Expendable materials fee required. f,w.

## PROBLEMS

**300—Problems in Art (1-3).** Directed advanced study and practice of art in a combination of areas related to, but not included in, scheduled courses. Prerequisites: senior standing or adequate preparation in Art and instructor's consent. f,w,s.

**301—Topics (4).** Special studies in studio art; covers subjects not included in regularly offered courses. Prerequisites: junior standing and instructor's consent. f,w,s.

**302—Senior Seminar (3).** A capstone course for the undergraduate art degree with emphasis on the production of a written statement relating to the students' visual research. Prerequisite: senior standing. f. (WI)

**402—Graduate Collaboration (1-4).** Collaborative projects involving two or more students in Department of Art. f,w.

**404—MFA Thesis Exhibition Documentation (1).** Prepa-

ration of materials deemed necessary to document in a permanent form the thesis exhibition. Credit will be granted upon the satisfactory completion of the document, which will be retained by the Department of Art. Required of all MFA candidates.

**410—Graduate Studio Seminar (1).** Practical and philosophical concerns of the visual artist. Man- dated for all MFA candidates. Prerequisites: graduate standing.

**424—Problems in Design (cr.arr.).** Graduate level work in graphic design. Prerequisite: 425, and departmental consent.

**429—Problems in Photography (cr.arr.).** Supervised research in creative photography. Prerequisite: 425 and graduate standing. f,w.

**434—Problems in Ceramics (cr.arr.).** Graduate level work in ceramics. Prerequisites: 430 or 431 and departmental consent.

**444—Problems in Fibers (cr.arr.).** Graduate level work in fibers. Prerequisites: 440 and departmental consent.

**454—Problems in Metals (cr.arr.).** Prerequisites: 15 hours of 450 and instructor's consent. May be repeated to 12 hours maximum. f,w.

**456—Historic Research in Artcrafts (1-4).** Prerequisite: departmental consent. f,w.

**464—Problems in Drawing (cr.arr.).** Prerequisites: 460 and departmental consent. f,w.

**474—Problems in Experimental Media (cr.arr.).** Independent study at the graduate level. May be repeated to a maximum of 12 hours. Prerequisites: 470 & graduate standing. f,w.

**479—Problems in Painting (cr.arr.).** Prerequisites: 477 and departmental consent. f,w.

**489—Problems in Sculpture (cr.arr.).** Prerequisites: 485 and departmental consent. f,w.

**494—Problems in Printmaking (cr.arr.).** Prerequisites: 490 and departmental consent. f,w.

**499—Problems in Serigraphy (cr.arr.).** Prerequisites: 496 and instructor's consent. f,w.

### SCULPTURE

**185—Beginning Sculpture (3).** Principles of sculptural organization, figure studies, modeling techniques, simple plaster casting. Payment of expendable materials expense is required. Prerequisites: 20, 165, or 160. f,w.

**285—Intermediate Sculpture (3).** Continuation of 285. Introduction to carving techniques. Payment of expendable materials expense is required. Prerequisite: 185. f,w.

**385—Advanced Sculpture (3).** This course will build skills aquired in Art 285, Intermediate Sculpture including welding, casting, carving and assemblage with emphasis on the development of a personal visual language. Prerequisite: 285, may repeat to 15 hours maximum. f,w.

**485—Advanced Sculptural Composition (3).** Payment of expendable materials expense is required. Prerequisite: 385 and grduate standing. may repeat to 15 hours maximum. f,w.

### SERIGRAPHY

**296—Serigraphy I (3).** Introduces methods, materials, and techniques of printmaking with the silk screen. Payment of expendable materials expense is required. Prerequisites: 20 & one semester of Drawing. f,w.

**396—Serigraphy II (3).** Advanced study of serigraphy: pictorial composition through stencil arrangements emphasized. Payment of expendable materials expense is required. Prerequisite: 296. May repeat to 15 hours maximum. f,w.

**496—Graduate Serigraphy (3).** Advanced problems in serigraphy with emphasis on creative expression through a combination of methods. Payment of expendable materials expense is required. Prerequisites: 396 & and graduate Art major. May repeat to 15 hours maximum. f,w.

### WATERCOLOR

**1175—Beginning Water Color (3).** Theory, practice of painting in water color from still life, landscape, figure. Prerequisites: 2 or 5 and 1 semester of drawing. Expendable materials fee required. f,w.

**275—Intermediate Water Color (3).** Continuation of 175, Beginning Watercolor, theory and practice of painting in watecolor. Expendable materials fee required. Prerequisite: 175.

**375—Advanced Water Color (3).** Advanced problems in water color. Prerequisite: 275. May repeat to 15 hours maximum. Expendable materials fee required. f,w.

**475—Graduate Water Color (3).** Advanced study in water color. Emphasis on individual creative expression. Prerequisites: 375 and graduate standing. May repeat to 15 hours maximum. Expendable materials fee required. f,w.

# Art History and Archaeology

**College of Arts and Science**
**109 Pickard Hall (573) 882-6711**

**CHAIR** M. Rautman

**PROFESSORS** W. Biers, P. Crown, N. Land, K.W. Slane

**ASSOCIATE PROFESSORS** J. Klein, M. Rautman, A.R. Stanton

**ASSISTANT PROFESSOR** K. Eggener

**PROFESSORS EMERITI** H.W. Marshall, O. Overby, H. Thomas

**DEGREES** BA, MA and PhD in art history and archaeology

The development of European and American art in its historic and cultural context is the subject of study in the Department of Art History and Archaeology.

**REQUIREMENTS** Students may elect a broad program in art history or a more narrowly focussed one in classical archaeology. Those who are planning to major in either program should begin foreign language study as early as possible (see below).

**Art History**

**Required courses** 28 hours minimum

AHA 10 (3) and 11: (3) History of Western Art I and II or the General Honors Humanities sequence (12)

AHA 141: American Art and Architecture (3) or AHA 142: Survey of Traditional Arts in America (3)

AHA 180: Capstone in Art History and Archaeology (1)

At least one 200-level course in each of four fields: Ancient, Byzantine-Medieval, Renaissance-Baroque and 18th century to the present

At least two 300-level courses, after appropriate prerequisites have been met. One course numbered 301 through 375 must be taken in conjunction with AHA 180: Capstone in Art History and Archaeology, within the last 45 hours of study.

**Language requirement**

Study is required through the reading level (i.e., 13 hours) in one language, either German, French, Italian or Spanish, plus one additional course in the language chosen (for a total of 16 hours). Students may choose to take three courses in each of two languages (i.e., 13 hours in each of two languages): Latin, Greek, German, French, Italian or Spanish. Students who plan to attend graduate school are strongly urged to study two languages.

**Recommended courses for related field, electives or general requirements**

Humanities courses, such as history, literature, philosophy, aesthetics, film, classical studies or religious studies. Courses in anthropology, sociology or environmental design

Art courses (maximum 12 hours; 15, if declared as a minor). Students are strongly urged to take at least one course in studio art.

**Archaeology**

**Required courses** 22 hours minimum

AHA 10 (3) and 11: (3) History of Western Art I and II or the General Honors Humanities sequence (12)

AHA 180: Capstone in Art History and Archaeology (1)

AHA 220: Greek Art and Archaeology (3)

AHA 221: Roman Art and Archaeology (3)

AHA 219: Near Eastern and Egyptian Art and Archaeology (3) or AHA 239: Early Christian and Byzantine Art and Archaeology (3)

At least two 300-level courses, each in a different field. One course numbered 301 through 375 must be taken in conjunction with AHA 180: Capstone in Art History and Archaeology, within the last 45 hours of study.

**Language requirement**

Study is required through the reading level in two languages: either Latin or Greek and either French or German. Students who plan to enroll in a graduate program after completing the AB degree should begin study of a third language.

**Recommended courses for related field, electives or general requirements**

Any courses in classical studies, ancient history, geology, anthropology or religious studies.

**MINOR IN ART HISTORY AND ARCHAEOLOGY** A minor in art history and archaeology requires 15 hours of credit within the department. Nine of the 15 hours must be at the 200-level or above.

### COURSES

**10—History of Western Art I (3).** Introductory survey of the architecture, sculpture and painting of the ancient Near East, Greece, Rome, Byzantium and Medieval Europe. f.

**11—History of Western Art II (3).** Introductory survey of architecture, sculpture and painting of Europe and America from the Renaissance to Modern times. w.

**101—Undergraduate Topics in Art History & Archaeology (1-3).** Organized series of short courses on major artists and on cities of art historical or archaeological interest. Subjects and earnable credit may vary from semester to semester. Prerequisite: departmental consent for repetition.

**130—Islamic Art and Civilization (3).** Architecture, decorative arts and painting of the Muslim world from the 19th century. The formation of Islamic art and its relationships with religion, philosophy and symbolism. Prerequisite: instructor's consent.

**141—American Art and Architecture (3).** Architecture, sculpture, painting of America from 17th century to present day. Prerequisites: Honors freshman, sophomore standing, or instructor's consent. f.

**142—Survey of Traditional Arts in America (3).** An interdisciplinary survey of traditional artistic expression in America and the functions of custom in everyday life in selected regions, ethnic communities, and occupations. Vernacular architecture, art, craft, the cultural landscape, and historic preservation are emphasized. Prerequisites: Honor's fresh-

man, sophomore standing, or instructor's consent.

**152—Asian Humanities (3).** (same as Religious Studies, History, and South Asian Studies 272). This course is an introduction to the literature and visualarts of Asia through selected master works. It focuses principally on India and China and investigates the distinctive features of their cultures.

**180—Capstone: Art History and Archeology (1).** Students will write an expanded, guided research paper. The Capstone student will consult on a regular basis with the professor responsible for the course and will make an oral presentation of the paper in the course. Must be taken in conjunction with a 300-level Art History and Archaeology course. Prerequisite: instructor's consent.

**201—Topics in Art History and Archaeology (1-3).** Selected studies in various facets of art history and archaeology. Prerequisite: departmental consent.

**219—NE Eastern and Egyptian Art and Archaeology (3).** Development of art and architecture of the Near East and Egypt in the Bronze Age. alt. f.

**220—Greek Art and Archaeology (3).** General survey of development of material culture in Greece from earliest time to Hellenistic period. Recommended pre- requisite: 10, or General Honors 101 or History 102 or instructor's consent. f.

**221—Roman Art and Archaeology (3).** General survey of development of material culture in Roman world from earliest time through the 3rd century. Recommended prerequisite: 10 or General Honors 101, or History 102 or instructor's consent. w.

**222—Ancient Technology (3).** Engineering, architecture, and military technology in the ancient world. Prerequisite: sophomore standing. alt. w.

**239—Early Christian and Byzantine Art (3).** General survey of the visual arts of Byzantium and her neighbors from the founding of Constantinople in A.D. 330 to the Ottoman conquest of 1453. f.

**240—Early Medieval Art (3).** Architecture, painting and sculpture of Europe from 4th century to beginning of Romanesque period. Recommended pre- requisite: 10, General Honors 102 or instructor's consent.

**241—Late Medieval Art (3).** Art and architecture in Europe from Charlemagne through the 14th century. Recommended prerequisite: 10, General Honors 102 or instructor's consent.

**250—Italian Renaissance Art (3).** Architecture, painting and sculpture of Italy from 14th through 16th century. Recommended prerequisites: 11, General Honors 103, or instructor's consent. f.

**251—Northern Renaissance Art (3).** Art and architecture in Northern Europe from the 14th through the 16th century. Recommended prerequisites: 11, General Honors 103, or instructor's consent. f, alt yrs.

**260—Baroque Art (3).** European architecture, painting and sculpture of the 17th century. Recommended prerequisites: 11, General Honors 103 or instructor's consent. w.

**261—Eighteenth Century European Art (3).** 18th-century European painting, sculpture and architecture. Recommended prerequisites: 11, General Honors 103 or instructor's consent. f.

**264—Traditional Architecture (3).** Traditional/vernacular building from the 18th centruy to the present, with emphasis on the British Isles and America. Prerequisites: 11, 141 History 20, 103 or instructor's consent.

**270—Nineteenth Century European Art (3).** 19th-century European painting, sculpture and architecture. Recommended prerequisites: 11, General Honors 104 or instructor's consent. w.

**271—Modern Art in Europe and America (3).** International directions in painting, sculpture, and architecture from 1885 to ca. 1940. Recommended prerequisites: 11, 141, General Honors 104 or instructor's consent. f.

**272—Contemporary Art (3).** Painting, sculpture, and architecture from the Second World War to the present. Prerequisite: 11, 141, General Honors 104, or instructor's consent.

**282—Museum Internship (3).** A one-semester or full summer intensive internship for departmental majors with specific projects and responsibilities to be arranged by the student in cooperation with a faculty member and an approapriate agent of the museum involved. May be taken as an elective only. May be repeated for a maximum of 6 hours credit. Prerequisite: instructor's consent.

**290—Honors Proseminar I (3).** Introduction in research, individual reports, papers. Prerequisite: junior standing. Restricted to Honors candidates.

**291—Honors Proseminar II (3).** Continuance of 290. w.

**292—Honors Reading and Research I (3).** Individual research projects in preparation of senior thesis. Prerequisite: senior standing. Restricted to Honors candidates.

**293—Honors Reading and Research II (3).** Preparation of senior thesis. Prerequisite: 292. w.

**300—Problems (cr.arr.).** Special studies in art history/archaeology; covers subjects not included in regularly offered courses. Prerequisites: adequate preparation in Art History, Archaeology, Anthropology, Classical Languages, or History; and instructor's consent.

**301—Topics in Art History and Archaeology (cr.arr.).** Special studies in art history/archaeology; covers subjects not included in regularly offered courses. Prerequisites: adequate preparation in Art History and Archaeology, Anthropology, Classical Languages, or History; and instructor's consent.

**308—Greek Vase Painting (3).** Examination of vase painting with an emphasis on iconography and artistic style of selected painters. Prerequisites: 220 or instructor's consent.

**309—Ancient Monumental Painting (3).** Survey of art of painting and mosaics in Greek and Roman antiquity. Prerequisites: 220, 221 or instructor's consent.

**310—Greek Sculpture (3).** Survey of sculptor's art in Aegean and Classical world from earliest times to Hellenistic period. Prerequisites: 220 or instructor's consent.

**311—Roman Sculpture (3).** The origins and development of sculpture in the Roman Republic and the Roman Empire. Prerequisites: 221 or instructor's consent.

**312—Greek Architecture (3).** Survey of the art of building in the Aegean and Classical world from earliest times to the Hellenistic period. Prerequisite: 220 or instructor's consent.

**313—Roman Architecture (3).** The history of Roman architecture, origin and development of forms and techniques, major monuments in Rome and its provinces through the 3rd century after Christ. Prerequisites: 221, General Honors 101, or instructor's consent.

**314—Archaeological Methods (2-6).** Methods of excavating various types of sites; recording, preserving their materials. Prerequisites: adequate preparation in archaeology or anthropology and instructor's consent.

**315—Minor Arts of Antiquity (3).** Discussion of selected minor arts and crafts of the Greco-Roman world. Prerequisite: instructor's consent.

**317—Archaeology of the Greek Bronze Age (3).** Analysis of the material culture of Greek prehistoric civilizations from 3000 to 1000 B.C.. Prerequisites: 220 or instructor's consent.

**323—Greek and Roman Numismatics (3).** Coinage of Greek city-states and/or Roman Republic and Empire. Prerequisites: Greek 3 or Latin 3 depending on the emphasis.

**330—Late Antique Art and Archaeology (3).** Exploration of the material culture of the Mediterranean world from the 3rd century to Iconoclasm. Prerequisites: 221, 239 or instructor's consent.

**336—Art of the Dark Ages (3).** Survey of the visual arts of western Europe during the period of migrations, from the fall of Rome to the Carolingian renovation of the 9th century. Prerequisites:240 or equivalent or instructor's consent.

**341—Byzantine Art and Archaeology (3).** Historical investigation of Byzantine material culture in the eastern Mediterranean and Russia, from the outbreak of Iconoclasm to the ottoman conquest. Prerequisites: 239 or equivalent or instructor's consent.

**342—Romanesque Art and Architecture (3).** Discussion of selected topics in architecture, sculpture and painting and their artistic and cultural relationship from ca. 800 to ca. 1150. Prerequisites: 241 or equivalent, or instructor's consent.

**343—Gothic Art and Architecture (3).** Discussion of selected topics in architecture, sculpture and painting and their artistic and cultural relationship from ca. 1150 to ca. 1400. Prerequisite: 241 or equivalent, or instructor's consent.

**350—Michelangelo and the High Renaissance (3).** Sculpture, architecture, paintings, and drawing of Michelangelo in the context of his times. Prerequisite: 250 or equivalent.

**351—Renaissance and Baroque Architecture (3).** Problems in European architectural history from 14th through 17th century. Prerequisites: 250, 260 or equivalent.

**352—Renaissance Figural Arts of Northern Europe (3).** Discussion of selected topics in painting and sculpture and their artistic and cultural relationships from the fourteenth through the sixteenth century in northern Europe. Prerequisites: 241, 251 or equivalent, or instructor's consent.

**353—Venetian Painting (3).** Survey of Venetian Painting from the 14th through the 18th century. Prerequisites: 11, 250 or 260.

**354—The Renaissance Artist (3).** Lectures, readings, discussions and a research paper related to the Renaissance artist. Focus will be on representations of the artist in art and literature from ca. 1300 to ca. 1650. Prerequisite: 250, 260.

**359—Baroque Figural Arts (3).** Painting and sculpture of Italy in 17th century. Prerequisite: 260, 261, or equivalent.

**360—British Art 1640-1840 (3).** Prerequisite: 261 or instructor's consent.

**361—Rococo to Romanticism (3).** Rococo through romanticism: styles and issues in 18th century art. Prerequisite: 261 or equivalent.

**362—Realism-Through Post-Impressionism (3).** Styles and issues in nineteenth-century art. Prerequisite: 270 or equivalent.

**363—Women, Art and Society 1700-1920 (3).** (same as Women Studies 363). This course surveys and analyzes the careers and works of selected European and American women artists, and images of women (by female and male artist) in the 18th, 19th and the first half of the 20th centuries. Prerequisites: junior standing, Art History 11 or equivalent, and instructor's consent.

**364—Material Folk Culture (3).** An exploration of traditional European-American and American material culture (art, craft, architecture) from a multidisciplinary perspective. Special attention is given to the relationship of the natural to the man-made environment. Prerequisite: 142 or equivalent.

**365—American Architecture (3).** Architecture from colonial period to present in relation to European architecture. Prerequisite: 141 or equivalent.

**366—Modern Architecture (3).** Problems in the history of architecture from late 18th century to the present. Prerequisites: 141, 270, 271 or equivalent.

**371—Modern Sculpture (3).** Sculpture in Europe and the U.S. ca. 1880 to the present, with special emphasis on changing definitions of the medium. Prerequisite: 271, 272, or instructor's consent.

**372—Advanced Course in Contemporary Art (3).** Topics in European and American painting and sculpture after 1950. Prerequisite: 271 or 272 and instructor's consent.

**374—Historic Preservation Methods (1-6).** Research techniques to solve research problems and conduct field recording in historic preservation, material culture, historic architecture, and cultural heritage studies. Prerequisites: 364, 375 or instructor's consent. Repeatable to a maximum of 9 hours. f.

**375—Historic Preservation (3-9).** (same as History 375).

**376—Topics in Museum Studies (3).** Lectures and reports on selected topics including connoisseurship of archaeological and art objects, the history of collecting, and curatorial topics. Prerequisites: graduate standing or instructor's consent.

**401—Introduction to Graduate Study (3).** Methods of research, bibliography, use and criticism of source material. Required of graduate students in art history and archaeology who have not had 290. Prerequisite: graduate standing. f.

**402—Historiography of Art and Archaeology (3).** Literature of art and archaeology in terms of works of leading European art historians, archaeologists. Required of gradu-

ate students in art history and archaeology. Prerequisite: graduate standing. w.

**404—Art Theory and Criticism (3).** Theoretical and critical literature of art from earliest times to the present. Prerequisite: graduate standing.

**410—Seminar in Greek Art and Archaeology (cr.arr.).** Special subjects of study assigned for individual research; discussion of reports by seminar members. Prerequisites: 308, 310, 312 or equivalent.

**411—Seminar in Roman Art and Archaeology (cr.arr.).** Special subjects of study assigned for individual research; discussion of reports by seminar members. Prerequisites: 309, 311, 313, or equivalent.

**414—Ancient/Medieval Topography (cr.arr.).** (same as Classics 414). Descriptive and historical analysis of a selected city or site. Subject varies. Prerequisite: instructor's consent.

**420—Seminar in Medieval Art and Archaeology (cr.arr.).** Specific subjects of study will be assigned to students for presentation in relation to broader questions of the cultural/historical phenomena of the time, from ca 700 to ca 1400. Prerequisites: 341, 342 or 343 or equivalent.

**430—Seminar in Renaissance Art (3).** Special subjects of study assigned for Northern or Southern Renaissance for individual research, discussion of reports by seminar members. Prerequisites: 350 or 352 or equivalent.

**431—Seminar in Northern Renaissance Art (1-9).** Selected subjects on painting or sculpture are assigned to students for presentation and will be discussed in broader context of the cultural/historical phenomena of the time. Prerequisite: 352 or equivalent.

**449—Seminar in 18th Century Art (cr.arr.).** Special subjects of study in 18th century art assigned for individual research; reports to be presented and discussed by seminar members. Prerequisite: AHA 261, 361 or instructor's consent.

**450—Seminar in 19th Century Art (cr.arr.).** Special sujects of study in 19th century art assigned for individual research; reports to be presented and discussed by seminar members. Prerequisite: AHA 270 or instructor's consent.

**451—Seminar in Modern and Contemporary Art (cr.arr.).** Special subjects of study assigned for individual research; discussion of reports by seminar members. Prerequisites: 271, 272 or equivalent.

**452—Seminar in Modern Architecture (cr.arr.).** Special subjects of study assigned for individual research; discussion of reports by seminar members. Prerequisite: 271 or equivalent.

**454—Nineteenth Century Painting (3).** Graduate lecture course. Special attention will be given to Victorian painting, landscape, the development of abstraction and the concept of realism. Prerequisite: graduate standing.

**460—Seminar in American Art (cr.arr.).** Special subjects of study assigned for individual research; discussion of reports by seminar members. Prerequisite: 365 or equivalent.

**465—Internship in Historic Preservation (3-6).** An internship in a relevant organization or historic preservation agency tc be arranged by the student and the program director. Prerequisite: instructor's consent.

**470—Museum Studies I: History, Philosophy, Functions & Future Museums (3).** Functions and history of museums and interrelations among departments, including those of director, curator, registrar, education, conservation, and marketing. Topics include acquisitions policies; public outreach; role of architecture; and philosophical and legal issues pertaining to administration of muesums. Prerequisites: graduate standing and instructor's consent.

**471—Museum Studies II: Collections, Management, Care & Preservation (3).** Appropriate means for care and display of artifacts. Topics include: accessioning, cataloging, retrieval of information, and laws and ethics of collecting; the museum environment and its monitoring; condition reports, shipping and storage, and conservation. Field trips. Prerequisite: 470 or instructor's consent.

**472—Museum Curatorship: Exhibition Design and Preparation (1-6).** A comprehensive study of exhibitions, focusing on their relevance and quality, and on research, design, interpretation and use. The organization of an exhibition from conception to opening reception and complementary programming. Students will select art work for an exhibition. Prerequisites: 470.

**475—Principles of Conservation (3).** Introduction to and analysis of the theory and application of conservation, preservation, and restoration of artifacts: Prerequisite: 470.

**476—Museum Internship (3).** A one semester of full summer intensive internship with specific projects and responsibilities to be arranged by the student and the program director. Prerequisite: 470,471 and instructor's consent.

**480—Readings (cr.arr.).** Reading, critical evaluation of literature of special fields of art history and/or archaeology. Prerequisite: 401 or equivalent.

**490—Research and Thesis (cr.arr.).** Individual research leading to preparation of thesis or dissertation. Prerequisite: Admission to candidacy. Graded on a S/U basis only.

# Biochemistry

**College of Agriculture, Food and Natural Resources**
**117 Schweitzler Hall (573) 882-4845 FAX (573) 882-5635 or M121 Health Sciences Center (573) 882-8795**

**CHAIR** G. Hazelbauer
**PROFESSORS** D. Emerich, W. Folk, T. Guilfoyle, G. Hazelbauer, J. Polacco, D. Randall, L. Randall, M. Roberts, F. Schmidt, G. Sun, R. Sunde, W. Volkert, J. Wall, G. Weisman
**ASSOCIATE PROFESSORS** S. Deutscher, D. Eide, K. Gates, M. Hannink, H. Henzl, D. Lubahn, R. MacDonald, M. Martin, T. Mawhinney, B. McClure, T. Quinn, P. Tipton, R. Tsika, W. Zahler
**RESEARCH ASSOCIATE PROFESSORS** J. Erickson, G. Hagan
**RESIDENT INSTRUCTION ASSOCIATE PROFESSOR** V. Peterson
**ASSISTANT PROFESSORS** L. Beamer, S. Chen, C. Phillips, L. Reneker, K. Sharma, J. Tanner, S. VanDoren, C. Wang, S. Zhang
**RESEARCH ASSISTANT PROFESSORS** J. Chen, D. Chin, L. Erb, J. Forrester, R. Garrad, V. Mossine, J. Murfett, M. Riley, A. Simonyi, X. Zou
**RESIDENT INSTRUCTION INSTRUCTOR** S. Freyermuth
**PROFESSORS EMERITI** B. Campbell, G. Garner, C. Gerke, R. Hillman, E. Moscatelli, B. O'Dell, B. Ortwerth, E. Pickett, A. White, R. Wixom
**ADJUNCT FACULTY** J. Edwards, G. Glinsky, K. Gruys, J. Miernyk, L. Miller, T. Oulmassov, D. Post-Beittenmiller, C. Samudzi, D. Tillitt

**DEGREES** BS, MS and PhD in biochemistry

The Biochemistry Department offers a course of study emphasizing the application of chemical principles to biological systems. The program requires rigorous course work in the basic sciences, culminating with the biochemistry lecture and laboratory sequence. Students are encouraged to gain reearch experience through independent projects in faculty labs. The biochemistry degree prepares students for further study in graduate or professional school, or for a career in biochemistry, biotechnology or the biological, chemical or medical sciences.



In addition to the General Education Requirements of the campus and the College of Agriculture, Food and Natural Resources, the BS degree in biochemistry has the following minimum course requirements:

**BIOCHEMISTRY** (13)
Biochem 90: Contemporary Topics in Biochemistry and Biotechnology (2)
Biochem 270: Biochemistry I (3)
Biochem 272: Biochemistry II (3)
Biochem 274: Biochemistry Laboratory (4)
Biochem 299: Senior Seminar (1)
**BIOLOGY** (8)
General Biology — Bio Sci 42: Introduction to Biological Systems (5)
Genetics — Bio Sci 202: General Genetics (4) or An Sci/Pt Sci 213: Genetics of Agricultural Plants and Animals (3)
**CHEMISTRY** (23)
Chem 31: General Chemistry I (2)
Chem 32: General Chemistry II (3)
Chem 33: General Chemistry III (3)
Chem 210: Organic Chemistry I (3)
Chem 212: Organic Chemistry II (5)
Chem 221: Quantitative Analysis (4)
Chem 230: Fundamentals of Physical Chemistry (3)
**MATHEMATICS** (10)
Math 80: Calculus I (5)
Math 175: Calculus II (5)
**PHYSICS** (8)
Physics 21 and Physics 22: College Physics (8)
**ADVANCED SCIENCE** (9)
Nine credits of advanced science courses selected from approved courses in biochemistry, biology and chemistry

**COURSES**

**90—Contemporary Topics in Biochemistry and Biotechnology (2).** Students are introduced to current research methods and problems in Biochemistry through readings and class lectures. Discussion groups are used to explore scientific, social and ethical issues related to this research. Prereqquisites: sophomore standing and instructor's consent. f.

**100—The Living World: Molecular Scale (3).** Survey of modern biochemistry and biotechnology. Structure and function of DNA, proteins lipids and carbohydrates. The role of biopolymers in life processes and everyday living is emphasized Prerequisite: Chemistry 15 or equivalent. w.

**101—Topics in Biochemistry (1-4).** Initial offering of a course in Biochemistry designed primarily for undergraduates.

**105—Biotechnology in Society (3).** Biotechnology in a social context covers three areas: introduction to terminiology and concepts, specific biotechnological applications to modern problems, and ethical questions (e.g., "proper" limitations, unforseen spin offs). Prerequisites: Chemistry 15 or 1 yr high school Chemistry. f,w.

**106—DNA Science (3).** (same as Biological Sciences 106). A hands-on introduction to DNA structure, function and

manipulation (genomic and plasmid DNA isolation, restriction digestion, gel electrophoresis and cloning. Prerequisite: Chemistry 15. Graded on A/F basis only.

**193—General Biochemistry (3).** Survey of biochemistry; static/dynamic aspects of carbohydrates, lipids, proteins, nucleic acid. Discussion of metabolic pathways, energy production, and metabolic regulatory mechanism. Prerequisites: Chemistry 205. w.

**270—Biochemistry (3).** First semester of comprehensive biochemistry course: metabolic pathways, amino acids/proteins, carbohydrates, lipids, nucleic acids, kinetics, energy requirements, metabolic regulation in living cells. Prerequisites: Chemistry 210 and 212. Recommended: Quantitative Analysis. f,w.

**272—Biochemistry (3).** Second semester of a comprehensive biochemistry course, including metabolism of carbohydrates, fatty acids, steroids, amino acid synthesis and metabolism, molecular genetics, hormones, photosynthesis and integrated metabolism. Prerequisite: 270. f,w.

**274—Biochemistry Laboratory (4).** Techniques course involving analytical experiments with carbohydrates, lipids, proteins, nucleic acids; use of instrumentation in biochemistry; radioisotope tracers in metabolism; isolation, purification and kinetics of enzymes. Prerequisites: 270 and 272, or 272 concurrently. f,w.

**280—Biochemistry of Human Disease (3).** Small group learning of medical biochemistry through systematic analyzes of clinical cases. Emphases are on self-learning, group discussions, and teaching one another. Prerequisite: Biochemistry 270 and instructor's consent. Letter grading only.

**294—Undergraduate Research in Biochemistry (2-3).** Individually directed laboratory research for upperclass students under faculty supervision. Prerequisite: junior standing/instructor's consent required.

**295—Honors Research in Biochemistry (2-3).** Laboratory research for upper level honors students in consultation with Biochemistry faculty. Prerequisite: Biochemistry Honors Program major; junior standing and instructor's consent.

**299—Seminar (1).** Discuss journal papers dealing with current topics of research, techniques, status of field, importance of results. Students report on completed undergraduate research projects. Prerequisites: senior standing, a minimum of 10 hours chemistry including a Biochemistry course with laboratory.

**300—Problems (1-3).**

**301—Topics in Biochemistry (cr.arr.).** Experimental courses; highly specialized topics taught infrequently or courses taught by visiting professors. Prerequisites: General Biochemistry; others as specified by instructor each semester course is offered.

**374—Molecular Biology Laboratory (2).** (same as Biological Sciences 374). Emphasizes recently developed genetic and biochemical techniques; illustrates how they apply to contemporary problems in biological research. Prerequisites: Biology 202, Biochemistry 272 or concurrent regristration inBbiology 370.

**399—Computer Assisted Sequence Analysis and Molecular Modeling (2).** This course uses advanced computer graphics and computational techniques to analyze protein and nucleic acid sequences and their three-dimensional structures. Prerequisites: chemistry 210 and 211 and instructor's consent. f.

**400—Problems (1-6).**

**401—Plant Biochemistry (3).** Emphasizes biochemistry unique to plants; biochemical events plants share with other organisms discussed, compared. Photosynthesis, metabolism, composition, compartmentation, regulation of biochemical events included. Prerequisites: 272 or 320-322 or 304 or instructor's consent. alt. f, odd years.

**403—Topics in Biochemistry (1-9).** Experimental courses, highly specialized topics taught infrequently or courses taught by visiting professors. Prerequisites: General Biochemistry, other as specified by instructor each semester course is offered.

**410—Seminar (1).** Review of current literature; individual presentation of research or classical science topics. f,w.

**415—Nutritional Endocrinology (2).** The overall objective is to understand the relationships between nutrient requirements, utilization and transport and hormonal factors in normal and disease states. Prerequisites: Biochemistry 270, 272, 274 or instructor's consent. even yrs,f.

**422—Analytical Biochemistry—Chromatography (2).** Principles, experimental design, capabilities, limitations, and applications of the general field of chromatography of biologically important molecules. Eight (2-hour) lectures, eight (4-hour) labs. Four weeks. Prerequisites: graduate standing or instructor's consent. f.

**424—Analytical Biochemistry—Mass Spectrometry (2).** Instrumentation, fragmentation mechanisms, interpretation of spectra, combined gas chromatography—mass spectrometry. Eight (2-hour) lectures, eight (4-hour) labs. Prerequisites: two courses in Organic Chemistry, one course in Physics, and instructor's consent. w.

**432—Molecular Biology II (3).** Detailed experimental analysis of eukaryotic cellular and molecular biology relevant to cellular and viral gene expression, post-transcriptional and post-translational modifications and genome replication. Models for developmental genetic analysis and genetic determinants controlling developmental processes utilizing the current literature will be examined. w.

**433—Molecular Biology of Plant Growth and Development (3).** (same as Biological Sciences 433). Molecular biology of plant hormones, signal transduction, environmental signals. Prerequisites: Biological Sciences 313 and 370.

**434—Physical Biochemistry (3).** Physical concepts underlying a variety of physical chemical methods as they apply to biochemical research. Prerequisites: 270 and 272, or 304 and Chemistry 230, or equivalents. w.

**435—Enzymology and Metabolic Regulation (3).** A basic introduction to the study of enzymes and their role in intermediary metabolism. Topics include enzyme kinetics, mechanisms of enzymatic catalysis and control of metabolic pathways. Prerequisiites: Biochemistry 270 and 272.

**436—Nutritional Biochemistry I (5).** (same as Animal Science 436). Nutritional regulation of intermediary and lipid metabolism. Emphasis is on integrating information, interpreting current research data. Prerequisites: Biochemistry 270 and 272; one 300-level nutrition courses. Grades based on classroom participation; case-study reports; and two exams with written and oral components. f.

**438—Nutrient Regulation of Gene Expression (3).** (same as FS&HN 438). Current concepts with in-depth coverage of several minerals that illustrate themes in molecular mineral nutrition. Based entirely on research literature and taught in a tutorial format. Prerequistes: biochemsitry 270 and 272; 300-level nutrition course.

**439—Molecular Biology of Mineral Nutrition (3).** (same as Nutrition 439 and Nutritional Science 439). Current concepts of metal ion transport, intracellular metal trafficking and metal-dependent regulation of gene expression. Based entirely on research literature and taught in a tutorial format. Prerequisites: Biochemistry 270 and 272; 300-level nutrition course.

**440—Hormone Action (2).** A lecture course with weekly assigned readings. Topics will include: a description of selected polypeptide, steroid and other hormones and their biological effects; receptors; second messengers; protein phosphorylation in hormone mediation; growth factors; cellular oncogenes. Prerequisites: Biochemistry 270, 272.

**450—Research (2-8).** Does not include preparation of dissertation.

**469—Neurobiochemistry (3).** (same as Pharmacology 435). This course is designed to bring up-to-date information on selected biochemical processes occurring in the nervous system. Special emphasis is on the structure and function of neurons, and factors modulating neurotransmitter release and uptake. Prerequisites: Biochemistry 270-272 or equivalent.

**490—Research (cr.arr.).** Research in biochemistry for qualified students, with counsel of faculty. Includes preparation of dissertation. Graded on a S/U basis only.

# Biological Engineering

**College of Engineering**
**College of Agriculture, Food and Natural Resources**
**254 Agricultural Engineering Building**
**(573) 882-7044**

**CHAIRPERSON** J. Tan
**PROFESSORS** R. Bajpai, A. Hjelmfelt Jr., F. Hsieh, J. Tan
**ASSOCIATE PROFESSORS** S. Borgelt, K. Sudduth, A. Thompson
**ASSISTANT PROFESSORS** P. Darcy, K. Gillis
**PROFESSORS EMERITI** D. Brooker, L. Day, J. Frisby, F. Harris, N. Meador, D. Sievers
**ASSOCIATE PROFESSOR EMERITUS** E. Iannotti

**DEGREES** BS, MS and PhD in Biological Engineering

Biological engineering is a science-based engineering discipline that integrates engineering and biological sciences in one curriculum. Biological engineers develop products and design systems or processes for improvement of human/animal health, utilization of bioresources, and protection of the environment. The MU Biological Engineering program is a broadly-based curriculum that prepares students for careers in three areas:

- Biomedical engineering (including pre-medicine),
- Bioprocess engineering and
- Bioenvironmental engineering

The Bachelor of Science in Biological Engineering (BSBE) program at MU is accredited by the Accreditation Board for Engineering and Technology (ABET). Graduates are well prepared to take the Fundamentals of Engineering (FE) exam during their senior year, which is the first step toward obtaining a Professional Engineer (PE) license. The curriculum encompasses basic sciences (math, physics, chemistry, biochemistry and biology), social and behavioral sciences, humanities and fine arts, engineering sciences and topics (computer science, mechanics, thermodynamics), and program core courses. The core courses cover topics of biological engineering principles and design, including bioenergetics, biosystem modeling, biomechanics, transport phenomena in biosystems, bioelectronics, and instrumentation. A capstone design course requires each student to apply the knowledge and skills he/she has gained by completing a design project under the direction of a faculty advisor. Technical electives allow students to have an emphasis in one of the three areas (biomedical, bioprocess or bioenvironmental engineering).

Biological engineering is a relatively new branch of engineering education, but it has had a long history of practice in the industries of medicine, food, agriculture, environment protection, etc. In the past two decades, the advances in life sciences have led to the establishment of an

# Biological Engineering

entirely new industry of biotechnology, which is changing the demand for biological engineers. As a biological engineer, you will have engineering expertise related to biological systems. You may design systems and processes for medical applications, the production of biologically-derived products such as pharmaceuticals, or the biological treatment of pollutants. Or, you may develop new food and fiber products or products that efficiently utilize bioresources in an environmentally friendly manner. BE graduates are hired by biotechnology, medical, pharmaceutical, food, and agricultural companies and government agencies. Some attend graduate and medical schools.

## BIOLOGICAL ENGINEERING CURRICULUM

**Communications** (3 hrs)
Engl 20: Exposition and Argumentation (3)
(Pre-med students take an additional composition or writing-intensive course. Pre-vet students choose from Engl 70, 161 or higher, or Comm 75 or higher)

**Mathematics** (16 hrs)
Math 80: Analytic Geometry and Calculus I (5)
Math 175: Calculus II (5)
Math 201: Calculus III (3)
Math 304: Differential Equations (3)

**Basic Sciences** (34 hrs)
Phys 175: University Physics I (5)
Phys 176: University Physics II (5)
Chem 31: General Chemistry I (3)
Chem 32: General Chemistry II (3)
Chem 205: Organic Chem (5)
Bchem 193: General BioChem (3)
Biol 1&2 or 42: General Biology (5)
Biol 203: Intro to Cell Biology (3)
Biology elective (3)

(Pre-med and pre-vet students take Biol 42 rather than Biol 1&2; Chem 33, 210 & 212 in place of Chem 205; and a genetics or physiology course for the biology elective.)

**Social and Behavioral Sciences** (9 hrs)
Must include economics course and state law-required course. Cluster requirement applies.

**Humanities and Fine Arts** (9 hrs)
Cluster requirement applies

**Engineering Topics-General** (18 hrs)
Engr 30: Graphics (3)
Engr 85: Statics (3)
Engr 99: Thermodynamics (3)
(or ChE 261 or Chem 230)
CECS 103: Algorithm Design and Programming (3)
Engr 195: Strength of Materials (3)
CE 251: Fluid Mechanics (3)

**Engineering Topics-Major** (21 hrs)
BE 95: Intro to Biol Engr (1)
BE 210: Prin of Biol Engr I (3)
BE 295: Prof Practice in Engr (1)
BE 310: Prin of Biol Engr II (3)
BE 312: Bioelectronics (3)
BE 315: App Elctron Instru (4)
BE 341: Mech Sys in BE (3)
BE 395: Biol Engr Design (3)

**Technical Electives** (9 hrs)
Select from upper-class engineering courses.

**Electives**
To complete a minimum total of 126 hours.

## FOOD ENGINEERING OPTION

Same as Biological Engineering with the following exceptions:

- ChE 234 instead of CE 251
- FS 309 and FS 372 in lieu of Biol Sci 1 and 2
- ChE 235 required as technical elective
- BE 351 required as technical elective

## COURSES

**95—Introduction to Engineering (1).** For first semester engineering students. Develop appreciation for professional engineering. Students will participate with senior design students to conceptualize a case-study problem. f.

**201—Topics in Biological Engineering (3).** Current and new technical developments in biological engineering. Prerequisite: instructor's consent.

**203—Environmental Control for Biological Systems (3).** Systems for controlling the physical environments (heat, moisture, light, contaminating organism, chemicals) for plant and animal systems including livestock, aquacultures, crops and agricultural products. Prerequisite: Engineering 99 and Math 304.

**210—Principles of Biological Engineering I (3).** Characteriszation of biological phenomena in engineering design; relationships among paramerters using linear and nonlinear statistical expressions; case studies of engineering design solutions. Prerequisites: Biology 1 and 2, Math 80.

**260—Engineering Properties of Biological Materials (3).** Definition, measurement and applications of mechanical, thermal, electromagnetic and biochemical properties of biological materials pertinent to biosystems modeling, design, analysis and optimization. Effects of materials composition and structure on material properties. Prerequisite: BE 210. Corequisites: Physics 176 and Engr 195.

**295—Professional Practice in Engineering (1).** A review of professional opportunities, registration, ethics, and societies. Prerequisite: junior standing.

**300—Problems (1-5).** Supervised independent study at the undergradute level. Prerequisite: instructor's consent.

**301—Topics in Biological Engineering (3).** Current and new technical developments in biological engineering. Prerequisite: instructor's consent.

**302—Design of Livestock Waste Management Systems (3).** Development and application of design criteria to the design of of agricultural waste management facilities. Prerequisites: Chemistry 31 and CE/MAE 251 or instructor's consent.

**310—Principles of Biological Engineering II (3).** Application of transport phenomena to biological systems. Theory and examples of fluid mechanics, heat transfer and mass transfer. Prerequisites: BE 210 and Thermodynamics Course.

**311—Soil and Water Conservation Engineering (3).** Analysis of run-off and erosion from urban and agricultural lands. Design and layout of erosion control structures. Prerequisites: CE/MAE 251 or BE 210.

**312—Bioelectronics (3).** Charge carriers and carrier motion, electronic properties of biological molecules, molecule motion in solutions and electro-phoresis, chemical reactions, junctions and membrane transport, biosensors, neurons and neural networks. Prerequisites: Physics 176 and BE 310.

**315—Applied Electronic Instrumentation (4).** Fundamental concepts and theories, basic electronics, analog and digital circuits, signal conditioning, computer interfacing, measurement prinicples and techniques used in developing computer-based instrumentation systems. Prerequisite: Physics 176.

**321—Irrigation and Drainage Engineering (3).** Soil, water, plant relationships. Water supplies and design of surface sprinkler and trickle irrigation systems. Surface and tile drainage. Prerequisites: CE/MAE 251 or BE 210.

**340—Mechanical Systems Engineering (3).** Fundamentals and applications of prime movers and power transmissions for the design of engineering systems. Prerequisites: Thermodynamics course, CE 251. Corequisite: Engineering 124 or BE 315 or instructor's consent.

**350—Honors Thesis Research (2-4).** Open only to honor students in biological engineering. Independent investigation in biological engineering to be presented as a thesis.

**351—Food Process Engineering I (3).** Study of transport phenomena and unit operations in food processing systems. Emphasis on rheology of food heating and cooling processes and thermodynamics of food freezing. Prerequisite: BE 210 or instructor's consent.

**361—Food Process Engineering II (3).** Continuing study of transport phenomena and unit operations in food processing systems. Emphasis on fluid food evaporation concentration food dehydration, contact equilibrium processes and mechanical separation processes. Prerequisite: AE/BE 351 or instructor's consent.

**390—Engineering Internship (2-5).** Problem course following prior approved work experience. Problem selected by internship company representative, faculty problem adviser and student. Supervised by faculty problem adviser and presented in engineering report form. Prerequisite: adviser's consent.

**395—Biological Engineering Design (3).** Capstone design course for the biological engineering major. Design of biological system devices or processes. Prerequisite: senior standing or instructor's consent.

**400—Problems (cr.arr.).** Supervised individual study at the graduate level.

**401—Advanced Topics in Biological Engineering (1-3).** Study of advanced developments in biological engineering.

**402—Natural Systems for Wastewater Treatment (3).** Emphasis is on the design, management and biological performance of lagoons, overland flow systems and constructed wetland. Prerequisite: Civil Engineering 391 and BE 311 or instructor's consent.

**410—Seminar (1).** Recent investigations in biological engineering and related fields. Discussion of current literature; preparation and presentation of papers.

**412—Research Methods (1).** Review of literature; planning research projects; publication procedures. Prerequisite: graduate standing.

**416—Numerical Methods in Engineering Research (3).** Numerical techniques and case studies in Biological Engineering. Topics include basic numerical methods, mathematical representation of data, matrix algebra, ordinary and partial differential equations. Prerequisites: Mathematics 304.

**421—Water Management Theory (3).** Advanced studies in erosion control, irrigation, and drainage. Water resources engineering. Prerequisites: Mathematics 80, Computer Science course, Agronomy 307 and Soil Conservation course.

**461—Food Extrusion (2).** Engineering principles and applications of single and twin screw food cooking extrusion systems. Modeling, control and optimization of extrusion systems. Dough rheology. Prerequisite: BE 361.

**470—Modeling and Identification of Engineering Systems (3).** Generalized description of engineering systems, bond graph modeling, system identification techniques, and neural network approaches. Prerequisite: Mathematics 304.

**490—Research (cr.arr.).** Independent investigation to be presented as a thesis. Graded on S/U basis only.

# Biological Sciences

**College of Arts and Science**
**105 Tucker Hall (573) 882-6659**
**DIRECTOR** J. David
**PROFESSORS** S. Alexander, J. Birchler, J. Carrel, J. Faaborg, C. Galen, H. Gerhardt, P. Jen, A. McClellan, K. Newton, D. Riddle, R. Semlitsch, G. Smith, F. vom Saal, J. Walker
**ASSOCIATE PROFESSORS** T. Baskin, L. Chapman, K. Cone, J. David, M. Golomb, T. Holtsford, M. Kirk, M. Liscum, J. Maruniak, S. Nothwehr, T. Phillips, G. Summers, D. Worcester
**ASSISTANT PROFESSORS** A. Chandrasekhar, R. Cocroft, C. Krull, S. Mathews, J. Schul
**RESIDENT INSTRUCTION ASSISTANT PROFESSOR** S. Bush, D. Gayou, R. Hurst-March, A. Wiedemeier
**PROFESSORS EMERITI** R. Breitenbach, A. Burdick, B. Cumbie, A. Eisenstark, C. Kucera, D. Mertz, D. Metter, D. Miles, R. Wang

**DEGREES** AB, BS, MA and PhD in biological sciences

The Division of Biological Sciences offers both a bachelor of arts (AB) and a bachelor of science (BS) in biological sciences, in addition to a minor in biological sciences for students majoring in other departments. Students with a highly focused interest in microbiology may elect the interdisciplinary AB in microbiology. Degree requirements for the AB and BS in biological sciences include course work in biology and ancillary science departments (chemistry, physics and math). The BS degree program requires more extensive course work, with additional studies in math and physics. The AB degree program is more flexible and has fewer required courses to accommodate students with minors in related departments. Both degree programs can be used to prepare for graduate study or professional school.

The division encourages participation in the honors program in biological sciences, which provides individualized instruction and research opportunities for eligible students.

**The AB and BS degree programs in biological sciences include the following course requirements:**

**BIOLOGY**

- **Bio Sci 42: Introduction to Biological Systems (5)**
- **Bio Sci 202: General Genetics (4)**
- **A physiology course.** Options: Bio Sci 203: Introduction to Cell Biology (3) or 317: Plant Physiology (3-5)
- **A population biology course.** Options: Bio Sci 250: Community Biology (3), 302: Evolution (3), 342: Behavioral Biology (3), 362: General Ecology (5) or 364: Plant Population Biology (4)
- **A biological diversity course.** Options: Bio Sci 208: and 209: General Entomology (3), 214: Plant Taxonomy (4), 230: Invertebrate Zoology (4), 266: Ornithology (4), 309: Mammalogy (4), 311: Ichthyology (4), 325: Herpetology (4) or Micro 205: Fundamentals of Medical and Public Health Microbiology (4).

The following courses will satisfy both the population biology and the biological diversity course requirements: Bio Sci 208 and 209, 230, 266, 309, 311, and 325.

**All biology majors must take additional biology courses to total at least 29 hours for the AB degree or 33 hours for the BS degree.** Elective hours must be in formal courses numbered above 100 and must include at least one 200- or 300-level laboratory course and one 300- to 400-level course. Independent reading, service learning, problems and seminar courses do not apply. Students completing 293-294 or 295-296 may apply three hours toward fulfillment of elective hours for the AB or BS degree. Biochemistry 270 and 272 may apply toward fulfillment of elective hours for the AB or BS degree.

**ANCILLARY SCIENCE REQUIREMENTS**
**AB PROGRAM**

- General chemistry and laboratory (Chem 31, 32, 33) and one year of organic chemistry (Chem 210, 212)
- One course in physics, geology or astronomy (4-5 hours)
- One course in calculus (Math 80 or 108), Statistics 207 or Computer Science 103 (3-5 hours)

**BS PROGRAM**

- General chemistry and laboratory (Chem 31, 32, 33) and organic chemistry with laboratory (Chem 210, 212)
- One year of general physics with laboratory (8 hours)
- One or two courses in calculus (either Math 80 or Math 108 and 208) (5-6 hours) or the option of Stat 207 and one course in computer science (Comp Sci 103) (6 hours)

**MINOR** The biological sciences minor comprises 15 hours of course work that must include

- **An introductory biology course** (five hours). Options are Bio Sci 42: Introduction to Biological Systems or 12: General Botany.
- **At least 10 additional hours in biological sciences,** including at least one course from two of the following four areas:
  **Genetics** Bio Sci 108: Genetics and Human Affairs (3) or 202: General Genetics (4)
  **Physiology** Bio Sci 203: Introduction to Cell Biology (3) or 317: Plant Physiology (3-5)
  **Population Biology** Bio Sci 250: Community Biology (3), 302: Evolution (3), 342: Behavioral Biology (3), 362: General Ecology (5) or 364: Plant Population Biology (4)
  **Biological Diversity** Bio Sci 208: and 209: General Entomology (3), 214: Plant Taxonomy (4), 230: Invertebrate Zoology (4), 266: Ornithology (4), 309: Mammalogy (4), 311: Ichthyology (4), 325: Herpetology (4), or Micro 205: Fundamentals of Medical and Public Health Microbiology (4)
- **At least one elective course must include a laboratory**. Problems, service learning, readings and research (i.e., 193, 194, 195, 293, 294, 295, 296, 300 and 350) may not be used to fulfill requirements for the minor.

**COURSES**

**1—General Principles and Concepts of Biology (3).** Emphasizes connections and applications to society and the human condition, science literacy, and critical thinking skills. A discussion of general principles and fundamental concepts of living things. Prerequisite: Math 10 or concurrent enrollment. cor.

**2—General Biology Laboratory (2).** Laboratory exercises dealing with representative organisms and methods of modern biological sciences. Prerequisite: 1 or 1 concurrently.

**6—Basic Environmental Studies (3).** Considers the ecosystem, energy and biogeochemical cycles and population dynamics; relations of the environment to agriculture and technology, pollution, power and food production; politico-economic considerations; moral and ethical issues. For non-science majors; does not count as a laboratory science.

**12—General Botany (5).** Introduction to study of plants. Emphasis on structure, growth, physiology genetics and reproduction of plants.

**42—Introduction to Biological Systems (5).** Basic concepts and principles of the structure and function of living systems, from cells to populations. Foundation course for science students intending to complete a 3-semester sequence that also includes genetics and cell biology. Prerequisites: Math 10 and high school chemistry.

**101—Topics in Biological Sciences (cr.arr.).** Selected topics not in regularly offered courses. Prerequisite: instructor's consent.

**108—Genetics and Human Affairs (3).** Introduction to genetics, emphasizing the impact of genetics on human society. Human evolution, molecular genetics, genetics engineering in medicine and agriculture. An intensive writing course. Prerequisite: a college science course or equivalent (advanced high school biology).

**193—Readings in Biological Science (1-3).** Supervised reading in biological literature. May be repeated up to six hours total credit. Prerequisite: instructor's consent. May not be used in partial fulfullment of general education requirement.

**194—Honors Readings in Biological Literature (1-3).** Selected readings in biological literature for Honors, in consultation with instructor. Prerequisite: overall 3.3 GPA Biological Sciences honors program major; instructor's consent. May not be used in partial fulfillment of general education requirements.

**195—Service Learning in Biology (1).** Pre-med and pre-vet students participate in community service through a biomedically relevant agency. Students attend 3 class meetings, keep a journal and send in four e-mail reports. Does not count toward A&S graduation requirements. One credit, repeatable once.

**201—Topics in Biological Sciences (cr.arr.).** Selected topics not covered in regularly offered courses. Prerequisite: a course in general biology.

**202—General Genetics (4).** Principles of inheritance in plants and animals; structure and use of genetic material, transmission of genetic information, linkage, modification of genetic information, regulation of genetic activity, population genetics. Prerequisites: 42 Chemistry 32 (or concurrent enrollment).

**203—Introduction to Cell Biology (3).** Analysis of cellular organization and function at the molecular level. The mechanisms underlying cellular trafficking, cell motility, and signaling within cells and between cells and their environment will be emphasized. Prerequisites: 202 and Chemistry 210 (or concurrent enrollment in Chemistry 210).

**207—Biology of Fungi (3).** (same as Plant Science 207). The diverse roles of fungi in the biosphere will be explored by considering fungi we eat, fungi which destroy our food, fungi in folklore and fungi as global nutrient recyclers. Prerequisite: 11, 12 or 42.

**208—Introductory Entomology (2-3).** (same as Entomology 208). Holistic biology of insects, including anatomy, physiology behavior, ecology, and management. Prerequisites: Biological Sciences 11, 12, or 42 or equivalent.

**209—Insect Diversity (1).** (same as Entomology 209). Laboratory emphasizing external insect anatomy, classification, and identification to the family level. Insect collection is

required. Prerequisite: concurrent enrollment or previous satisfactory completion of Entomology/Biology 208.

**210—Parasitology (4).** (same as Veterinary Pathobiology 210). Parasitism is considered as a fundamental type of inter species interaction. Principles of parasitism as they apply to animals are presented with emphasis on parasite morphology, biology and host parasite relationships. Prerequisite: 8 hours of biology.

**212—Basic Microbiology (4).** Principles of microbiology. Prerequisite: 202 and 203.

**214—Plant Taxonomy (4).** Principles of classification of plants; survey of diversity in flowering plant families; identification of local flora; use of keys. Prerequisite: 1 semester biology or botany.

**230—Invertebrate Zoology (4).** Structure, ecology and phylogeny of the invertebrate phyla. Prerequisites: 11 or 42.

**241—Genetics Laboratory (2).** Experimental genetic studies of Drosophila, corn and microorganisms. Prerequisites: a grade of C or better in 202 or instructor's consent.

**250—Community Biology (3).** Integrated set of lectures on evolution/population genetics, population dynamics/social systems and ecosystem structure/ process, biomass in worldwide context, man in the environment. Prerequisites: 1, 11, 12 or 42 equivalent.

**266—Ornithology (4).** (same as Fisheries and Wildlife 266). Structure, identification, habits, importance of regional birds. Field work, lectures, lab. Prerequisites: 5 hours Biology or instructor's consent.

**270—Animal Physiology (5).** Introduces concepts of vertebrate organ function and homeostatic control emphasizing mammalian physiology. Some comparisons to function in other vertebrates and strategies for coping with environmental stresses introduced. Prerequisite: 203.

**293—Undergraduate Research in Biology (1-3).** Individually directed field or laboratory research for upper- class students under faculty supervision. Project must be arranged by student and faculty member prior to registration. Prerequisites: Overall GPA 2.75; 20 hours of biology and/or chemistry; instructor's consent.

**294—Undergraduate Research in Biology (1-3).** Individually directed field or laboratory research for upper- class students under faculty supervision. Project must be arranged by student and faculty member prior to registration. Prerequisites: 293; overall GPA 2.75.

**295—Honors Research in Biology (1-3).** Special field or laboratory problems of experimental nature for upper-level Honors students, in consultation with instructor. Prerequisites: overall GPA 3.3, biological sciences or microbiology major, and instructor's consent.

**296—Honors Research in Biology (1-3).** Continuation of research program. Successful completion leads to degree with Honors in biological sciences or microbiology. Prerequisites: 295; overall GPA of 3.3; instructor's consent.

**300—Problems in Biological Sciences (cr.arr.).** Individual supervised work to supplement regularly organized courses in biology; introduction to research. Prerequisites: upper-level standing and instructor's consent.

**301—Topics in Biological Sciences (cr.arr.).** Selected topics not in regularly offered courses. Prerequisite: instructor's consent.

**302—Evolution (3).** Surveys various processes in organic evolution and underlying genetic mechanisms. Prerequisite: 202.

**308—Plant Anatomy (4).** Comparative structure, growth of meristems; development, structure of important cell types, tissues, tissue systems; comparative anatomy of stem, root, leaf. Emphasizes anatomy of gymnosperms, angiosperms. Prerequisites: 12 or 42.

**309—Mammalogy (4).** (same as Fisheries & Wildlife 307). Taxonomy, distribution, structure, habits, importance of mammals; emphasizes those of central United States. Prerequisites: junior standing or instructor's consent.

**311—Ichthyology (4).** (same as Forestry, Fisheries & Wildlife 311). A broad introduction to the biology and ecology of fishes. Emphasis will be placed on understanding the adaptations fishes exhibit to aspects of their environment. Prerequisites: 8 hours biology or equivalent.

**317—Plant Physiology (3-5).** (same as Plant Science 317). Modern physiology of higher plants using common cultivated plants as examples. May be taken with or without laboratory. Prerequisites: 12 or 42 and 5 hours chemistry.

**324—Limnology (3-4).** (same as Fisheries & Wildlife 324).

**325—Herpetology (4).** The biology, ecology, taxonomy, and distribution of amphibians and reptiles. Some Saturday field trips. Prerequisite: 8 hours Biology or equivalent.

**326—Analysis of Biological Macromolecules (3).** Theory/ application of techniques used for characterization of proteins, nucleic acids; topics: sedimentation velocity; equilibrium; sucrose density gradients; electrophoresis; spectrophotometry. Prerequisites: 203 or Biochemistry 270; Mathematics 80 and one year Physics.

**327—Summer Institute in Biotechnology (3).** Development of experiments in molecular genetics for use in high school biology laboratories. May be repeated for credit. Prerequisite: instructor's consent.

**328—Introductory Radiation Biology (3).** (same as Nuclear Engineering 328, Radiology 328, Veterinary Medicine and Surgery 328).

**330—Developmental Biology (3).** Analysis of the molecular, genetic, cellular, and morphological processes responsible for phenotypic changes in developing organisms. A variety of experimental systems are discussed to identify common mechanisms used by developing organisms. Prerequisites: 202, 203, Chemistry 210.

**333—Vertebrate Histology and Microscopic Anatomy (5).** Microscopic anatomy of vertebrate tissues and organs. Prerequisites: junior standing; 203 and 270, or equivalent are recommended.

**335—Mammalian Reproductive Biology (3).** Adult reproductive anatomy, physiology and behavior; gametogenesis and fertilization; placentation; sexual differentiation; parturition; maternal behavior and lactation; puberty; reproductive aging; reproductive ecology. Prerequisites: junior standing and 15 hours of Biology.

**337—Neural Control and Regeneration in Motor Systems (3).** Examination of the function of neural networks at all levels, from properties of single neurons to large collections of neural elements. Prerequisites: 270 or instructor's consent.

**339—Neurobiology (3).** Vertebrate and invertebrate neurobiology, including cell and molecular biology of the neuron, neurophysiology, neuroanatomy, neuroethology and developmental neurobiology. Prerequisites: 203 or 270 or instructor's consent.

**341—Neurobiology Laboratory (3).** Laboratory experience with experimental neurobiology, with emphasis on neural networks, motor systems, and developmental neurobiology. Prerequisites: 270 or 339 or instructor's consent.

**342—Behavioral Biology (3).** Comparative study of animal ethology. Principles of animal ethology illustrated in different animal phyla. Prerequisites: 42 and one additional upper-level course in Biology or Psychology.

**343—Nerve Cells and Behavior (3).** The cellular basis of behavior. Molecular and cellular properties of nerve cells, as related to behavior, will be represented and discussed. Prerequisite: 270 or instructor's consent.

**350—Special Readings in Biological Sciences (cr.arr.).** Independent readings and discussions of topics in biology selected in consultation with supervising faculty member. Paper required. Prerequisites: senior or graduate standing in biology and instructor's consent.

**362—General Ecology (5).** Principles of populations, coevolution, density factors, competition; physical environment; concept of community, trophic structure, biotic succession; characterization of biomes, man in ecosystem. Biology majors having completed 250: 2 hours credit. Prerequisites: 10 hours in Biology and junior standing.

**364—Plant Population Biology (4).** Covers the ecological and evolutionary processes that influence the distribution and abundance of plant species. Topics include evolution of life history schedules, gender evolution, population growth and demography, competition, herbivory, plant-pollinator interactions, clonal growth, and plant community structure. Prerequisites: 2 courses in biology.

**366—Avian Ecology (3).** Advanced examination of ecological patterns in birds. Explores the environmental factors affecting the evolution of avian behavior, morphology, community structure and distribution. Prerequisites: 250 or 362; 266.

**370—Molecular Biology (3).** Molecular mechanisms of DNA replication, mutation, recombination and gene expression in prokaryotes, eukaryotes, and their viruses; gene fine structure; genetic engineering. Prerequisites: 202 and 203.

**371—Cellular Physiology (3).** The cell as a functional unit. Prerequisites: 10 hours Biology and 5 hours Physics and 5 hours Organic Chemistry; some background in Biochemistry and/or Molecular Biology is strongly recommended.

**374—Molecular Biology Laboratory (2).** (same as Biochemistry 374). Emphasizes recently developed genetic and biochemical techniques; illustrates how they apply to contemporary problems in biological research. Prerequisites: 202, Biochemistry 272 or concurrent registration in Biological Science 370.

**375—Human Inherited Diseases (3).** Analysis of the molecular and cellular mechanisms underlying inherited diseases in humans. Topics include genetics of sex determination, metabolic disorders, cancer, blood groups, transplantation, AIDS. Prerequisites: 202 and 203.

**399—Senior Seminar (1-3).** Readings and critical evaluation of selected problems and theories in biology. Offered in one or more sections, with specialized subdisciplinary emphasis. Prerequisites: Biology major, senior standing, instructor's consent.

**400—Problems in Biological Sciences (cr.arr.).** Research not expected to terminate in thesis, or individual advanced study in special subjects. Prerequisites: graduate standing and instructor's consent.

**401—Topics in Biological Sciences (cr.arr.).** Advanced topics not in regularly offered courses. Prerequisite: instructor's consent.

**405—Professional Survival Skills (2).** Introduction to resources, facilities, and communication skills for professional careers in biological sciences. Topics include computer resources, accessing scientific literature, making slides and figures, grantsmanship, resume preparation, manuscript review, and research presentation.

**408—Developmental Genetics (3).** Discussion and analysis of selected regulatory mechanisms in development, with major emphasis on the regulation of gene transcription. Prerequisites: 202 and Biochemistry 270, Biochemistry 272, or equivalent; graduate standing.

**410—Seminar (1).** Current topics in the biological sciences. Open to all graduate students. Offered S/U. Prerequisite: graduate standing.

**411—Seminar in Areas of Specialization (1).** Offered each semester in one or more specialized sections followed by the topic title of the seminar. May be offered S/U. Prerequisite: graduate standing.

**412—Seminar in Genetics (1).** Discussion of current investigations in genetics. Prerequisite: graduate standing.

**413—Workshop in Area of Specialization (1).** Intensive course in the theory and methodology of biological investigation. Conducted by visiting scientists. Offered in one or more specialized sections. Prerequisites: graduate standing or instructor's consent. May be repeated for credit.

**418—Advanced Plant Genetics (3).** Genetic approaches to molecular and biochemical studies in maize, wheat, and

Arabidopsis. Prerequisites: General Genetics and course in Cell Biology or Plant Physiology.

**421—Design of Ecological Experiments (2).** Principles of experimental design in the context of ecological, behavioral, and evolutionary research. Prerequisite: Statistics 207.

**422—Ecological Genetics (4).** Population genetics and evolutionary theory, with emphasis on studies of natural populations. Prerequisites: 202, 250 or 362, and Statistics 207 or equivalent.

**425—Plant/Animal Interactions (3).** Discussion and lectures on herbivory, pollination biology, and dynamics of fruit and seed dispersal from ecological and evolutionary perspectives. Prerequisites: 362 or 364 or equivalent.

**428—Advanced Community Ecology (3).** Detailed examination of new happenings in population and community ecology. Topics vary but will include species interactions, community structure, reproductive strategies. Prerequisites: 362 or instructor's consent.

**430—Speciation (3).** Advanced discussion of species concepts and the processes of formation of species. Prerequisites: 202 and 302.

**432—Advanced Cell Biology (3).** Structure and function of membranes; cell ultrastructure; organellar function; cellular movement; microtubules; microfilaments; mitosis and meiosis. Prerequisites: 203; graduate standing; instructor's consent.

**433—Molecular Biology of Plant Growth and Development (3).** (same as Biochemistry 433). Molecular biology of plant hormones, signal transduction, environmental signals. Prerequisites: Biological Sciences 313 and 370.

**434—Plant Developmental Biology (3).** Critical discussions of recent publications in plant development, with particular focus on developmental genetics.

**437—Advanced Microscopy Techniques (3).** Electron microscopy and modern light microscopy techniques including epiflourescence, confocal flourescence microscopy, low light video microscopy, differential interference optics, and computerized image analysis. Prerequisite: 333 or 432 and instructor's consent.

**441—Neurobiological Techniques (4).** Principles and techniques of experimental neurobiology. Participants will complete an independent research project. Prerequisite: 270 or 339 or consent.

**442—Sensory Physiology & Behavior (3).** Basic principles of coding and integration of sensory stimuli; neural correlates of animal behavior; environmental influences on postnatal sensory development. Prerequisite: 339 or equivalent.

**445—Developmental Neurobiology (3).** Principles of neural development. Development of neuron and nerve patterns, axon growth, synapses, and development of behavior. Prerequisite: 339 or equivalent.

**450—Non-thesis Research (cr.arr.).** Independent research not leading to a thesis. Prerequisites: graduate standing and instructor's consent.

**490—Research in Biological Sciences (cr.arr.).** Research leading to thesis or dissertation. Prerequisites: graduate standing and instructor's consent. Graded on a S/U basis only.

# Black Studies Program

**(AN INTERDISCIPLINARY AREA IN THE COLLEGE OF ARTS AND SCIENCE)**
**313 Gentry Hall (573) 882-6229**

The Black Studies Program is an interdisciplinary program leading to a dual major and minor in the College of Arts and Science. Course offerings are open to all students.

## REQUIREMENTS

- Satisfaction of the basic skills and general education requirements in the College of Arts and Science (In selecting a language to meet those requirements, students are encouraged to consider Spanish, Portuguese or French.)
- Completion of an area of concentration in another Arts and Science program or department
- Completion of an interdisciplinary area of concentration of at least 32 hours in Black Studies and related courses

**MINOR** Students seeking a minor in Black Studies take a minimum of 15 hours of Black Studies courses within the College of Arts and Science, including the foundation course BLKST 100: Introduction to Black Studies. In addition, a course in each of three content areas — history, society, and culture — must be taken, and one of these courses must focus on Black women. Students are also encouraged to take a course in three regional areas of study: Africa, African America, and the Black Diaspora. A minimum of six hours in courses numbered 200 or above, and at least one 300-level course must be taken. At least nine of these hours must be in courses other than readings, methods, techniques, or problems. In addition, a maximum of three hours of the minor can be taken in Black Studies courses outside the College of Arts and Science.

**DUAL DEGREE PROGRAM** A student also can earn a degree in Black Studies as part of a dual degree. In order to receive two baccalaureate degrees, a student must complete a minimum of 132 semester hours and complete all of the specific requirements for both degrees. Normally, a minimum of one additional semester is required for both degrees.

## COURSES

**1—Introduction to Swahili and African Culture (3).** Introduction to Swahili and African Culture is a three credit hour course, which serves as a survey of an indigenous African language and the culture of East Africa. There are no prior requirements. f.

**90—African-American on Stage and Screen (3).** (Same as Theatre 90.) A study of the evolution of African- Americans culture and the impact of dramatic literature and the impact of dramatic literature and the entertainment industry on the social perceptions of African-Americans.

**91—World Theatre Workshop (2).** (same as Theatre 91). Provides a diverse ensemble of student performers, writers, and technicians with an intensive immersion in the process of theatrical production through the public presentation of dramatic literature that focuses on global issues of ethnicity and culture.

**100—Black Studies (3).** An interdisciplinary introduction to the basic concepts and literature in the disciplines covered by African-American studies;. the role of historical, political, social, and economic forces in shaping cultural expression will be stressed.

**101—Undergraduate Topics in Black Studies (1-3).** Organized study of selected topics. Subjects and credits may vary from semester to semester. Prerequisite: program consent for repetition.

**104—African-American Literature (3).** (Same as English 104) Surveys writing by African-American authors from early 19th century to the present using a socio- historical approach to show the development of a black literary tradition. Prerequisite: 20. cor.

**108—Social Inequalities (3).** (Same as Sociology 110.) Survey of inequalities based upon criteria such as race, ethnicity, sex, age, religion and social class in contemporary societies. Focus on dynamics by which privilege and inequality are structured. Required for Sociology majors. Prerequisite: 1, 4, or 50. cor.

**110—Women, Race & Class (3).** (Same as Women Studies 110.) Study of women's experiences of family, work, sexuality, spirituality, violence, power, and love across race and class lines. Examine psychological, economic, and institutional connections between racism, sexism, and classicism. No credit for students who have taken 111.

**111—Social Perspectives on Women, Race and Class (3).** (Same as Women Studies 111.) Examines the impact of the construction of "female" on different categories of women. Reviews women's multilayered relationships. Stresses both the roles of creator and "victim" within social structures and value systems. No credit for students who have taken Women Studies 110.

**115—The Black Woman in America (3).** (Same as Women Studies 115.) Review and critiques of a variety of materials about Black women from slavery to present. The course allows students to generate their own view about psychological, social and philosophical impact of the Black women's struggle on all women. Prerequisite: sophomore standing.

**130—African American History (3).** (Same as History 130.) Survey of social, political and economic development to the African American people in American life from 1619 to the present.

**135—History of Modern Africa (3).** (Same as History 135) Provides a general survey of Sub-Saharan Africa, from 1800 to the present. Topics include: state formation, the slave trade, colonialism, nation liberation and the problems of independent Africa. Prerequisite: sophomore standing or instructor's consent.

**136—History of South Africa (3).** (Same as History 136) South African Society from the 16th century to the present with an emphasis on the last two centuries and the consolidation of the apartheid state. Prerequisite: sophomores standing or instructor's consent.

**139—The Black Americans (3).** (Same as Sociology 139.) Analysis of history of blacks in the United States. Assessment of contemporary black community in terms of its institutions, style of life, patterns of work and intergroup relations. Prerequisites: Sociology 1 or 4 or equivalent or instructor's consent.

**152—Themes in the Geography of Africa South of the Sahara (3).** (same as Geography 152). Major concepts of African geography in current and historical perspective. Case studies of major African countries. Prerequisites: sophomore standing or one introductory Geography course.

**200—Special Problems (cr.arr.).** Research apprenticeship with faculty member, assisting a faculty member in the development and execution of a research project. May be repeated for a maximum of six hours. Prerequisite: sophomore standing, instructor's consent.

**201—Undergraduate Topics in Black Studies (1-3).** Organized study of selected topics. Subjects and credit may vary from semester to semester. Prerequisite: program consent for repetition. Prerequisite: sophomore standing.

**204—Survey of African-American Literature (3).** (Same as English 204.) A genre-focused survey of African- American literature from the Harlem Renaissance to the present. Courses may focus on the move, the essay and other nonfiction forms, poetry, and drama. Prerequisite: 20.

**225—African American Psychology (3).** (same as E&CPSY A225). The research, theories, and paradisms developed to understand the attitudes, behaviors, and psychosocial realities of African-Americans are discussed. Prerequisite: Psychology 1.

**226—Black Feminism (3).** (same as E&CPSY A226). This course outlines the basic principles and practices of Black feminism in the United States. Examination of the multiple systems of oppression on Black women's lives and Black women's collective actions against social structures will occur. Prerequisite: Psychology 1 or instructor's consent.

**234—Black Religion (3).** (Same as Religious Studies 234.) A history of religion approach to the study of black religion which takes into consideration the unique past experiences of the African American community as it underwent the terror of forced migration, slavery, segregation, and discrimination. Prerequisite: sophomore standing.

**235—Religious Biography: Black Religion (3).** (same as

History 235). Studies black American religion through the biographies of representative and influential figues of the nineteenth and twentieth centries, including Nat Turner, W.E.B Dubois, Marcus Garvey, M.L. King, and Malcolm X.

**237—Women in African History (3).** (same as Women Studies 237 and History 237) Focuses on the varied and changing roles of women in sub-Saharan Africa from precolonial times to the present. Prerequisite: sophomore standing or instructor's consent.

**240—Black Freedom Movement, 1955-1973 (3).** (same as History 240). Examines the dismantling of American apartheid and its transformation into a new racial control system. It also explores how and why the Civil rights Movement was converted into a struggle for Black Power. Offered once a year.

**246—History of Black Nationalism in the United States (3).** (same as History 246). Examines the struggle of African-Americans tp construct autonomous institutions, to build all Black communities or to acquire an independent nation-state. We will study the ideology, structure, strategy and tactics. Prerequisites: History 130 or Sociology 139.

**250—Black Women in American Politics (3).** (Same as Political Science 250.) This course analyzes the role that Black women have played in American politics from the Reconstruction era civil rights and women's movements, and bids for elective official. Prerequisite: Political Science 1 or 11 and sophomore standing.

**260—Black Political Thought (3).** (Same as Political Science 260.) This course analyzes the major political theories and their proponents from the Reconstruction era to the present. Prerequisites: Political Science 1 or 11 and sophomore standing.

**273—Religion in Afro-American Literature (3).** (same as Religious Studies 273). Examination of Afro-American fiction, poetry and drama which present significant racial attitudes toward the Christian religion. Prerequisites: 131 or equivalent, sophomore standing.

**275—Anthropology and the Concept of Race (3).** (same as Anthropology 275). The concept of race is deconstructed by examining models of human origins, genetics and racist ideas about crime, intelligence and achievement. Paper and examinations required. Prerequisite: sophomore standing.

**287A—Undergrad. Seminar in Black Studies: History of Race in the US (3).** (same as History 287A). Readings on problems in American history with reports and discussion on selected topics. Prerequisite: junior standing, fifteen hours or consent of instructor. Departmental consent for repetition up to a maximum of 6 hours.

**300—Special Problems (cr.arr.).** Independent investigation leading to a paper or a project. Prerequisite: junior standing, instructor's consent.

**301—Undergraduate Topics in Black Studies (1-3).** Organized study of selected topics. Subjects and credit may vary from semester to semester. Prerequisite: program consent for repetition. Prerequisite: junior standing.

**304—Major African-American Writers (3).** (Same as English 304.) An intensive study of selected African- American writers. Prerequisite: 204 or eqivalent. May be repeated to six hours with department's consent.

**308A—Major African-American Women Writers (3).** (Same as Women Studies and English 308A.) Study of a limited number (1-3) of significant African-American writers to be read intensively using contemporary feminist critical theory. Prerequisite: two courses in British or American Literature. Repeatable with department's consent. Maximum of six hours for 308 and 308A.

**309—African-American Politics (3).** (same as Black Studies 309). Surveys political partcipation of African-Americans in American politics. Analyzes their public lives in the context of elections, behavior of political organizations, social movements, parties, and level of government. Prerequisites: Political Science 1 or 11 and junior standing.

**315—Themes in Literature by Women (3).** (same as Women Studies 315). Examines works by a number of women writers with particular attention to their socio political context. May repeat to six hours with department's consent. Prerequisite: junior standing.

**347—Working with Minority Youth (3).** (same as Social Work 347). Develops awareness and understanding of social/psychological/ cognitive realities influencing the behavior of black youth. Content draws upon theories, research, and practice skills relevant to understanding black youth. Minority groups included. Prerequisite: instructor's consent.

**348—Caribbean Women Writers (3).** (same as Women Studies 348). Examines representative works by female authors from the Caribbean; primarily the English speaking islands. The depiction of Caribbean women will be a major consideration, as well as the unique qualities of Caribbean literature. Prerequisite: sophomore standing or instructor's consent.

**351—The Black Family: Past, Present & Future (3).** (same as Human Development and Family Studies 351). Emphasis is on the unique social, economic, religious, educational and political environments that have affected the structure and function of the black family. Prerequisite: junior standing. w.

**354—Literature of the Black Diaspora (3).** (Same as English 354.) An upper division course which explores other literatures written in English by and about people of African descent from South Africa, West Africa, the Caribbean, Central America, and Canada. Prerequisite: sophomore standing or above with backgrounds in Black history and/or literature.

**371—Third World Politics (3).** (same as Political Science 371).

**372—African Politics (3).** (same as Political Science 372). A general comparative course focusing on post-independent Africa. Theories and concepts related to decolonization, nationalism, democratization, and ethnicity; also institutional forms and organizations: political parties, parliaments, and executives. Prerequisite: 1 or 11 and junior standing.

**373—Global Perspectives on Women and Development (3).** (same as Sociology and Women Studies 373). Examines the history and structure of "development" discourse and practices. Stresses the interconnections and impact on women globally. Reviews women's strategies in defining and instituting programs to improve quality of life in communities. Prerequisites: Sociology 110, Women Studies 111, Black Studies, 111 or Women Studies 370.

**377—Race, Gender and Ethnicity in Higher Education (3).** (same as Higher & Adult Education K377 and Women Studies 377). Historical relationships of race, gender, and ethnic issues in United States higher education. Issues include: theory and research of curriculum and teaching, diversity within the the academy, and leadership, governance, and policy.

**380—Social Work Practice With Minorities: African-American Emphasis (3).** (same as Social Work 380). Provides students with an appreciation of the black experience in the United States on a knowledge and feeling level.

**385A—Themes in African-American Folklore (3).** (Same as Anthropology 384A and English 385A.) Intensive study in a selected area of African-American Folklore: folk narrative, folk song, myth, proverb, etc., folklore and literature, or the folklore of a partcular group. 385 and 385A may be repeated for a maximum of six hours with instructor's consent. Prereq-uisite: junior standing.

**389—Economic Characteristics of the African American Experience (1).** (same as History 389). Examines how economic considerations have influenced African American history from the trans- Atlantic slave trade to the present. Prerequisite: junior standing or instructor's consent. w,s.

**391—African-Americans in the Twentieth Century (3).** (Same as History 391.) Surveys the African-American experience from 1900 to the present. Attention is given to economic, political, social, and cultural trends.

**400—Special Problems (cr.arr.).** Independent project or paper, not leading to dissertation. Pre- requisite: program's approval.

**438—Readings in African-American History (3).** (Same as History 438.) Readings on selected topics in African-American history from 1619 to the present, with emphasis on conflicting interpretations. May be repeated to a maximum of six hours.

**439—Seminar in African-American History (3).** (Same as History 439.) Directed research in selected topics in African-American history. May be repeated to a maximum of . six hours.



# Business Administration

**(INTERDEPARTMENTAL PROGRAM IN THE COLLEGE OF BUSINESS**
**137 Middlebush Hall (573) 882-7073**

**DEGREES** BSBA

**ECONOMICS** The sequence of courses for the BSBA in economics introduces the student to the tools of economic analysis and to their use in decision-making in such areas as investment, optimal product mixes, budget allocations, locational decisions and competitive strategies. It also may provide training in internal and external forecasting. Such analytical techniques are appropriate for industrial, commercial and financial organizations, as well as government agencies.

**Required core courses to be completed on campus in the junior year** 18 hours
Acct 258: Computer-Based Data Systems (3) or CECS 103: Algorithm Design and Programming I (3)
*Econ 229: Money and Banking (3)
Fin 203: Corporation Finance (3)
Mgmt 202: Fundamentals of Management (3)
Mgmt 254: Introduction to Business Law (3)
Mktg 204: Principles of Marketing (3)

**Required Courses** six hours
*Econ 351: Intermediate Price Theory (3)
*Econ 353: Intermediate Income Analysis (3)
*Economics majors in B&PA must obtain a grade of C (2.0) or better in Econ 4, 5, 229, 351 and 353. Students may retake courses to meet this requirement.

**Economics students must complete at least three economics courses selected from among the following**:
Econ 201: Topics
Econ 224: Introduction to International Economics (3)
Econ 256: Economics of Public Policy: Antitrust (3)
Econ 261: Economic Transformation in Eastern Europe and the Former Soviet Union (3)
Econ 299: Economics Proseminar (3)
Econ 311: Employment and Wages (3)
Econ 312: Special Topics in Labor Markets (3)
Econ 315: Public Economics (3)
Econ 316: State and Local Finance (3)
Econ 320: Economic Doctrines (3)
Econ 322: Economics of Regulation (3)
Econ 325: The International Monetary System (3)
Econ 326: Economics of International Trade (3)

Econ 329: Banking and Money Markets (3)
Econ 335: Economics for Decision-making (3)
Econ 340: Economic Theory of Games (3)
Econ 345: Economics of Education (3)
Econ 355: Structure of Industry (3)
Econ 360: Economic Development (3)
Econ 361: Comparative Economic Systems (3)
Econ 362: Welfare Economics (3)
Econ 368: Economic Fluctuations (3)
Econ 370: Introduction to Quantitative Economics (3)
Econ 371: Applied Econometrics (3)
Econ 384: Structural Change in Economic History (3)
Econ 398: Senior Seminar in Economics (3)

**Upper-level courses in accounting, finance, management, marketing, mathematics, statistics or behavioral sciences:** nine hours are required if 12 hours of economics have been completed; 12 hours are required if nine hours of economics have been completed.
**Professional Electives** three hours
**Required Core Course to be Completed on Campus in the Senior Year:** three hours
Mgmt 375: Management Policies and Problems (3)
**Total** 51 hours

A student may count a maximum of 30 semester hours of economics courses to meet the 120-hour requirement for the undergraduate degree.

# Chemical Engineering

**College of Engineering**
**W2033 Engineering Building (573) 882-3563**
**CHAIR** S. Lee
**PROFESSORS** R. Bajpai, S. Lee, T. Marrero, H. Yasuda
**ASSOCIATE PROFESSORS** P. Chan, D. Retzloff
**ASSISTANT PROFESSORS** P. Darcy, E. Doskocil, W. Jacoby, S. Lombardo
**RESEARCH ASSISTANT PROFESSORS** M. Chen, B. Lanterman
**PROFESSORS EMERITI** M. deChazal, R. Luebbers, R. Luecke, G. Preckshot, T. Storvick, D. Viswanath

**DEGREES** BS ChE, MS and PhD in chemical engineering

Chemical engineering is the application of scientific and engineering principles to industrial processes for which chemicals or chemistry is an integral component. The objective is to manufacture products to specifications both safely and profitably. To accomplish this, chemical engineers employ methodologies not familiar to chemists but requiring a strong background in chemistry. Chemical engineers are production supervisors in industry, technical sales personnel, process designers, research and development team members, as well as industrial managers. The traditional employers of chemical engineers include the petroleum, chemical, paper, food, semiconductor and utilities industries.

Current and future industrial trends require the participation of chemical engineers in the development of new and novel technologies in an interdisciplinary environment. For example, the currently important initiatives in air and water pollution control, alternative energy sources, waste minimization, development of environmentally benign manufacturing processes and energy conservation have been and continue to be the domain of chemical engineers. Future advances in the areas of microelectronics, genetic engineering, new materials development, and pharmaceutical production require the active participation of chemical engineers.

The goal of the Chemical Engineering Program at the University of Missouri-Columbia is to develop an academic program for which our graduates are:

1. well educated in the areas of mathematics, basic sciences, engineering;
2. capable and confident in applying their problem solving and design abilities as well as communicating these results in a clear and persuasive manner;
3. able to satisfy the future requirements of the chemical engineering profession;
4. committed to the pursuit of life-long learning, especially in the areas of science, engineering, business and management.

Design and process work in industry requires the chemical engineer to have extensive knowledge in chemistry, thermodynamics, unit operations, kinetics and reactor analysis, and process control. The requisite skills for diverse employment of chemical engineers include knowledge of engineering science as well as general problem solving ability. The flexibility of the chemical engineering degree provides a solid foundation for pursuing advanced studies in medicine, law, business, or basic science such as biochemistry. The curriculum is focused on the basic sciences and traditional engineering topics mentioned above. In addition, students receive training in statics, circuits, statistics, communication skills, computer programming, computer utilization and economics. The program contains sufficient flexibility so that a student can obtain additional training in any of the non-traditional career possibilities previously mentioned. The environmental, materials and biochemical options are versions of the basic chemical engineer degree and are examples of this flexibility. The need for our graduates to be capable in the area of design and able to work in teams is fully recognized by the faculty. Team design projects are integrated into the curriculum.

Each graduate of the University of Missouri-Columbia must complete the general education requirements, which are designed to provide a structured base of competence in the areas of written and oral communications, computer skills, mathematics, physical sciences, social sciences and humanities. The goal is to provide a broad education to facilitate problem solving, to develop critical thinking skills and to provide an appreciation and understanding of the cultural and social environment of the professional workplace.

Each graduate must complete the required curriculum that is designed to demonstrate knowledge and integration of chemical engineering science and practice using analytical, computational, and experimental techniques. In addition, each graduate must have a comprehensive background in advanced chemistry. Graduates have a detailed working knowledge of the entire spectrum of chemical engineering activities.

### CHEMICAL ENGINEERING OPTION

**First Semester** 16 hours
Math 80: Analytic Geometry and Calculus I (5)
Chem 32: General Chemistry II (3)
Engl 20: Exposition and Argumentation (3)
Humanities-Social Science (3)
Ch Engr 27: Introduction to Chem Engr (2)
**Second Semester** 16 hours
Math 175: Calculus II (5)
Chem 33: General Chemistry III (3)
Physics 175: University Physics I (5)
Humanities-Social Science (3)
**Third Semester** 17 hours
Math 201: Calculus III (3)
Chem 210: Organic Chemistry I (3)
Physics 176: University Physics II (5)
Ch Engr 225: Mass and Energy Balance (3)
Humanities-Social Science (3)
**Fourth Semester** 17 hours
Math 304: Differential Equations (3)
Chem 212: Organic Chemistry II (5)
Ch Engr 201: Computer-aided Calculations in Chemical Engineering (3)
Approved Elective (3)
Approved Statistics Elective (3)
**Fifth Semester** 16 hours
Chem 221: Quantitative Methods of Analysis (4)
Ch Engr 234: Principles of Chemical Engineering I (3)
Ch Engr 261: Chemical Engineering Thermodynamics I (3)
Humanities-Social Science (3)
Approved Technical Elective (3)
**Sixth Semester** 15 hours
Advanced Chemistry Elective (3)
Ch Engr 170: Chemical Process Measurement Lab (3)
Ch Engr 235: Principles of Chemical Engineering II (3)
Ch Engr 262: Chemical Engineering Thermodynamics II (3)
Humanities-Social Science (3)
**Seventh Semester** 15 hours
Ch Engr 243: Chemical Engineering Laboratory I (3)
Ch Engr 363: Chemical Reaction Engineering (3)
Ch Engr 385: Chemical Engineering Design I (3)
Approved Chemical Engineering Elective (3)
Engr 124: Circuit Theory I (3)
**Eighth Semester** 15 hours
Ch Engr 370: Chemical Process Control (3)
Ch Engr 387: Process Synthesis and Design (3)
Approved Chemical Engineering Elective (3)
Humanities-Social Science (3)
Engr 85: Statics and Elementary Strength of Materials (3)

### BIOCHEMICAL OPTION

**First Semester** 16 hours
Math 80: Analytic Geometry and Calculus I (5)
Chem 32: General Chemistry II (3)
Engr 20: Exposition and Argumentation (3)
Humanities-Social Science (3)
Ch Engr 27: Introduction to Chemical Engineering (2)
**Second Semester** 16 hours
Math 175: Calculus II (5)
Chem 33: General Chemistry III (3)
Physics 175: University Physics I (5)
Humanities-Social Science (3)
**Third Semester** 17 hours
Math 201: Calculus III (3)
Chem 210: Organic Chemistry I (3)
Physics 176: University Physics II (5)
Ch Eng 225: Mass and Energy Balance (3)

Humanities-Social Science (3)
**Fourth Semester** 16 hours
Bio Sci 42: General Biology (5)
Math 304: Differential Equations (3)
Ch Engr 201: Computer-aided Calculations in Chemical Engineering (3)
Chem 212: Organic Chemistry II (5)
**Fifth Semester** 17 hours
Chem 221: Quantitative Methods of Analysis (4)
Bio Sci 202: Genetics (4)
Ch Engr 234: Principles of Chemical Engineering I (3)
Ch Engr 261: Chemical Engineering Thermodynamics I (3)
Approved Statistics Elective (3)
**Sixth Semester** 18 hours
Biochem 270: Biochemistry (3)
Ch Engr 170: Chemical Process Measurement Lab (3)
Ch Engr 235: Principles of Chemical Engineering II (3)
Ch Engr 262: Chemical Engineering Thermodynamics II (3)
Bio Sci 203: Introduction to Cell Biology (3)
Humanities-Social Science (3)
**Seventh Semester** 18 hours
Biochem 272: Biochemistry (3)
Ch Engr 243: Chemical Engineering Laboratory I (3)
Ch Engr 315: Introduction to Biochemical Engineering (3)
Ch Engr 363: Chemical Reaction Engineering (3)
Ch Engr 385: Chemical Engineering Design I (3)
Humanities-Social Science (3)
**Eighth Semester** 18 hours
Ch Engr 314: Biochemical Engineering Operation (3)
Ch Engr 370: Chemical Process Control (3)
Ch Engr 387: Process Synthesis and Design (3)
Engr 85: Statics and Elementary Strength of Materials (3)
Engr 124: Circuit Theory I (3)
Humanities-Social Science (3)

## ENVIRONMENTAL OPTION

**First Semester** 16 hours
Math 80: Analytic Geometry and Calculus I (5)
Chem 32: General Chemistry II (3)
Engl 20: Exposition and Argumentation (3)
Humanities-Social Science (3)
Ch Engr 27: Introduction to Chemical Engineering (2)
**Second Semester** 16 hours
Math 175: Calculus II (5)
Chem 33: General Chemistry III (3)
Phys 175: University Physics I (5)
Humanities-Social Science (3)
**Third Semester** 17 hours
Math 201: Calculus III (3)
Chem 210: Organic Chemistry I (3)
Phys 176: University Physics II (5)
Ch Engr 225: Mass and Energy Balance (3)
Humanities-Social Science (3)
**Fourth Semester** 17 hours
Math 304: Differential Equations (3)
Chem 212: Organic Chemistry II (5)
Ch Engr 201: Computer-aided Calculations in Chemical Engineering (3)
Humanities-Social Science (3)
Approved Statistics Elective (3)
**Fifth Semester** 16 hours
Chem 221: Quantitative Methods of Analysis (4)
Ch Engr 234: Principles of Chemical Engineering I (3)
Ch Engr 261: Chemical Engineering Thermodynamics I (3)
CE 292: Water and Wastewater Treatment Proc (3)
Humanities-Social Science (3)
**Sixth Semester** 15 hours
Chem 329: Environmental Chemistry (3)
Ch Engr 170: Chemical Process Measurements Lab (3)
Ch Engr 235: Principles of Chemical Engineering II (3)
Ch Engr 262: Chemical Engineering Thermodynamics II (3)
Ch Engr 311: Chemodynamics (3)
**Seventh Semester** 18 hours
Chem 351: Topics in Environmental-Toxicological Chemistry (3)
Ch Engr 243: Chemical Engineering Laboratory I (3)
Ch Engr 312: Air Pollution (3)
Ch Engr 363: Chemical Reaction Engineering and Technology (3)
Ch Engr 385: Chemical Engineering Design I (3)
Law 573L: Environmental Law (3)
**Eighth Semester** 18 hours
Engr 124: Circuit Theory I (3)
Ch Engr 349: Hazardous Waste Management (3)
Ch Engr 370: Chemical Process Control (3)
Ch Engr 387: Process Synthesis and Design (3)
Engr 85: Statics and Elementary Strength of Materials (3)
Humanities-Social Science (3)

## MATERIALS OPTION

**First Semester** 16 hours
Math 80: Analytic Geometry and Calculus I (5)
Chem 32: General Chemistry II (3)
Engl 20: Exposition and Argumentation (3)
Humanities-Social Science (3)
Ch Engr 27: Introduction to Chemical Engineering (2)
**Second Semester** 16 hours
Math 175: Calculus II (5)
Chem 33: General Chemistry III (3)
Physics 175: University Physics I (5)
Humanities-Social Science (3)
**Third Semester** 17 hours
Math 201: Calculus III (3)
Chem 210: Organic Chemistry I (3)
Physics 176: University Physics II (5)
Ch Engr 225: Mass and Energy Balance (3)
Humanities-Social Science (3)
**Fourth Semester** 17 hours
Math 304: Differential Equations (3)
Chem 212: Organic Chemistry II (5)
Ch Engr 201: Computer-aided Calculations in Chemical Engineering (3)
Engr 85: Statics and Elementary Strengths of Materials (3)
Approved Statistics Elective (3)
**Fifth Semester** 17 hours
Chem 221: Quantitative Methods of Analysis (4)
Ch Engr 234: Principles of Chemical Engineering I (3)
Ch Engr 261: Chemical Engineering Thermodynamics I (3)
Humanities-Social Science (3)
MAE 224: Engineering Materials (4)
**Sixth Semester** 18 hours
Advanced Chemistry Elective (3)
Ch Engr 170: Chemical Process Measurements Lab (3)
Ch Engr 235: Principles of Chemical Engineering II (3)
Ch Engr 262: Chemical Engineering Thermodynamics II (3)
Humanities-Social Science (3)
Approved Materials Elective (3)
**Seventh Semester** 15 hours
Ch Engr 243: Chemical Engineering Laboratory I (3)
Ch Engr 317: Chemical Processing in Semiconductors Devices (3)
Ch Engr 363: Chemical Reaction Engineering (3)
Ch Engr 385: Chem Engineering Design I (3)
Engr 124: Circuit Theory I (3)
**Eighth Semester** 15 hours
Ch Engr 319: Introduction to Polymers Materials (3)
Ch Engr 370: Chemical Process Control (3)
Ch Engr 387: Process Synthesis and Design (3)
Approved Materials Elective (3)
Humanities-Social Science (3)

# Chemical Engineering

## COURSES

**17—Experimental Course (cr.arr.).** For freshman-level students. Content and number of credit hours to be listed in Schedule of Courses.

**27—Introduction to Chemical Engineering (2).** Orientation course for freshmen-level students. Introduction to careers and opportunities in chemical engineering, basic engineering principles, simple calculations. Prerequisites: Math 80, Chemistry 32, or concurrently.

**170—Chemical Process Measurements (3).** Laboratory study of physical and chemical measurements and some chemical engineering unit operations essential to chemical process industries. Prerequisites: junior standing, 234 concurrently.

**201—Computer-aided Calculations in Chemical Engineering (3).** Survey of computational methods in chemical engineering; use of structured programming, spreadsheet, and software packages; numerical solutions of chemical engineering problems that involve roots of equations, simultaneous equations, curve fitting, integration and differentiation, differential equations. Prerequisite: Mathematics 304 and Chemical Engineering 225, or concurrent.

**225—Mass and Energy Balance (3).** Industrial stoichiometry, material and energy balances, thermophysics, thermochemistry; related topics. Prerequisites: Physics 175, Chemistry 210, or concurrently.

**234—Principles of Chemical Engineering I (3).** Fluid flow, heat transfer. Prerequisites: 2.0 or better in 225.

**235—Principles of Chemical Engineering II (3).** Mass transfer. Prerequisite: 234.

**243—Chemical Engineering Laboratory I (3).** Laboratory study of some principal unit operations of chemical engineering. Prerequisite: 235 or concurrently.

**261—Chemical Engineering Thermodynamics I (3).** Study of thermodynamics, with particular reference to chemical engineering applications. Prerequisites: 2.0 or better in 225.

**262—Chemical Engineering Thermodynamics II (3).** Prerequisite: 261.

**270—SQC and DOE for Chemical Engineering (3).** Statistical tool box for chemical engineers: design of experiments that compare treatment means and explore the effects of process variables; various methods of data interpetation and empirical modeling; statistical quality control. Extensive use of Excel spreadsheets is required.

**300—Problems (2-4).** Directed study of chemical engineer-

ing problems. Prerequisite: instructor's consent.

**301—Topics in Chemical Engineering (3).** Current and new technical developments in chemical engineering. Prerequisite: instructor's consent.

**306—Advanced Engineering Math (3).** (same as Nuclear Engineering 306). Applies ordinary and partial differential equations to engineering problems; Fourier's series; determinants and matrices; Laplace transforms; analog computer techniques. Prerequisite: Mathematics 304.

**311—Chemodynamics (3).** Environmental movement of chemicals in air, water, and soil; designed to introduce students to the basic principles and techniques useful for the prediction of the movement and fate chemicals in ecosystems. Prerequisites: 234 or instructor's consent.

**312—Air Pollution Control (3).** Modeling of urban air pollution and control techniques. Topics treated are plume dispersion theories, photochemistry, methods of monitoring, methods of industrial abatement and legal aspects. Prerequisites: 311 or instructor's consent.

**314—Biochemical Engineering Operation (3).** Transport processes in bioreactors, agitation and aeration, scale-up, sterilization, liquid-solid separation, cell distegration, and other units operations related to product recovery.

**315—Introduction to Biochemical Engineering (3).** General introduction to biochemical engineering follows fundamentals of microbiology and biochemistry. Topics: fermentation, microbial population kinetics, bioproduct separation and purification, enzyme engineering techniques, biochemical reaction energetics. Prerequisites: Chemistry 212, Mathematics 201 or instructor's consent.

**317—Chemical Processing in Semiconductor Device (3).** This course covers the current plasma processing methods used to produce semiconductor devices with emphasis on memory devices. The physics and chemistry of how plasmas are formed, sustained and interact with the semiconductor wafers being processed. Plasma chemistry and the chemical reactions used in plasma etching are discussed.

**319—Introduction to Polymer Materials (3).** An introduction to the structure and properties of polymers. Solution properties, molecular weight determination and rheological behavior are studied. Manufacturing and processing techniques are considered. Prerequisites: 262 & Chemistry 212. w.

**335—Transport Phenomena (3).** Integrated study of momentum, heat and mass transport. Prerequisites: 201, 235, 262, and Mathematics 304.

**345—Special Reading (2-5).** Individually supervised special reading leading to an engineering report. Prerequisite: senior standing.

**349—Hazardous Waste Management (3).** Engineering principles involved in handling, collection transportation, processing and disposal of hazardous waste minimization, legislation on hazardous wastes and groundwater contamination. Prerequisite: junior standing.

**350—Research for Honor Students (3-6).** Individual research for a senior thesis; research is supervised by the chemical engineering faculty. The thesis is to be defended before the departmental Honors committee. Prerequisite: senior standing.

**363—Chemical Reaction Engineering and Technology (3).** Reactor design and optimization; rate equations; thermal effects in reactor. Prerequisites: senior standing in Chemical Engineering 201, 262, or instructor's consent.

**370—Modern Methods of Chemical Process Control (3).** Process description using state space theory; introduction to digital control techniques; stability analysis. Prerequisites: senior standing in Chemical Engineering and 201, 262 or instructor's consent.

**379—Particulate Systems Engineering (3).** An introduction to natural and engineered particulate systems. Prerequisites: Mechanical and Aerospace Engineering 299 or equivalent.

**385—Chemical Engineering Design I (3).** The course presents optimum design methods, cost estimation, material selection and other relevant areas for the design of chemical plants. In addition, chemical safety, risk assessment and introduction to reliefs will be covered. Prerequisite: senior standing 201, 235 and 262.

**387—Process Synthesis and Design (3).** Continuation of Chemical Engineering 385: application of chemical analysis and modeling to a capstone design project. Prerequisite: 201.

**400—Problems (1-5).** Supervised investigation in chemical engineering to be presented in the form of a report. Prerequisite: instructor's consent.

**401—Advanced Topics in Chemical Engineering (3).** Prerequisite: instructor's consent.

**408—State Variable Methods in Automatic Control (3).** (same as Mechanical and Aerospace Engineering 408, Electrical Engineering 408, Nuclear Engineering 408). State variables for continuous and discrete-time dynamic control systems; controllability and observability; optimal control of linear systems. Prerequisites: 370, Electrical Engineering 206, Mechanical & Aerospace Engineering 357 or instructor's consent.

**410—Seminar (1).** Reviews investigations and projects of importance in chemical engineering.

**419—Plasma Polymerization (3).** Fundamental aspects of polymer formation in plasma state: gas ionization, reaction kinetics, plasma characteristics and operational parameters of plasma reactors. Properties of plasma - synthesized ultrathin films and their utilization also discussed. Prerequisites: 319 or instructor's consent.

**420—Advanced Heat and Momentum Transfer (3).** Advanced study of these transport phenomena. Prerequisites: 235, 335.

**422—Analysis of Equilibrium Stage Processes (3).** Advanced study of stage processes. Prerequisites: 201, 235 and 262.

**423—Advanced Mass Transfer (3).** Advanced study of mass transfer. Prerequisite: 420 or consent of instructor.

**429—Membranes and Membrane Processes (3).** Thermodynamics and mass transfer of membrane separation processes; Concentration-Driven Processes; Pressure-Driven Processes; Electromembrane Processes; Biological Membrane Processes; Membrane Polymers; Preparation of Membranes; Membrane Separation Application (potable and ultrapure water, effluent treatment, gas separations, electrochemistry, dialysis therapeutic, and other applications).

**449—Advanced Hazardous Waste Treatment Processes (3).** (same as Civil Engineering 449). Course includes some introductory materials about hazardous waste regulations followed by advanced treatment methods such as air stripping, soil-vapor extraction, chemical oxidation, membrane processes, in-situ and ex-situ biotreatment methods, solidification and thermal processes. Prerequisite: CE 349.

**451—Advanced Chemical Engineering Thermodynamics I (3).** Advanced thermodynamics; particular reference to its application to chemical engineering. Prerequisite: 262.

**452—Advanced Chemical Engineering Thermodynamics II (3).** Prerequisite: 451.

**463—Chemical Reaction Engineering Science (3).** Phenomenological behavior of catalysts. Theoretical interpretations for heterogeneous and homogeneous catalysts. Prerequisite: 363.

**470—Mathematical Studies of Chemical Engineering Operation (3).** Analytical methods applied to solution of chemical engineering problems. Prerequisite: Mathematics 304.

**471—Process Optimization Methods in Chemical Engineering (3).** Steady-state and unsteady-state optimization techniques applied to chemical processes. Prerequisite: 201.

**472—Advanced Computing for Chemical Engineers (3).** Interactive computing; advanced languages and programming techniques; process simulation; stiff dynamical systems; regression analysis; process optimization. Prerequisite: 201.

**490—Research (cr.arr.).** Independent investigation in chemical engineering, to be presented as a thesis. Graded on a S/U basis only.

# Chemistry

**College of Arts and Science**
**125 Chemistry Building (573) 882-8374**

**CHAIR** J. Atwood

**PROFESSORS** J. Atwood, M. Harmata, R. Kuntz, S. Lever, R. Loeppky, S. Manahan, J. McCormick, J.D. Robertson, P. Sharp, R. Thompson, W. Volkert, T. Wong

**ASSOCIATE PROFESSORS** J. Adams, K. Gates, R. Glaser, C.M. Greenlief, S. Jurisson, J. Kauffman, S. Keller

**ASSISTANT PROFESSORS** L. Beamer, J. Tanner, S. Tucker

**PROFESSORS EMERITI** J. Bauman, E. Kaiser, H. Kim, S. Koirtyohann, R. Murmann, P. Plummer, S. Searles

**ASSOCIATE PROFESSORS EMERITI** R. Harris, J. O'Laughlin

**DEGREES** AB, BS, MS, PhD in chemistry

The Chemistry Department offers three undergraduate degree options, two of which lead to a Bachelor of Science and one which leads to a Bachelor of Arts. A minor in chemistry and a Bachelor of Science degree with departmental honors also are offered.

(1) The **Bachelor of Science (American Chemical Society certified)** program is designed especially for those students who desire professional employment as chemists or who plan to pursue graduate education in chemistry. The science and math requirements for this program are as follows:

Chem 32: General Chemistry II (3)
Chem 33: General Chemistry III (3) (students may also substitute Chem 41 for Chem 32, 33)
Chem 141: Fundamentals of Inorganic Chemistry (3)
Chem 210: Organic Chemistry I (3)
Chem 212: Organic Chemistry II (5)
Chem 213: Organic Chemistry Laboratory (2) (students may also substitute Chem 216, 217, and 218 for 210, 212, and 213)
Chem 221: Quantitative Methods of Analysis (4)
Chem 231: Physical Chemistry (3)
Chem 233: Physical Chemistry (3)
Chem 234: Physical Chemistry Laboratory (3)
Chem 250: Senior Research; or Chem 298, 299; Senior Honors Research (required for departmental honors); or Chem 305: Advanced Chemistry Laboratory (3)
Chem 270: Undergraduate Seminar in Chemistry (3)
Chem 312: Instrumental Methods of Analysis (3)
Chem 341: Inorganic Chemistry (3)
Upper-level chemistry elective (3)
Math 80: Calculus I (5)
Math 175: Calculus II (5)
Math 201: Calculus III (3)
Physics 175: University Physics (5)
Physics 176: University Physics (5)

Students should consult with a chemistry adviser to make sure that the above courses are scheduled in the appropriate order.

(2) The **Bachelor of Science (Medicinal Chemistry emphasis)** program is designed for students who plan a career in the health professions or in

pharmaceutical, clinical, or medicinal chemistry. The science and math requirements for this program are as follows:

Chem 32: General Chemistry II (3)
Chem 33: General Chemistry III (3) (students may also substitute Chem 41 for Chem 32, 33)
Chem 141: Fundamentals of Inorganic Chemistry (3)
Chem 210: Organic Chemistry I (3)
Chem 212: Organic Chemistry II (5)
Chem 213: Organic Chemistry Laboratory (2) (students may also substitute Chem 216, 217, and 218 for 210, 212, and 213)
Chem 221: Quantitative Methods of Analysis (4)
Chem 230: Fundamentals of Physical Chemistry (3)
Chem 270: Undergraduate Seminar in Chemistry (3)
Chem 317: Medicinal Chemistry (3)
Chem 316: Synthetic Organic Chemistry (3); or Chem 361: Introduction to Radiochemistry (3); or Bio 328: Introductory Radiation Biology (3)
Bio 42: Introduction to Biological Systems (5)
Bio 202: General Genetics (4)
Bio 203: Introduction to Cell Biology (3); or Bio 270: Animal Physiology (5); or Bio 333: Vertebrate Histology and Microscopic Anatomy (5); or appropriate substitute
Biochem 270: Biochemistry (3)
Biochem 272: Biochemistry (3)
Math 80: Calculus I (5)
Math 175: Calculus II (5)
Physics 21: College Physics (4); or Physics 175: University Physics (5)
Physics 22: College Physics (4); or Physics 176: University Physics (5)
Students should consult with a chemistry adviser to make sure that the above courses are scheduled in the appropriate order.

(3) The **Bachelor of Arts** degree is designed to meet the needs of students who wish to gain a strong chemistry background but who may have goals other than employment as a chemist or graduate work in chemistry. The science and math requirements for this program are as follows:

Chem 32: General Chemistry II (3)
Chem 33: General Chemistry III (3) (students may also substitute Chem 41 for Chem 32, 33)
Chem 141: Fundamentals of Inorganic Chemistry (3)
Chem 210: Organic Chemistry I (3)
Chem 212: Organic Chemistry II (5)
Chem 213: Organic Chemistry Laboratory (2) (students may also substitute Chem 216, 217, and 218 for 210, 212, and 213)
Chem 221: Quantitative Methods of Analysis (4)
Chem 230: Fundamentals of Physical Chemistry (3)
Chem 270: Undergraduate Seminar in Chemistry (3)
Math 80: Calculus I (5)
Math 175: Calculus II (5)
Physics 21: College Physics (4); or Physics 175: University Physics (5)
Physics 22: College Physics (4); or Physics 176: University Physics (5)
In addition, a student seeking an AB degree will select a collateral area consisting of no fewer than 12 hours of upper-level course work outside of Chemistry (e.g., in biology, math, computer science, biochemistry, or business).

Students should consult with a chemistry adviser to make sure that the above courses are scheduled in the appropriate order.

A **Minor in Chemistry** will be awarded for the completion of Chem 32, 33, 210, 221, and 212. However, if a student's area of concentration already requires all of these courses, then an additional elective course must be included in the minor.

Please note that for a number of chemistry courses there is a prerequisite of a grade of "C or better" in another course. This requirement should be interpreted to mean that the student must earn at least a grade of C- in the previous course.

## COURSES

**15—Atoms and Molecules (3).** One-semester introduction for non-science majors to the basic concepts and important applications of chemistry. Satisfies A&S requirement for a laboratory science. No credit if taken after 31. f,w,s.

**31—General Chemistry I (2).** Introductory course for students with little or no high school background in chemistry. Covers fundamental principles, stoichiometry, solutions, basic atomic structure, gases. No credit if taken after 15. Corequisite: Math 10 or equivalent. f,w,s.

**32—General Chemistry II (3).** Covers thermochemistry, periodic properties, bonding liquids, solids. Satisfies laboratory science requirement. Students with good high school backgrounds in chemistry should start with this course. Prerequisites: advanced placement or grade of C- or better in 31; Math 10 or equivalent. f,w,s

**33—General Chemistry III (3).** Continuation of 32. Covers equilibria, kinetics, electrochemistry, nuclear chemistry. Satisfies requirement for a laboratory science. May be taken concurrently with 210. Prerequisite: grade of C- or better in 32. f,w,s.

**41—Honors Intensive General Chemistry (5).** A one-semester, intensive introduction to chemistry for honors-eligible students that takes the place of Chemistry 32, 33. Four lectures and one 3-hour lab period per week. Prerequisites: honors eligibility, college algebra and one year of high school chemistry or instructor's consent. f.

**141—Fundamentals of Inorganic Chemistry (3).** A systematic introduction with laboratory to inorganic and organometallic compounds, reactions, and periodic properties. Prerequisite: grade of C or better in 33. f.

**150—Undergraduate Research (1-3).** A laboratory research project and/or preparation of compounds with a written final report. Cannot be substituted for other chemistry courses required for a B.S. or A. B. degree. No more than 6 hrs. total credit. Prerequisites: sophomore standing, 2.75 GPA and/or instructor's consent. f,w,s.

**195—Service Learning in Chemistry (2).** A service-learning community outreach program affording chemistry students with an opportunity to enhance their problem-solving skills. May be repeated once for credit. Satisfies no specific chemistry degree requirements, nor A&S general education requirements. Graded on a S/U basis only. Prerequisites: junior standing, departmental consent. f,w.

**205—Introduction to Organic Chemistry (5).** A survey of organic chemistry, including an introduction to structure and bonding, functional group chemistry, principles of reactivity, reaction mechanisms, the molecules of life. Laboratory illustrates and augments the lecture material. 4 lectures, 1 lab per week. Prerequisite: grade of C or better in 32 or equivalent.

**210—Organic Chemistry I (3).** First course of a two-semester sequence. Topics include structure and bonding, chemistry of hydrocarbons, alkyl halides, alcohols and ethers, reaction mechanisms, principles of reactivity and synthesis, IR and NMR spectroscopy. Only 1 credit hour if taken after 205 or equivalent. Prerequisite: grade of C or better in 32 or equivalent. f,w,s.

**212—Organic Chemistry II (5).** Continuation of 210; includes laboratory. An emphasis on carbonyl compounds, amines, multifunctional compounds including the molecules of life, reaction mechanisms, synthesis and spectroscopic characterization; introduction to organic chemistry laboratory techniques, practicalities of compound synthesis, separation, and characterization. Prerequisite: grade of C or better in 210 or equivalent. f,w,s.

**213—Organic Chemistry Laboratory (2).** Preparation and identification of organic compounds; application of instrumental techniques. 2 lab sessions, 1 discussion session per week. Prerequisite: grade of C or better in 212 or equivalent.

**216—Honors Organic Chemistry I (4).** First course of a two-semester sequence. Similar to 210 but with increased depth and breadth; emphasis on preparing science students for research and professional careers. 3 lectures, 1 discussion session per week. Prerequisite: honors eligibility, grade of B or better in 32 or equivalent. f.

**217—Honors Organic Chemistry II (5).** Continuation of 216; includes laboratory. Content and structure similar to 212, but with increased depth and breadth. Prerequisites: honors eligibility, grade of B or better in 216 or instructor's permission. w.

**218—Honors Organic Chemistry Laboratory (2).** Preparation and identification of organic compounds; multistep syntheses; application of instrumental techniques, including NMR, FTIR, MS and HPLC. 2 lab sessions, 1 discussion session per week. Prerequisites: honors eligibility, grade of C or better in 217 or equivalent.

**221—Quantitative Methods of Analysis (4).** Principles and practice of quantitative analysis, including the basic principles of modern instrumental methods. Prerequisite: 33.

**230—Fundamentals of Physical Chemistry (3).** Survey of physical chemistry for students not intending to pursue advanced work in chemistry. Satisfies physical chemistry prerequisite for Biochemistry 372. Prerequisite: Math 175, a course in organic chemistry; Physics 21 and 22 or Physics 175, or 176 concurrently. f.

**231—Physical Chemistry (3).** Lecture only. Topics include the kinetic theory of gases, chemical kinetics, thermodynamics and chemical equilibrium. Prerequisites: one semester organic chemistry and one year University Physics and Mathematics 201, or Mathematics 201 concurrently. f.

**233—Physical Chemistry (3).** Continuation of 231. Lecture only. Covers wave mechanics, bonding, molecular spectroscopy and statistical mechanics. w.

**234—Physical Chemistry Laboratory (3).** Normally concurrent with 233. Prerequisites: 221 with a C or better. w.

**250—Senior Research (3).** A laboratory research project with approved written goals and a final written report. It may be taken twice. Prerequisites: a 2.75 GPA, 33 hours of chemistry or senior standing, and consent of Director of Undergraduate Studies. f,w,s.

**270—Undergraduate Seminar in Chemistry (3).** Methods for locating and presenting chemical information, data analysis techniques, professional issues. Prerequisites: 33, 210. w.

**280—Internship in Chemistry (1-6).** Cannot be substituted for other chemistry courses required for B.S. or A.B. degree. Prerequisites: 2.75 GPA, 20 hours of Chemistry, departmental consent of the Director of Undergraduate Studies. S/U graded only.

**298—Senior Honors Research (3).** A laboratory research experience with a student-instructor prepared outline approved by the Honors Director, a final written report and a final oral presentation and examination. Prerequisites: a 3.33 GPA, senior standing, instructor's approval and approval of project outline. f,w,s.

**299—Senior Honors Research (3).** A laboratory research experience with a student-instructor prepared outline approved by the Honors Director, a final written report and a final oral presentation and examination. Prerequisites: a 3.33 GPA, senior standing, instructor's approval and approval of project outline. f,w,s.

**300—Problems in Chemistry (cr.arr.).** Individual study under the direction of a faculty member that supplements regular course work. Prerequisite: upper-class standing and instructor's consent. f,w,s.

**301—Topics in Chemistry (cr.arr.).** Organized study designed to broaden knowledge base of new graduate students. Subjects on analytical, inorganic, organic and physical chemistry covered. Prerequisite: departmental consent for repetition. f,w.

**305—Advanced Chemistry Laboratory (3).** Advanced methods for the synthesis and characterization of organic, inorganic, and organometallic compounds. Prerequisite: 141, 212, 221, 233 (233 may be taken as a corequisite).

**312—Instrumental Methods of Analysis (3).** Chemical instrumentation methods including electrochemistry, spectroscopy, and advanced separations techniques. Prerequisites: 221, semester of physical chemistry. f.

**316—Synthetic Organic Chemistry (3).** Stresses synthetic organic chemistry at an intermediate level. Prerequisite: at least one year organic chemistry.

**317—Medicinal Chemistry (3).** Chemical mechanisms of drug action. Topics include drug metabolism and action, chemical toxicology and medicines, enzyme activity, and specific drug case studies. Prerequisite: 212, 230 or 231 or instructor's consent.

**325—Chemical Instrumentation for Secondary Science Teachers (3).** Fundamental concepts, development and design of experiments in chemical instrumentation including spectroscopy development and chromatography for secondary science teachers. Prerequisite: one year of general chemistry, one year of organic chemistry, and one year of college physics; instructor's consent required. May be repeated for credit up to a maximum of 6 hours. s.

**329—Environmental Chemistry (3).** Surveys the chemistry of air and water environments; discusses the chemistry of waste treatment. May not be used to satisfy the advanced chemistry course requirement on the B.S. degree Prerequisite: 8 hours chemistry including organic & analytical.

**331—Intermediate Physical Chemistry I (3).** Treatment of thermodynamics, chemical equilibrium, kinetic theory of gases and chemical kinetics designed to provide a broad base of knowledge in these fundamental areas to beginning graduate students in chemistry. Prerequisite: departmental consent.

**333—Intermediate Physical Chemistry II (3).** Treatment of atomic and molecular, structure and spectroscopy based on quantum concepts. Designed to provide a broad base of knowledge in these fundamental areas to beginning graduate students in chemistry. Prerequisite: departmental consent.

**341—Inorganic Chemistry (3).** Atomic and molecular structure, bonding, kinetics and mechanism, ligand field theory, coordination compounds, acids and bases. Prerequisite: one semester Physical Chemistry, 2nd semester co-requisite. w.

**351—Topics in Environmental-Toxicological Chemistry (3).** In-depth study of the chemical aspects of current issues dealing with environmental pollutants and toxic chemical substances. Prerequisite: 329 or equivalent.

**361—Introduction to Radiochemistry (3).** Introduces application of radio-tracer techniques to chemical research. Prerequisite: 33, course in quantitative analysis, and one semester of physical chemistry, or instructor's consent. w.

**401—Topics (cr.arr.).** Organized study of selected topics. Subjects and earned credit may vary from semester to semester. Repeatable upon consent of department. Prerequisite: instructor's consent.

**402—Introduction to X-ray Crystallography (3).** Designed for students in chemistry and related fields. Aimed at offering a practical understanding of single-crystal x-ray structural studies. Includes hands-on laboratory work (data collection and analysis). Prerequisites: prior approval of the instructor.

**410—Seminar (1).** f,w.

**411—Organometallics (3).** Condensations effected by organometallics; dissolving metal reductions; sandwich compounds and related organotransition metal derivatives.

**412—Physical Organic Chemistry I (3).** Bonding theory, physical methods, absorption spectroscopy, conformational analysis, mechanism of reactions.

**415—Organic Reaction Mechanisms (3).** Organic reaction mechanisms are discussed within a framework of structure-reactivity relationships. Particular attention directed to the chemistry of reactive intermediates and the application of stereochemical and molecular orbital concepts. Prerequisites: 1 year of Organic Chemistry and Physical Chemistry.

**416—Organic Spectroscopy (3).** Structural analysis of organic compounds involving problem solving using modern NMR, IR, UV-VIS, MS CD/ORD and other spectroscopic techniques. Prerequisites: 233 or instructor's consent.

**417—Applications of the Reactions of Organic Chemistry (3).** Prerequisite: one year graduate Organic Chemistry.

**419—Physical Organic Chemistry II (3).** Case studies and methods for determining organic reaction mechanizisms.

**421—Analytical Measurement (3).** Fundamental and applied aspects of scientific measurements. Topics include: Statistics, signal-to-noise, frequency analysis, sources of noise, digital and analog filtering, time vs frequency domain measurements, Fourier transformation, sampling, convolution/deconvolution, autocorrelation and cross-correlation. Directed toward entering graduate students. f.

**423—Separations and Chromatography (3).** Classical and instrumental methods of separation: gas, paper, thin film, and column chromatography; ion exchange.

**425—Analytical Spectroscopy (3).** Selected topics dealing with recent advances in analytical chemistry.

**427—Advanced Analytical Chemistry (3).** Continuation of 425.

**429—Environmental and Xenobiotics Analysis (3).** Covers standard (reference) and emerging methods of chemical analysis for water, air, waste, and biological samples of environmental interest, as well as the analysis of xenobiotic compounds, their metabolites, and their effects in biological systems. Prerequisites: graduate standing, instrumental analysis.

**430—Advanced Physical Chemistry (3).**

**431—Quantum Chemistry (3).** Introduction to formal quantum mechanical theory, quantum measurement, simple model problems having exact solutions, angular momenta, approximation methods (perturbation theory, variation principle, WKB), and the structure of many-electron atoms. Prerequisite: 233 or equivalent. w.

**432—Chemical Kinetics (3).** Factors affecting rates, orders and mechanisms of chemical reactions, with emphasis on current theories and experimental techniques.

**433—Computational Chemistry (3).** Theory and application of modern computational techniques (molecular mechanics, ab initio and semiempirical molecular orbital methods) for predicting the structures, energies, and properties of molecules and molecular systems. Prerequisite: 233 or equivalent. w.

**434—Statistical Mechanics (3).** Principles of statistical mechanics and their application to chemical systems; ensemble theory; condensed phases. Prerequisite: 233 or equivalent.

**435—Magnetic Resonance (3).** Basic principles of nuclear magnetic resonance (NMR) and electron spin resonance (ESR), nuclear spin relaxation, current experimental techniques and the application to studies of structures, dynamics and chemical analysis. Prerequisites: 212, 233 or equivalent.

**439—Inorganic Polymer Chemistry (3).** Designed for graduate students in Chemistry, Materials Science and Engineering. Aimed at offering the fundamental concepts in inorganic polymer chemistry with a particular emphasis on the recent advances in this field. Prerequisites: Chemistry 341 or prior approval by instructor.

**440—Inorganic Mechanisms (3).** Experimental stoichiometry and rate law determination. Isotopic applications. Methods and results of fast reaction studies. Basic known inorganic mechanisms. Experimental methods of establishing mechanisms of reaction.

**441—Chemistry of the Main Group Elements (3).** Descriptive inorganic chemistry of the main group elements. Textbook material extensively supplemented with information from the current chemical literature.

**444—Inorganic Structural Methods (3).** Chemical bonding, application of group theory, spectroscopy; diffraction as applied to structure determination; structural implications of dipole moment and magnetic susceptibility measurements.

**450—Research (cr.arr.).** Does not lead to dissertation. f,w,s.

**461—Advanced Radiochemistry (3).** Reviews current advances in radiochemistry, hot atom chemistry, radiation chemistry, nuclear spectrometry. Prerequisite: 361 or equivalent. alt. f, even years.

**462—Nuclear Chemistry (3).** Designed for graduate students in chemistry and related fields. Studies nuclear reaction and nuclear properties. Prerequisites: 233, Math 201 or prior approval of instructor.

**490—Research (cr.arr.).** Research leading to thesis. Graded on a S/U basis only.

# Chinese

*(See German and Russian Studies)*

# Civil and Environmental Engineering

**College of Engineering**
**E2509 Engineering Building East (573) 882-6269**
**CHAIR** S. Kiger
**ASSOCIATE CHAIR** B. Gunnink
**PROFESSORS** V. Gopalaratnam, S. Kiger, J. McGarraugh, M. Virkler
**ASSOCIATE PROFESSORS** M. Barker, J. Bowders, Z. Chen, T. Clevenger, B. Gunnink, L. Peyton, B. Reed
**ASSISTANT PROFESSORS** K. Sanford Bernhardt, S. Kurtz, E. Loehr, H. Salim, C. Sun, K. Trauth
**PROFESSORS EMERITI** J. Baldwin Jr., S. Banerji, R. Douty, K. Evans, G. Hauck, C. Lenau, H. Liu
**ASSOCIATE PROFESSORS EMERITI** D. Guell, L. Hemphill

**DEGREES** BS CiE, MS and PhD in civil engineering

Virtually every structure you see and just about every structure a city needs — schools, housing projects, shopping centers, streets, sewers, tunnels, bridges, roads, airports, railways, dams, water systems, sewage treatment plants — was designed and built by civil engineers. Everything from a sanitary landfill to a great university, and the road connecting them, were built by civil engineers.

Civil engineers have a variety of career options. Many work for consulting engineering firms where they conceive and design plans for construction. Others work for contractors, construction engineers and managers. Still others work for municipalities and state agencies.

In recent years, many civil engineers have

been working as environmental engineers to control water and air pollution and solve the problems of solid waste disposal. Civil engineers often direct the public works engineering programs of major municipalities, and virtually every major industry in the United States employs civil engineers.

At MU, a civil engineering student can specialize in five basic areas:

- Structural engineering (reinforced concrete and steel)
- Environmental engineering (water supply, wastewater treatment, solid waste disposal, hazardous waste management)
- Transportation engineering (highways, railways, mass-transit systems)
- Hydraulic engineering and hydrology (pipes, open channels, surface and ground water)
- Geotechnical engineering (foundations, dams, geoenvironmental, geosynthetics)

The Department of Civil and Environmental Engineering is well-equipped for classroom and laboratory instruction and research. Extensive laboratories are available for concrete and steel materials testing, soils testing, hydraulics and fluid mechanics, and chemical and microbiological analysis related to water supply and wastewater treatment. Civil engineering is one of the most highly laboratory-oriented disciplines at the University. Excellent shop facilities and technicians are available to fabricate and maintain the laboratory and research equipment.

The educational objectives of the Civil Engineering Bachelor of Science Program are to prepare students to enter the profession of civil engineering, to prepare students for graduate study and to prepare students to engage in lifelong learning. These objectives are consistent with those of the College of Engineering. Graduates of the program are proficient through their education to work immediately upon graduation in most areas of the profession, including environmental engineering; geotechnical engineering; hydraulics, hydrology, water resources; structural engineering; and transportation/traffic engineering.

Essentially all graduates take the Fundamentals of Engineering Exam. Graduates are encouraged to become registered professional engineers and to continue their education throughout their careers.

The engineering topics are selected so as to provide the necessary technical abilities and skills to meet the departmental educational objectives. These topics start with basic computer and graphics courses and a freshman design experience. These are followed with basic engineering science courses, which ground the students in the fundamentals necessary for future course work and a sophomore design experience. Engineering topics courses in the junior year provide students with the basic fundamentals in the areas of environmental engineering; geotechnical engineering; hydraulics, hydrology, water resources; structural engineering; and transportation/traffic engineering. Many of the junior-level topics courses contain elements of civil engineering design. Elective courses in the senior year enable students to specialize in one or more areas of the program or to obtain a broad educational background across the civil engineering discipline.

Design is integrated throughout the curriculum starting with a freshman design course (CE 74: Civil Engineering Design I), followed by a sophomore design experience (CE 174: Civil Engineering Design II). Design components are contained in most required engineering topics courses. These include CE 235: Soil Mechanics, CE 222: Reinforced Concrete Design, CE 223: Structural Steel Design, CE 252: Hydrology, CE 292: Water and Wastewater Treatment, CE 212: Transportation Systems Engineering (3), etc. Design is also included in many of the elective courses. The design experience culminates in a major senior capstone design experience, CE 274: Civil Engineering Systems Design. The capstone design project is supplied by consultants, governmental agencies, etc., and is a project they have worked on or are currently working on. The capstone course is a "real-life" design experience that draws upon most prior course knowledge. The course involves working in teams, both oral and written presentations, a final design report and oversight, interaction and evaluation by practicing engineers from industry and governmental organizations.

The Department of Civil and Environmental Engineering also cooperates with the Department of Geology to administer a program that leads to a dual degree in civil engineering and geology.

**First Semester** 14 hours
Math 80: Analytic Geometry and Calculus I (5)
Chem 32: General Chemistry II (3)
Engr 30: Engineering Graphics (3)
**Humanities/Fine Arts or Social/Behavioral Sciences electives (3)
**Second Semester** 16 hours
Cv Eng. 74: Civil Engineering Design I (3)
Math 175: Calculus II (5)
Physics 175: University Physics I (5)
Engl 20: Exposition and Argumentation (3)
**Third Semester** 14 hours
Math 201: Calculus III (3)
Physics 176: University Physics II (5)
CECS 103: Algorithm Design/Programming I (3)
Engr 85: Statics and Elementary Strength of Materials (3)
**Fourth Semester** 15 hours
Math 304: Differential Equations (3)
Engr 195: Intermediate Strength of Materials (3)
Cv Engr 185: Introduction to Dynamics (3)
Cv Engr 174: Civil Engineering Design II (3) (WI)
**Humanities/Fine Arts or Social/Behavioral Science electives (3)
**Fifth Semester** 16 hours
Cv Engr 221: Structural Analysis (4)
Engr 99: Thermodynamics I (3)
Cv Engr 251: Fluid Mechanics (3)
Cv Engr 235: Soil Mechanics (3)
**Humanities/Fine Arts or Social/Behavioral Science electives (3)
**Sixth Semester** 17 hours
Cv Engr 254: Applied Fluid Mechanics (2)
Cv Engr 252: Hydrology (3)
Cv Engr 232: Civil Engineering Materials (3)
Cv Engr 292: Water and Wastewater Treatment (3)
Cv Engr 212: Transportation Systems Engineering (3)
Cv Engr 222: Reinforced Concrete Design or Cv Engr 223: Structural Steel Design (3)
**Seventh Semester** 16-19 hours

# Chinese
# Civil and Environmental Engineering

Cv Engr 253: Fluid Mechanics Lab (1)
Engr 124: Circuit Theory I (3)
*Approved Electives (9)
**Humanities/Fine Arts or Social/Behavioral Science electives (3-6)
**Eighth Semester** 15-18 hours
Cv Engr 274: Civil Engineering Systems Design (WI) (3)
*Approved Electives (9)
**Humanities/Fine Arts or Social/Behavioral Science electives (3-6)

**The approved electives must include at least four civil engineering courses.*

***One approved cluster in either the Social and Behavioral Sciences or Humanistic Studies and Fine Arts must be taken. Another nine hours must be taken in the other area not used for the cluster. Refer to the Engineering Cluster Booklet and consult with your adviser.*

## COURSES

**74—Civil Engineering Design I (3).** Introduction to civil engineering including computer applications, the design process, design teams, surveying and site layout, communication skills, and academic ethics. Corerequisite: Engineering 30.

**174—Civil Engineering Design II (3).** Essential features of civil engineering including the design process, design teams, experimental and computational tools, engineering economy, communication skills, and ethical considerations. Corequisite: Engineering 195.

**185—Introduction to Dynamics (3).** Basic fundamentals of particle and rigid body dynamics; energy and momentum methods. Prerequisite: Engineering 85.

**212—Transportation Systems Engineering (3).** Studies engineering characteristics of various modes of transportation of passengers and goods. Prerequisites: Math 201 and Civil Engineering 174.

**221—Structural Analysis I (4).** Analysis of statically determinate beams, frames: shear and moment diagrams; influence line diagrams; beam deflections. Analysis of statically indeterminate structures; moment distribution: energy methods. Introduction to matrix analysis. Prerequisites: Engineering 195.

**222—Reinforced Concrete Design (3).** Basic principles of reinforced concrete design. Design of beams for flexure and shear; design of short and slender columns. Prerequisite: 221.

**223—Structural Steel Design (3).** Basic principles of structural steel design. Design of beams, axially loaded members, columns, and bolted and welded connections. Corequisites: 221.

**232—Civil Engineering Materials (3).** Introduces composition, structure, properties, behavior, and selection of civil engineering materials. Prerequisites: Engineering 195 or instructor's consent.

**235—Soil Mechanics (3).** Detailed study of physical and mechanical properties of soil governing its behavior as an engineering material. Prerequisite: Engineering 195.

**251—Fluid Mechanics (3).** Statics and dynamics of fluids, principles of continuity, momentum and energy, pipe flow. Prerequisite: Physics 175.

**252—Hydrology (3).** Fundamental concepts of hydrology in engineering; quantitative estimation of stream-flow magnitude and frequency. Prerequisite: Mathematics 201.

**253—Fluid Mechanics Laboratory (1).** Applications and demonstration of basic principles of fluid mechanics by

experiment. Prerequisite: 251.

**254—Applied Fluid Mechanics (2).** Steady and unsteady flow in open channels and closed conduits, flow in multiple pipe systems, compound reservoir problems, gravity dam design, gradually varied flow. Prerequisite: 251.

**274—Civil Engineering Systems Design (3).** Design of civil engineering systems. Prerequisite: senior standing in Civil Engineering at the University of Missouri- Columbia or written consent of the University of Missouri- Columbia Civil Engineering Chairman.

**292—Water and Wastewater Treatment Processes (3).** Physical, chemical and biochemical processes for treating drinking water supplies, domestic and industrial wastewaters, including planning and design of such facilities. Prerequisites: junior standing and Chemistry 32 or equivalent.

**300—Problems (2-4).** Directed investigation of civil engineering. Prerequisite: instructor's consent.

**301—Topics in Civil Engineering (3).** Study of current and new technical developments in civil engineering. Prerequisite: instructor's consent.

**323—Advanced Structural Steel Design (3).** Design of steel structures and bridges. Topics include composite beams, plate girder design, and moment resistant connections. Prerequisite: 223.

**331—Prestressed/Advanced Reinforced Concrete (3).** Principles of prestressing. Constituent materials, loading and allowable stresses. Working and ultimate stress analysis and design. Shear and torsion. Deflections. Prestress losses. Continuous beams. Composite beams. Compression members. footings. Corequisite: CE 222.

**335—Earthwork Engineering and Design (3).** Study of concepts, theories, and design procedures for modern earthwork engineering including: compaction and densification of soils and soil improvement, seepage and drainage, slope stability and performance, and earth retaining structures. Prerequisite: CE 235.

**342—Hydraulics of Open Channels (3).** Gradually varied flow and theory of the hydraulic jump. Slowly varied flow involving storage; rating curves. Prerequisite: 251.

**345—Pipeline Engineering (3).** (same as Mechanical and Aerospace Engineering 345) Theoretical and practical aspects of pipeline engineering including pipeline transport of natural gas and various solids such as coal, sand and solid wastes. Prerequisites: 251 and Mechanical & Aerospace Engineering 251.

**347—Remote Sensing of the Environment (3).** Principles, characteristics and applications of remote sensing in engineering, geosciences, agriculture and environmental projects. Topics: basic concepts, photographic, thermal multispectral and microwave systems, satellite remote sensing and digital image processing. Prerequisites: junior standing. f.

**348—Solid Waste Management (3).** Engineering principles involved in generation, handling, collection, transport, processing, and disposal of solid wastes, resource recovery and reuse, legislation on solid wastes and groundwater contamination problems. Prerequisite: junior standing.

**349—Hazardous Waste Management (3).** Engineering principles involved in handling, collection, transportation, processing and disposal of hazardous wastes, waste minimization, legislation on hazardous wastes and groundwater contamination.

**350—Honors Research (2-3).** Independent project, supervised by the honors advisor, to be presented as a formal written report. Prerequisite: participation in the Civil Engineering Department Honors program.

**352—Advanced Mechanics of Materials (3).** (same as Mechanical and Aerospace Engineering 352). Analysis of more complicated problems in stresses, strains. Prerequisite Engineering 195.

**367—Introduction to Construction Management (3).** Structure of the construction industry; construction drawings and specifications; estimating and bidding; construction contracts, bonds and insurance; planning and scheduling of construction operations; project management; computer techniques. Prerequisite: junior standing.

**372—Foundation Engineering (3).** Subsurface exploration. Design of basic foundation structures: shallow foundations, retaining walls, deep foundations. Prerequisites: 235.

**375—Matrix Methods of Structural Analysis (3).** An introduction to the fundamentals of stiffness and flexibility methods for analysis of truss and frame structures. Application of the STRUDL and NASTRAN programs to three dimensional structures. Prerequisite: 221. f,w.

**381—Traffic Engineering (3).** Characteristics and studies associated with highway traffic. Capacity analysis and evaluation of freeways, rural highways, and urban streets. Traffic signal control and coordination. Prerequisites: 212.

**382—Infrastructure Management (3).** Civil infrastructure condition assessment, performance modelng, deterioration processes and models, maintenance and rehabilitation strategies, management techniques, data analysis, management systems, financing, case studies, emerging technologies. Prerequisites: 212.

**384—Pavement Materials and Design (3).** Properties of materials used in roads, airports and other pavement construction. Design methods for rigid and flexible pavements. Prerequisites: Engineering 195.

**385—Vibration Analysis (3).** (same as Mechanical and Aerospace Engineering 385). Vibration theory with application to mechanical systems. Prerequisites: 185 and Mathematics 304.

**391—Introduction to Water Quality (3).** Methods for determining and characterizing water quality, effects of pollution on streams and lakes, and an introduction to engineered systems for the distribution, collection and treatment of water and wastewater. Prerequisite: junior standing. w

**395—Water Quality Analysis (3).** Chemical, physical and biological methods for analysis of streams, lakes, wastewaters and water supplies and their use in water quality management. Prerequisite: 391 or instructor's consent.

**396—Planning and Geometric Design of Highways (3).** Techniques of highway planning in rural and urban areas. Design of the visible elements of highways. Prerequisites: 212.

**398—Environmental Compliance, Auditing and Permitting (3).** Statutes, regulations and permitting for air hazardous wastes and storage tanks. Asbestos, radon, EMF, and emerging areas of regulatory concern. Siting issues. Criminal and civil enforcement.

**400—Problems (1-6).** Supervised investigation in civil engineering to be presented in the form of a report.

**401—Advanced Topics in Civil Engineering I (1-3).** New and current technical developments in civil engineering. Prerequisite: 304 or equivalent.

**402—Directed Reading In Civil Engineering (1-3).** Faculty supervised readings course, Prerequisite: graduate standing. f,w,s.

**410—Seminar (1).** Review of research in progress. Research techniques.

**411—Continuum Mechanics (3).** (same as Mechanical and Aerospace Engineering 411). Introductory course in the mechanics of continuous media. Basic concepts of stress, strain, constitutive relationships; conservation laws are treated using Cartesian tensor notation. Examples from both solid and fluid mechanics investigated. Prerequisites: 251, Mathematics 304, Engineering 195.

**412—Theory of Elasticity (3).** (same as Mechanical and Aerospace Engineering 412). Stress and strain at a point. General equations of elasticity. Plane stress, plain strain problems; torsion of prismatic bars. Energy methods.

**413—Theory of Plates and Shells (3).** (Same as Mechanical and Aerospace Engineering 413). Rectangular and circular plates. Variational methods in the analysis of plates and shells. Plates of unusual shape. Shear deformation effects. Large deformation analysis. Analysis of cylindrical shells.

**414—Theory of Elastic Stability (3).** (Same as Mechanical and Aerospace Engineering 414). Buckling of Columns, frames, arches and other structural systems. Kinematic approach to stability. Large deflections. Energy approach to buckling. Plate and shell buckling. Inelastic buckling of columns. Creep buckling.

**416—Theory of Plasticity (3).** (same as Mechanical and Aerospace Engineering 416). Plastic yield conditions and stress-strain relations. Behavior of elastic-perfectly plastic members. Plain strain in plastic members. Prerequisites: 412 or instructor's consent.

**420—Materials and Measurement (3).** About 25% of the course is devoted to the physical measurement of strain, force, displacement and motion. Remainder of course is devoted to advanced study of the behavior of steel and concrete with emphasis on brittle fracture in steel. Prerequisites: 232 or equivalent.

**421—Advanced Topics Structural Analysis (3).** Computer implementation and application of finite element analysis. Material and geometric nonlinearities. Plastic analysis of structures. Code provisions for analysis of seismic and wind loadings. Prerequisite: 375.

**431—Seepage, Drainage, and Filtration (3).** General principals that govern flow of water through soils and specific procedures for analysis and design of filtration and drainage media in geotechnical and geoenvironmental applications. Prerequisite: CE 235 or instructor's consent.

**434—Stability and Performance of Earth Slopes (3).** Principles, mechanics and procedures for analyzing the stability of earth slopes and landfills under short-term, long-term, rapid drawdown, and earthquake conditions. Prerequisite: CE 235 or instructor's consent.

**436—Advanced Soil Mechanics (3).** Theoretical soil mechanics as applied to solution of specific engineering problems. Prerequisite: 355 or equivalent.

**437—Advanced Geotechnics (3).** Advanced study of specific geotechnical engineering topics. Topics may include: Environmental Geotechnics, Landfill Design, Geosynthetics, Laboratory Testing, and Case History. May be repeated for credit when topics vary. Prerequisite: CE 235 or instructor's consent.

**445—Water Quality Modeling (3).** Derivation and application of models for describing oxygen budget, nutrient exchange, and biological productivity in streams, lakes and estuaries. Prerequisite: 391.

**447—Groundwater Pollution Evaluation and Modeling (3).** Fundamentals of groundwater hydraulics and groundwater contamination. Use and development of computer models to simulate flow and pollutant transport. Prerequisites: 251, Mathematics 304, or instructor's consent.

**459—Dynamics of Structures (3).** (same as Mechanical and Aerospace Engineering 459). Study of the dynamic behavior of structures. Analysis of equivalent lumped parameter systems for the design of structures in a dynamic environment. Prerequisites: 421 or equivalent, Proficiency in Digital Computer Programming, or instructor's consent.

**460—Fundamentals of Fluid Mechanics (3).** Treatment of fundamental concepts and theories in fluid mechanics at a level suitable for beginning graduate students. Prerequisites: 251 or equivalent.

**472—Behavior of Reinforced Concrete Members (3).** The design philosophy, constitutive laws, creep rate sensitivity and aging, shrinkage. Nonlinear response of reinforced concrete members. Deflection computation and control. Bond and anchorage . Prerequisite: 222.

**483—Transportation Planning and Models (3).** Regional and metropolitan transportation studies; land use, traffic generation, distribution and assignment models. Prerequisites: 370 or 373.

**484—Theory of Traffic Flow (3).** Scientific approach to study of traffic phenomena with emphasis on applications. Deterministic and stochastic models of traffic flow; optimization of intersection controls; computer simulation of traffic problems. Prerequisites: 370 or instructor's consent.

**486—Finite Element Methods (3).** (same as Mechanical and Aerospace Engineering 486).

**490—Research (cr.arr.).** Independent investigation in the field of civil engineering to be presented in the form of a thesis. Graded on a S/U basis only.

**491—Unit Process Laboratory (3).** Studies chemical and physical relationships as applied to unit processes of water

and wastewater. Prerequisites: 292.

**492—Physiochemical Treatment Processes (3).** Fundamental principles, analysis and modeling of physical and chemical processes for water and wastewater treatment. Prerequisite: 292.

**493—Biochemical Treatment Processes (3).** Biochemical principles, kinetic models and energy considerations in the design of biological wastewater treatment processes. Prerequisite: 292.

**494—Water and Wastewater Residuals Handling, Treatment and Disposal (3).** Water and wastewater residue production, characterization or residues, residue management options, residue treatment processing-conditioning, dewatering, stabilization, land disposal, landfills and thermal processes. Prerequisite: 392 or equivalent.

**496—Design of Water and Wastewater Treatment Facilities (3).** Development of design criteria and their application to the design of water and wastewater treatment facilities. Prerequisite: 292.

**498—Engineering Aspects of Water Quality (3).** Theoretical aspects of biological, chemical, physical processes; applications in water, wastewater, industrial-waste treatment processes, natural water systems; chemical equilibria, flow models; reaction kinetics on process design, pollutants. Prerequisites: 391 or instructor's consent.

# Classical Studies

**School of Arts and Science**
**420 General Classroom Building (573) 882-0679**
**CHAIR** D. Schenker
**PROFESSORS** J. Foley, C. Saylor, T. Tarkow
**ASSOCIATE PROFESSORS** D. Hooley, D. Schenker, D. Trout, B. Wallach
**ASSISTANT PROFESSORS** R. Marks, A. Mori
**PROFESSOR EMERITUS** E. Lane

**DEGREES** AB with emphasis areas in classical humanities, classical languages, Greek or Latin. MA and PhD in classical languages

The Classical Studies Department offers courses in the life, languages, cultures, and thought of the ancient Greeks and Romans.

### DEGREE REQUIREMENTS
### CLASSICAL HUMANITIES

Greek or Latin I and II (may be used to help satisfy GE language requirement)
6-9 hours in courses at the 60- through 100-levels
15-18 hours in courses at the 200-level or above (24 total credits) (Latin or Greek language courses numbered 210 or above can be used to replace up to two required Classical Humanities courses at the 200+ level.)
15 hours in a minor or 9 hours in a related field (such as history, archaeology, religious studies, English)

### LATIN

Latin I, II, III (may be used to satisfy the GE language requirement)
Latin 210 and 211
6-9 hours at the Latin 300-level or above
6-9 hours in English language courses (not requiring Greek or Latin) numbered 100 or above.
15 hours in a minor or 9 hours in a related field

### GREEK

Greek I, II, III (may be used to satisfy GE language requirement)
Greek 210
9 hours at the Greek 300-level or above
9 hours in English language numbered 100 or above
15 hours in a minor or 9 hours in a related field

### CLASSICAL LANGUAGES

6 hours in 300-level courses in Latin or Greek
Courses through the 210-level in the other language
9 hours in English language courses
15 hours in a minor or 9 hours in a related field

**DOUBLE MAJORS** A double major is a good way of integrating two related areas of interest, classics and archaeology, English, philosophy or history, for instance. Other students looking forward to a career in medicine or the sciences will use a double major, classics and biology or chemistry, for instance, to ensure a thorough background in the humanities to balance their scientific studies. Usually minor or related field requirements for each major are satisfied by major courses in the other department. Consult with departmental advisers about the specifics of this useful arrangement.

**MAJORS WITH HONORS** The undergraduate program can also include three to six credits in an honors thesis course (Classics 293: Honors Proseminar). These credits, in addition to regular major requirements and a 3.5 grade point average in all Classical Studies courses (as well as a 3.3 overall GPA), lead to an AB degree in Classical Studies with Honors.

**MINORS** The department offers minors in classical humanities (15 hours in English language courses including three to six at the 60- through 100-level, nine to 12 at the 200- and above level). (Three hours in Greek or Latin language at the 200 level may be used to substitute for equivalent credits.) Latin (15 hours: Latin 210, 211, and nine hours in English language courses); Greek (15 hours: Greek 210, one 300-level Greek course, and nine hours in English language courses).

### COURSES
### CLASSICAL HUMANITIES

**50—Greek and Latin in English Usage (3).** Influence of Latin and Greek on English vocabulary.

**60—Classical Mythology (3).** Myths of Greece and Rome as an aid in interpretation of literature and art. cor.

**101—Topic in Classical Civilization (cr.arr.).** Organized study of selected topics. Subjects and earnable credit may vary from semester to semester.

**103—Arguments About Antiquity (3).** (same as History 103). The course discusses controversial aspects of the ancient world and also considers their reuse in modern drama and film. The instructors offer different viewpoints on various topics, as well as engaging audience participation.

**115—Greek Culture (3).** Survey of Greek life and thought. Principal developments in literature, the arts, politics, religion and philosophy, and their influence on Western civilization.

**116—Roman Culture (3).** Survey of Roman life and thought. Principal developments in literature, the arts, politics, religion, philosophy, and private life, and their influence on Western Civilization.

**124—Greek Classics in Translation (3).** Reading in translation and critical study of the most important literary works of the ancient Greek World.

**125—Roman Classics in Translation (3).** Reading in translation and critical study of the most important literary works of the ancient Roman world.

**130—Foreigners and Dangerous Women in Greek and Latin Literature (3).** The study of how Greek and Roman writers depicted and reacted to other races and cultures, compared them with their own, and thereby revealed both their own values and prejudices.

**195—Service Learning in Classical Studies (1).** Students provide enrichment programming on the Ancient World at various Columbia Public School sites. Participants must be Classical Studies majors or minors. Graded on A/F basis only. Does not meet A&S general education requirements. Prerequisites: instructor's consent required.

**201—Topics in Classical Studies (cr.arr.).** Organized study of selected topics. Subjects and earnable credit may vary from semester to semester. Prerequisite: CH 60, any CH 100 course, or instructor's consent.

**204—The Age of Pericles (3).** A study of the literature and culture of the 5th and early 4th centuries B.C. in Athens. Authors will include Thucydides, Herodotus, Xenophon, Plato, Aristotle, the tragedians and Aristophanes. Prerequisites: CH 60 or any CH 100 level course, or instructor's consent.

**205—The Age of Augustus (3).** Study of the literature of the Age of Augustus; Vergil, Ovid, Horace, Livy, and Propertius. Prerequisites CH 60, or any CH 100 level course, or instructor's consent.

**206—Power and Oratory in Ancient Greece (3).** (same as History 204). Concentrates on the rise of oratory in Greece and how oratory was exploited for political ends. Special attention will be paid to the Athenian Democracy in the fifth and fourth centuries BC. Prerequisite: sophomore standing or instructor's consent.

**223—Greek and Roman Epic (3).** A study of the major representatives of the ancient epic genre. Readings will include Homer's "Iliad" and "Odyssey". Apollonius' "Argonautica", Vergil's "Aeneid". Prerequisite: CH 60 or any CH 100-level course, or instructor's consent.

**226—Greek Drama (3).** Reading and interpretation of Greek tragedies and comedies in translation. Prerequisite: CH 60 or any CH 100 level course or instructor's consent.

**227—Advanced Mythology (3).** Interpretation of selected classical myths and their influence on later literature and art. Prerequisite: CH 60, or any CH 100 level course, or instructor's consent.

**228—Murder and Mayhem, Images of Justice in Classical Antiquity (3).** Ideas of justice from Homer through the early Roman Empire; personal vengeance, law courts and trials, philosophical attitudes, women and courts, techniques of persuasion. Prerequisites: CH 60, any CH 100 level course, or instuctor's consent.

**229—Greek and Roman Characters and Ideals (3).** Study of selected types of characters admired and imitated or hated and rejected in classical antiquity; heroes, philosophers, women. Prerequisite: CH 60, any CH 100 level course, or instructor's consent.

**230—The Ancient Novel (3).** Reading and analysis of Greek and Latin prose fiction: ideal and comic romance, fantasy, romantic biography; Hellenistic background. Prerequisite: CH 60, any CH 100 level course, or instructor's consent.

**231—Paganism and Christianity (3).** A study of the transition from Paganism to Christianity in the Roman Empire, as seen by observers contemporary with the events (in English translations, many new). Prerequisites: CH 60, any CH 100 level course, or instructor's consent.

**232—Women in the Ancient World (3).** Using classical literary texts as our central focus we will examine the role of women: the conflict inherent in their obligations and their identity in the context of these obligations. Prerequisites: CH 60, or CH 100 level course, or instructor's consent.

**235—Classics in a Cross-Cultural Context (3).** The goal of this course is to place classical literature in a multicultural context by studying Greek and Latin literary texts alongside verbal art from non-European as well as European cultures. Prerequisites: CH 60, or CH 100 level course, or instructor's consent.

**260—Greek and Roman Religion (3).** (same as Religious Studies 259). Survey of religious development among the Greeks and Romans. Prerequisite: CH 60 or Art History and Archaeology 10 or History 102; sophomore standing.

**301—Topics in Classical Studies (cr.arr.).** Subjects and earnable credit may vary from semester to semester. Prerequisites: any CH 200 level course or instructor's consent.

**340—Literature and Culture of the Hellenistic Age (3).** A survey of the literature and culture of the Hellenistic Age. Prerequisites: any CH 200 level course, or instructor's consent.

**352—The Classical Tradition (3).** Selected studies in continuity and influence of Greek and Roman culture on Middle Ages, Renaissance, and modern times. Prerequisite: any CH 200 level course or instructor's consent.

**365—Classical Literature and Culture in Translation (1-3).** Classical Authors and secondary works illustrating aspects of Graeco-Roman civilization. Recommended for classical humanities majors. Prerequisite: any CH 200 level course or instructor's consent.

**375—The World of Late Antiquity (3).** A survey of the literature, culture, and history of the late Roman and early Byzantine periods. Attention to Christianity's development and the transformation of the classical heritage. Prerequisites: any CH 200 level or consent.

**387—Oral Tradition (3).** (same as English 387). Study of verbal art form living oral traditions (e.g. Native American and African American) and important literary works with roots in oral tradition (e.g. the Bible, the Iliad and Odyssey, and Beowulf). Prerequisite: junior standing and instructor's consent.

## CLASSICS

**201—Topics (cr.arr.).** Organized study of selected topics. Subjects and earnable credit may vary from semester to semester. Prerequisite: departmental consent for repetition.

**293—Honors Proseminar (3-6).** Limited to Honors undergraduates. To be taken in senior year. Integrated exploration of classical civilization. May repeat to 6 hours maximum. Prerequisite: limited to Honors undergraduates, to be taken in senior year.

**311—History of the Greek and Latin Languages (3).** (same as Linguistics 313). Evolution of classical languages and their relationship to each other.

**330—Introduction to Text Criticism and Paleography (3).** Latin and/or Greek textual criticism and paleography, using manuscript facsimiles at the University library. Prerequisite: 2 years of Classical Languages or equivalent.

**340—Ancient Pastoral (3).** Reading and interpretation of pastoral poetry and prose in Greek and Latin; emphasis on Theocritus, Virgil, and Longus. Prerequisite: 2 years each of Greek and Latin.

**350—Special Readings (1-3).** Readings in authors and texts not covered in other courses. Prerequisite: classics/classical civilization—departmental consent; Greek—two years classical Greek or equivalent; Latin—two years Classical Latin or equivalent.

**365—Classical Literature and Culture (1-3).** Survey of primary and secondary works illustrating aspects of Graeco-Roman civilization. Recommended for: Greek, Latin, or Classics majors. Prerequisites: 2 years classical Greek, or Latin, or equivalent; junior standing: departmental consent.

**380—Advanced Study in the Teaching of the Classics (3).** Prerequisites: classroom teaching experience or chairman's consent.

**409—Introduction to Graduate Study in Classics (1).** Required of all first-year graduate students.

**414—Ancient/Medieval Topography (cr.arr.).** (same as Art History and Archeology 414). Descriptive and historical analysis of selected city or site. Subject varies. Prerequisite: instructor's consent.

**415—Seminar in Classical Mythology (3).** Intensive study of classical mythology in origin, development, meaning and influence. Prerequisite: instructor's consent.

**425—Seminar in the Hellenistic Age (3-6).**

**435—Seminar in Ancient Rhetoric and Oratory (3).**

**437—Seminar in Ancient Literary Criticism (3).** Principles and theories of ancient Greek and Latin literary criticism, as developed in significant works on the subject.

**445—Graeco-Roman Didactic (3-6).** Critical and comparative study of Greek and Latin didactic poetry with emphasis on major authors from Hesiod through the Augustan Age. Prerequisite: graduate standing.

**455—Seminar in Greco-Roman Religion (3).**

**465—Seminar in Greco-Roman Satire and Social Criticism (3).**

**475—Seminar in the Age of the Antonines (3-6).**

**490—Research and Thesis (1-8).** Individual research in preparation for writing thesis and/or dissertation. Graded on a S/U basis only.

## GREEK

**1—Elementary Ancient Greek I (5).** Study of forms, grammar, syntax. Early attention to reading in simple Attic prose.

**2—Elementary Ancient Greek II (5).** Continuation of Greek 1. Readings in Attic prose. Prerequisite: Greek 1 or equivalent.

**3—Greek Reading (3).** Selected works of Greek literature. Prerequisite: grade of C or higher in Greek 2.

**207—Intensive Beginning Greek I (3).** Intensive study of forms, grammar, syntax; early attention to readings in simple prose. Course meets five hours weekly for 3 hours credit. Prerequisite: graduate standing.

**208—Intensive Beginning Greek II (3).** Continuation of 207. Attention to ability to read rapidly and accurately. Course meets five hours weekly for three hours credit. Prerequisite: graduate standing.

**209—Intensive Greek Reading (2).**

**210—Intermediate Readings (3).** Selected advanced readings in prose and poetry. Introduction to Homer. Prerequisite: Greek 3 or equivalent.

**216—The Greek New Testament (3).** (same as Religious Studies 216). Readings in the Greek New Testament and similar literature, e.g., the Septuagint. Prerequisite: Greek 210 or instructor's consent. Graded on A-F basis only.

**301—Topics (cr.arr.).** Organized study of selected authors or eras. Subject and earnable credit vary from semester to semester. Prerequisite: two years of Classical Greek or equivalent.

**303—Greek Stylistics (1-3).** Study and practice of general Greek prose tendencies, with special consideration to basic problems: abstract expression, word order, sentence structure and use of common rhetorical devices.

**304—Greek Tragedy (3).** Selected works of Aeschylus, Sophocles, Euripides, with special attention to language, style, ideas, and dramatic techniques. Prerequisite: two years Classical Greek or equivalent.

**305—Greek Comedy (3).** Selected plays of Aristophanes and Menander, with special attention to cultural contexts. Prerequisite: two years Classical Greek or equivalent.

**306—Greek Lyric Poetry (3).** Selected readings from lyric poets, with attention to verse, forms, and dialects. Prerequisite: two years Classical Greek or equivalent.

**307—Greek Oratory (3).** Selections from Greek orators, with emphasis on Lysias and Demosthenes. Prerequisite: two years Classical Greek or equivalent.

**308—Greek Philosophers (3).** Emphasis on readings and analysis of selected texts of major Greek philosophers. Prerequisite: two years Classical Greek or equivalent.

**310—Greek Historians (3).** Reading and analysis of selected texts of major Greek historians. Prerequisite: two year Classical Greek or equivalent.

**315—Homer (3).** Reading, discussion, and literary analysis of Iliad and Odyssey. Prerequisite: two years Classical Greek or equivalent.

**325—Greek Epigraphy (3).** Introduction to study of Greek inscriptions and their contribution to the understanding of other aspects of ancient culture. Prerequisite: Greek 3.

**350—Special Readings (1-3).** Readings in authors and texts not covered in other courses. Prerequisites: departmental consent, two years Classical Greek or equivalent.

**399—Survey of Greek Literature (3).** Greek literature from origins to end of Roman period; emphasis on authors not covered in other courses, to provide general view of styles and genres. Prerequisite: two years Classical Greek or equivalent.

**405—Proseminar in Greek Texts (3).** This is a seminar-level introduction to Greek literary and historical texts. The emphasis in this course will be on wide and intensive reading, with the objective of helping the new graduate student quickly develop a sound literary and linguistic competence.

**406—Greek Historiography (3).** (same as History 405). Study of the major contemporary historians of Classical Greece and their methodology. Differential readings available to both students with a reading knowledge of Greek and also those without Greek.

**425—Seminar in Greek Drama (3).** May be repeated to a maximum of 6 hours.

**440—Seminar in Greek Lyric Poetry (cr.arr.).**

**450—Seminar in the Greek Philosophers (3).**

**460—Seminar in the Greek Historians (3).**

**470—Seminar in Greek Epic Poetry (3).**

**475—Seminar on the Age of Pericles (3-6).** Study of Greek culture of mid-fifth century B.C., including law, religion, art, philosophy, science, and other aspects of the culture, to give students an integrated view of life of the period.

**480—Seminar in Special Fields (3).**

## LATIN

**1—Elementary Latin I (5).** Forms, grammar, syntax. cor.

**1GH—Honors Elementary Latin (5).** Beginning Latin for Honors Eligible students.

**2—Elementary Latin II (5).** Continuation of 1. Readings in Latin prose. Prerequisite: a grade of C or higher in Latin 1.

**3—Latin Reading (3).** Readings in Latin prose and poetry. Prerequisite: grade of C or higher in Latin 2.

**207—Intensive Beginning Latin I (3).** Intensive study of morphology, grammar, syntax; early attention to readings in simple prose. Course meets five hours weekly for 3 hours credit. Prerequisite: graduate standing. cor.

**208—Intensive Beginning Latin II (3).** Continuation of 207. Readings in Latin prose. Prerequisites: graduate standing.

**209—Intensive Latin Reading (2).**

**210—Latin Poetry (3).** Readings in selections from the Latin poets. Prerequisite: 3 or equivalent.

**211—Latin Prose (3).** Selections from various Latin prose writers; some composition at instructor's discretion. Prerequisite: 3.

**303—Latin Stylistics (1-3).** Study and writing of connected prose compositions. Prerequisite: two years classical Latin or equivalent.

**305—Age of the Scipios (3-6).** Critical readings in and integrated analyses of the culture of the second century B.C. Prerequisite: two years Classical Latin or equivalent.

**310—Age of Cicero (3-6).** Critical readings in and integrated analyses of the culture of the last decades of the Roman Republic. Prerequisite: two years Classical Latin or equivalent.

**315—Vergil (3).** Readings, discussion, and literary analysis of Vergil's Aeneid. Prerequisite: two years of Classical Latin or equivalent.

**320—Augustan Literature (3-6).** Critical readings in and integrated analyses of the culture of Augustan Rome. Prerequisite: two years Classical Latin or equivalent.

**325—Latin Epigraphy (3).** Introduction to the study of Latin inscriptions and their contributions to ancient culture. Prerequisite: two years Classical Latin or equivalent.

**335—Neronian Literature (3-6).** Critical readings in and integrated analysis of culture of the age of Nero. Prerequisite: two years Classical Latin or equivalent.

**340—Age of Pliny and Tacitus (3-6).** Critical readings in and integrated analyses of the ages of Domitian and Trajan. Prerequisite: two years Classical Latin or equivalent.

**345—The Theodosian Age (3).** A survey of major literary works of the late fourth and early fifth centuries. Readings from Augustine, Ambrose, Prudentius, Paulinus of Nola, Ammianus Marcellinus, Claudian. Prerequisite: two years of Classical Latin or equivalent.

**350—Special Readings (1-3).** Readings in authors and texts not covered in other courses. Prerequisites: two years Classical Latin or equivalent.
**376—Medieval Latin (3).** Selected texts of Middle Ages and Renaissance. For students with primary interest in history, literature, philosophy, religion, Romance philology, or the classical tradition, experience with Latin sources in their field. Prerequisite: instructor's consent.
**399—Survey of Latin Literature (3).** Latin literature from origins to end of Roman Empire; emphasis on authors not covered in other courses, to provide general view of styles and genres. Prerequisite: two years Classical Latin or equivalent.
**405—Proseminar in Latin Texts (3).** Prerequisite: graduate status or instructor's consent.
**410—Seminar in Roman Comedy (3).**
**420—Seminar in Latin Lyric and Elegiac Poetry (3).**
**430—Seminar in Neronian Literature (3).**
**450—Seminar in Roman Historians (3).**
**470—Seminar in Latin Epic Poetry (cr.arr.).**
**475—Seminar in the Augustan Age (3-6).** Integrated studies in the culture of the age of Augustus—its literature, art and architecture, religion, political and social institutions.
**480—Seminar in Special Fields (3).**
**485—Seminar in Late Antiquity (3).** Integrated studies in the culture of late antiquity with interdisciplinary focus. Prerequisites: graduate standing or instructor's consent.

# Communication

**College of Arts and Science**
**115 Switzler Hall (573) 882-4431**
**www.missouri.edu/~commwww**
**CHAIR** P. Benoit
**PROFESSORS** P. Benoit, W. Benoit
**ASSOCIATE PROFESSORS** M. Kramer, M. Porter, M.J. Smythe
**ASSISTANT PROFESSORS** D. Dougherty, J. Hess, L. Holbert, M. McKinney, M. Stephenson
**ADJUNCT PROFESSORS** D. Dunkin, M. Dunn, R. Karwoski
**PROFESSORS EMERITI** C. Cornwell, J. Gibson, L. Reid

**DEGREES** AB, MA, PhD in communication

The Department of Communication offers courses in creating and critically evaluating messages. These messages persuade, inform and entertain in contexts that range from one-to-one interactions to communication in organizations to media. Students prepare for careers in broadcasting, sales, public relations, law and management.

**ADMISSION POLICY** Because of increased student interest in the communication programs, admission is restricted. Students must apply for admission no earlier than the first semester of their sophomore year, or during the semester in which they will complete 45 hours of course work. A copy of the admission procedures and policies is available in the department office. The student's grade point average at MU and grade point average in completed communication courses are the primary, though not the only, criterion used to determine admission to the program.

Transfer students are not eligible for admission until they have completed at least one semester in residence and a communication course in residence.

Students for whom space is not available in a given semester may reapply for consideration in subsequent terms.

**REQUIREMENTS** A student's program for an AB degree in communication includes an average of 30-40 hours in the department and at least eight hours of related courses in other departments. A copy of possible courses that will meet this requirement is available in the department office.

For communication majors, the requirements will be:

**Core Requirements:**
75: Introduction to Speech Communication (3)
103: Media, Communication and Society (3)
104: Controversies in Communication (3)
377: Senior Project (3)

All majors choose three courses from each of the following communication literacy blocks:

**Block 1: Theory and Practice of Message Generation**
105: Basic Audio Production (3)
205: Performance in the Visual Media (3)
206: Advanced Audio Production (3)
210: Message Design and Writing for the Media (3)
261: Relational Communication (3)
271: Group Decision Making Processes (3)
272: Argument and Advocacy (3)
275: Business and Professional Communication (3)
276: Persuasive Speaking (3)
290: Television Studio Production (3)
295: Television Field Production (3)
320: Family Communication (3)
395: Professional Seminar in TV Production (3)

**Block 2: Critical Analysis of Communication**
241: Nonverbal Communication (3)
270: Culture and Communication (3)
302: Communication Research Methods (3)
304: Radio-TV Programming and Management (3)
307: Broadcast Regulation and Responsibility (3)
308: Television Program Analysis and Criticism (3)
312: Gender, Language, and Communication (3)
315: Language and Discourse (3)
336: Contemporary Issues in Telecommunications (3)
338: New Technologies and Communication (3)
340: Ethical Issues in Communication (3)
373: Political Communication (3)
374: Theory and Research in Persuasion (3)
376: Organizational Communication (3)
381: Principles of Rhetoric (3)

## COURSES

**75—Introduction to Speech Communication (3).** Principles, process of speech communication in small group, public speaking situations. Three lab/lecture meetings per week.
**101—Topics in Communication (3).** Organized study of selected topics. Subjects and earnable credit may vary from semester to semester. Prerequisites: 75 and 103, departmental consent for repetition.
**103—Media Communication in Society (2-3).** An introduction to the development and impact of media communications and its technologies on American society. Emphasis on contemporary industry developments, their historical antecedents, as well as contemporary issues related to the influence and impact of media communication on society.
**104—Controversies in Communication (3).** Analysis of controversial issues in communication like ethics, culture, and new technologies as they apply to different communication contexts (e.g., small groups, public forums, media). Prerequisite: English 20.
**105—Basic Audio Production and Performance (3).** Radio speaking in varied types of programs; console operations, tape editing, microphone techniques. Prerequisite: instructor's consent.
**205—Performance in the Visual Media (3).** Basic styles and presentational skills necessary in performing for film and television. Prerequisite: instructor's consent.
**206—Advanced Audio Production (3).** The study and application of techniques applicable to radio, television, and multimedia production with an emphasis on digital audio workstation systems. Prerequisite: Communication 105.
**210—Message Design and Writing for the Media (3).** Styles and functions of various script formats for radio, television productions. Prerequisites: 105 or instructor's consent.
**241—Nonverbal Communication (3).** Analysis of form and content of nonverbal communication. Emphasis on role of nonverbal cues in interpersonal communication. Prerequisite: junior standing or instructor's consent.
**261—Relational Communication (3).** Analysis of communication influences on relational identities and development. Prerequisite: junior standing or instructor's consent.
**270—Culture and Communication (3).** (same as Anthropology 270).
**271—Group Decision Making Processes (3).** (same as Peace Studies 271). Procedures and techniques for interpersonal communication and decision making in small groups. Prerequisite: junior standing or instructor's consent.
**272—Argument and Advocacy (3).** Critical analysis and production of argument emphasizing evidence, reasoning, and refutation. Prerequisite: 75.
**275—Business and Professional Communication (3).** Principles and practice of speech communication in business and professional settings. Emphasis on interviews, group conferences and personal presentations. Prerequisite: junior standing.
**276—Persuasive Speaking (3).** Principles, techniques of persuasive speaking. Prerequisites: 75 or instructor's consent.
**280—Internship (1-4).** Directed professional experience within and outside the University in communication-related fields or organizations. S/U graded only. Prerequisites: Admission to department, junior standing, instructor's consent, 2.5 GPA.
**290—Television Studio Production (3).** Operation of television studio production equipment; processes and procedures of producing and directing. Prerequisites: 105, junior standing and instructor's consent.
**295—Television Field Production (3).** Theory and practice of TV field production, including preproduction, production with portable equipment and electronic editing. Prerequisite: 290, junior standing and instructor's consent.
**296—Honors in Communication (2).** Special work for Honors candidates in communication.
**297—Honors in Communication (2).** Special work for Honors candidates in communication.
**301—Topics (cr.arr.).** Organized study of selected topics. Subjects and earnable credit may vary from semester to semester. Prerequisites: junior standing and instructor's consent, departmental consent for repetition.
**302—Communication Research Methods (3).** Focuses on writing and administering surveys, conducting field research, and designing experimental studies. Prerequisites: junior standing.
**304—Radio-TV Programming and Management (3).** Analysis and evaluation of program scheduling, audience research methodologies, and issues related to management of media facility. Prerequisites: junior standing & instructor's consent.

**307—Broadcast Regulation and Responsibility (3).** Federal, state regulations affecting programming, operating policies of American broadcast stations; administrative authority of Federal Communications Commission; responsibility of broadcast license. Prerequisite: instructor's consent.

**308—Television Program Analysis and Criticism (3).** Development of critical viewing skills including analysis of program conventions, genres, and television aesthetics. Prerequisites: junior standing and instructor'sconsent.

**310—Documentary Film and Video (3).** An historical and theoretical overview of the international actuality film from the early work of Flaherty and Grierson through contemporary television documentaries.

**312—Gender, Language, and Communication (3).** (same as Linguistics and Anthropology 312). Relationship among gender, language, noverbal communication, and culture. Prerequisite: junior standing or departmental consent.

**315—Language and Discourse (3).** (same as Linguistics 315). Analysis of the rules of social interaction and the functions of language in discourse. Prerequisites: junior standing and departmental consent.

**320—Family Communication (3).** (same as Human Development and Family Studies 320). Analysis of the functions and processes of communication within families. Prerequisite: junior standing or departmental consent.

**336—Contemporary Issues in Telecommunications (3).** Introduction to current issues and trends and relationship among the new technologies, policies, and potential impact on society. Prerequisites: junior standing and instructor's consent.

**337—Gender, Ideology and the Media (3).** This course looks at popular media and the issues surrounding its use and production by women. The course also investigates class, race, and other relevant social and cultural aspects of media. Prerequisite: junior standing.

**338—New Technologies and Communication (3).** Explores the social implications of new technolgies designed for communication. Assumes basic computer knowledge. Prerequisite: junior standing or instructor's consent.

**340—Ethical Issues in Communication (3).** (same as Peace Studies 340). Exploration and analysis of ethical dimensions intrinsic to human communication. Prerequisite: junior standing or departmental consent.

**350—Directed Reading (1-3).** Independent reading, reports. Prerequisites: junior standing or instructor's consent.

**373—Political Communication (3).** Study of role and impact of communication in political campaigns; historical and contemporary study of influence by communication; case studies and practicum. Prerequisite: junior standing or departmental consent.

**374—Theory and Research in Persuasion (3).** Studies the persuasive process, attitude formation, modification. Prerequisites: 276 and departmental consent.

**376—Organizational Communication (3).** Theories of communication systems and processes in organizational structures; study of communication behavior in formal and informal organizational settings. Prerequisites: 271 or departmental consent.

**377—Senior Project (3).** Integration and adaptation of communication theories to an applied communication problem. Required for all majors. Prerequisite: admission to department, senior standing, and departmental consent.

**381—Principles of Rhetoric (3).** Development of rhetoric from time of Corax with emphasis on Aristotle; derivation, application of standards for judging effectiveness in communication. Prerequisites: 75, junior standing and departmental consent.

**395—Professional Seminar in Television Production (3).** Application of principles to advanced television production, direction. Prerequisites: 290 and instructor's consent.

**400—Problems (cr.arr.).** Individual study not leading to thesis or dissertation. Prerequisite: instructor's consent.

**401—Topics (cr.arr.).** Study of selected topics in Communication. Topic and credit may vary semester to semester. Repeatable upon consent of department. Prerequisite: instructor's consent.

**402—Seminar in Quantitative Method in Communication (3).** Quantitative methods of speech research. Prerequisite: 441.

**403—Seminar in Communication (3).** Directed research on selected topics concerning theories of speech communication. May be repeated. Prerequisite: instructor's consent.

**404—History and Criticism of Broadcasting (3).** Cultural, technical development of broadcasting with emphasis on responsible criticism. Prerequisite: instructor's consent.

**407—Seminar in Corporate and Instructional Television (3).** Uses, design, production, evaluation, technical aspects and management of educational television. Prerequisite: instructor's consent.

**409—Broadcasting and Mass Culture (3).** Examines the traditional arguments and literature relevant to broadcasting and mass culture.

**410—Studies in Broadcasting (1-6).** Directed readings in current philosophical, historical, social, political, economic aspects of broadcasting. Prerequisite: instructor's consent.

**411—Seminar in Qualitative Methods in Communication (3).** Examination of assumptions and techniques of qualitative methods adopting an interpretive framework for analyzing communication phenomena.

**412—Seminar in Organizational Communication Theory (3).** Exploration of the theoretical foundations of interpersonal communication in the organization, groups and team development, leadership, organizational decision making, motivation and power, bureaucracy, new information technologies, organizational effectiveness and the change process.

**413—Seminar in Small Group Communication (3).** Identifies and analyzes theories and variables which explain, predict, and/or influence small group communication.

**414—Seminar in Television and Film Criticism (3).** Examination and application of various critical methodologies to television and film texts.

**415—Seminar in Interpersonal Communication (3).** Examines theory and research concerning face-to-face dyadic interactions. Emphasis on context of interpersonal communication events and processes of interactional management.

**417—Topics in Organizational Communication (3).** Examination of theory and research in selected areas of organizational communication. Topics vary by semester. Topics may include socialization, power, gender, emotions, and others. May be repeated. Prerequisite: graduate standing.

**419—Seminar in Mass Media Effects (3).** Explores current research in the processes and effects of mass communication. Readings pertain to the current social and psychological effects of media on viewers.

**420—Seminar in Mass Communication Theory (3).** This course will offer graduate students a broad overview of extant theories employed in the study of mass communication and mass media effects. The class will focus on theories of society, theories of media, and the relationships between mass communication and culture. It will also focus on theories of media structures, media organizations, media content, audiences, and media effects. f.

**441—Introduction to Graduate Study in Communication (3).** Orientation to the field. Introduction to research methods. Production of research proposal. Emphasizes scholarly style of writing.

**450—Research (3).** Completes comprehensive exams and writes a literature review.

**451—Seminar in Communication Education (3).** Directed research on selected problems in instruction and research methods in the field of communication. Prerequisite: instructor's consent. May be repeated.

**460—Research Practicum (3).** Student conducts research under close supervision of faculty mentor. Goal: produce research report suitable for submission as convention paper, article, or book chapter. Consent of mentor required. Advanced graduate students. May be repeated once for credit.

**472—Political Campaign Debates (3).** Theory and research on political campaign debates applied to analyses of candidate debates. Focus on primary and general presidential debates.

**474—Political Advertising (3).** Theory and research on political advertising applied to analyses of candidate advertisements. Focus on primary and general presidential television spots and web pages.

**483—Rhetorical Theory (3).** Examines rhetorical theory from classical Greece through contemporary theorists. Emphasizes classical, eighteenth century British, and contemporary periods.

**485—Rhetorical Criticism (3).** Principles, practice criticism (description, analysis, evaluation) of rhetorical artifacts.

**486—Seminar in Theories of Rhetoric and Criticism (1-6).** Directed research on selected topics in rhetorical theory and criticism. Prerequisite: instructor's consent. f,s.

**487—Seminar in Communication Theory (3).** Examines the nature of theory, the assumptions underlying theoretical approaches to communication, and surveys themes in contemporary communication theories.

**490—Research (cr.arr.).** Research leading to thesis or dissertation. Prerequisite: instructor's consent. Graded on a S/U basis only.

# Communication Science and Disorders

**School of Health Professions**
**303 Lewis Hall (573) 882-3873**
**DEPARTMENT CHAIR** P.S. Dale
**PROFESSOR** J. Amerman
**ASSOCIATE PROFESSOR** J. Goodman,
**ASSISTANT PROFESSORS** L. Day, S. Silverman, B. Slansky
**CLINICAL ASSOCIATE PROFESSOR** J. Deal
**CLINICAL ASSISTANT PROFESSORS** S. Jones, M. Parnell, L. Riley
**CLINICAL INSTRUCTORS** B. Brinkman, B. McLay, G. Robinson

**DEGREES** BHS in communication science and disorders, MHS in speech-language pathology, PhD in communication science and disorders.

The discipline of communication science and disorders studies the complex processes involved in normal language, speech and hearing as they develop across the life span, as well as the range of communicative disorders that results from biological, environmental and behavioral factors. The MU Department of Communication Science and Disorders (CSD) offers course work and research opportunities in the areas of normal language, speech and hearing, including physiological, acoustic, perceptual and cognitive processes, and in the diagnosis and treatment of the spectrum of communicative disorders.

Clinical specialists in communication science and disorders include speech-language pathologists and audiologists. Speech-language pathologists evaluate the speech and language of children and adults to determine whether problems exist in such areas as voice, articulation, fluency and receptive or expressive language, and plan and carry out programs for the treatment of these problems. Audiologists evaluate hearing, identify hearing losses and participate in the rehabilitation of persons with hearing impairments. Speech-language pathologists and audiologists often work with other professionals in education, medicine, social work, psychology, rehabilitation and dentistry to provide the necessary care for children and adults with communicative disorders. Both provide professional ser-

# Communication Science and Disorders

vices in hospitals, rehabilitation centers, private practice, colleges and universities, public and private schools, state and federal government agencies, nursing care facilities, health departments and community clinics.

**The professions of speech-language pathology and audiology require master's or doctoral degrees. A student completing an undergraduate degree in communication science and disorders must also complete a graduate program in his/her chosen area in order to become qualified to practice. Acceptance into an undergraduate program does not guarantee acceptance into a graduate program. Refer to the Graduate Catalog for information about the MHS and PhD degrees.**

**COURSE REQUIREMENTS** The following courses are required for an undergraduate major in communication science and disorders.
CSD 20: Human Language (3)
CSD 120: Survey of Communicative Disorders (3)
CSD 201: American Phonetics (3)
CSD 202: Normal Language Development (3)
CSD 210: Anatomy and Physiology of the Speech Mechanism (3)
CSD 230: Hearing Science (3)
CSD 243: Applied Neurophysiology (3)
CSD 302: Language Disorders in Children (3)
CSD 303: Language Disorders of Adults (2)
CSD 320: Disorders of Phonology and Articulation (3)
CSD 321: Voice and Fluency Disorders (2)
CSD 324: Clinical Observation in Communicative Disorders (1)
CSD 325: Clinical Apprenticeship in Communicative Disorders (3)
CSD 330: Introduction to Audiology (3)
CSD 342: Reading and Language Disabilities in School-Age Children (3)
CSD 343: Issues in Professional Practice (3)
Ling 340: The Structure of American English (3)
Stat 31 or E & CPSY A354 (3)
Comm 75 or 275 (3)

**PROFESSIONAL CERTIFICATION** The American Speech-Language-Hearing Association issues the Certificate of Clinical Competence (CCC) to individuals who hold degrees from accredited graduate programs, have completed approved undergraduate and graduate course work and a clinical practicum, achieved a passing score on the national examination, and successfully completed an approved, supervised clinical fellowship year. An individual who meets these requirements may be awarded the CCC in speech-language pathology (CCC-SLP) or in audiology (CCC-A), depending upon the emphasis in academic and clinical preparation. Individuals holding the CCC are qualified to practice independently.

**ACCREDITATION** The MU Master's degree program in speech-language pathology has been continually accredited by the Council on Academic Accreditation of the American Speech-Language-Hearing Association since 1965.

## COURSES

**11—Manual Communication I (3).** Introduction to the English-based sign system, Signed English, a system that has been developed to bridge the gap between English and American Sign Language. Offered on a S/U basis only.

**12—Manual Communications II (3).** Continued vocabulary development and introduction of American Sign Language syntax and morphology. Prerequisites: 11 or instructor's consent.

**20—Human Language (3).** (same as Anthropology and Linguistics 20). General introduction to various aspects of linguistic study. Elementary analysis of language data with some attention to application of linguistic study to other disciplines.

**120—Survey of Communicative Disorders (3).** Systematic survey of the disorders of speech, language and hearing.

**200—Research Apprenticeship (cr.arr.).** Research apprenticeship with a faulty member, assisting in the development and execution of research in communication processes and disorders. May be repeated to 6 hrs. maximum. Prerequisite: instructor's consent.

**201—American Phonetics (3).** (Same as Linguistics 202). Analysis of sounds of Midwestern American dialect. Standards of pronunciation, feature analysis transcription, articulation mechanics, coarticulation.

**202—Normal Language Development (3).** (same as Psychology 202). Language development in preschool and school-age children. Specific attention to cognition and language, developmental sequences, language learning processes, language sample analysis, and the relationship between spoken and written language. Prerequisites: Linguistics 340 (prefered) or instructor's consent.

**210—Anatomy and Physiology of the Speech Mechanism (3).** (same as Linguistics 212). Introduction to anatomical and functional aspects of the speech mechanism.

**230—Hearing Science (3).** Anatomy and physiology of the auditory and vestibular systems in health & disease. Also includes acoustics, measurement of sound, and psychoacoustics. CSD majors or instructor's consent.

**243—Applied Neurophysiology for Allied Health Students (3).** (same as Physical Therapy 243PT and Occupational Therapy 243OT). Principles of basic neurophysiology, emphasizing correlation of structure and function of the nervous system.

**301—Topics in Communicative Disorders (cr.arr.).** Organized study of selected topics. Subjects and earnable credit may vary from semester to semester. May be repeated with program consent. Prerequisites: junior standing and instructor's consent.

**302—Language Disorders in Children (3).** Overview of language disorders from early childhood through adolescence. Includes language disorders as primary disability and as secondary to other disabilities. Introduction to assessment and intervention. Prerequisites: 120, 202, Linguistics 340. CSD majors only.

**303CD—Language Disorders of Adults (2).** Introduction to disorders of language that occur in the adult population. Basic review of neuroanatomy/physiology, etiologies, symptomatology. Major emphasis will be placed on assessment and treatment. Prerequisites: 120, 202, and Linguistics 340, or instructor's consent. CSD majors only.

**320—Disorders of Phonology and Articulation (3).** Overview of disorders of use and production of speech sounds with an emphasis on developmental disorders. Introduction to assessment and treatment. Prerequisites: 120, 201, 202, 210. CSD majors only.

**321CD—Fluency and Voice Disorders (2).** Investigation of fluency and voice disorders in children and adults with particular attention to identification procedures and clinical management techniques. Prerequisite: 120, 210. CSD majors only.

**324—Clinical Observation in Communicative Disorders (1).** Directed clinical observations designed to prepare the student for clinical practicum. Repeated for a total of 2 credit hours Graded on a S/U basis only. Prerequisite: senior standing and departmental consent. CSD majors only.

**325—Clinical Apprenticeship in Communicative Disorders (1-3).** Supervised observation and clinical experience in speech- language pathology for undergraduates. CSD majors only. Prerequisite: senior standing and departmental consent. No graduate credit.

**330—Introduction to Audiology (3).** Tests and techniques in the evaluation and diagnosis of auditory and vestibular disorders. CSD majors only. Prerequisites: CSD 230 or instructor's consent.

**342—Reading and Language Disabilities in School-Age Children (3).** Theories, research, and practice in reading development and disorders. Focus on reading disabilities related to language disorders of various etiologies including developmental language disorders and head injury. Assessment, remediation, teaching methods.

**343—Issues in Professional Practice (3).** Organizational, interprofessional, economic, legal, and ethical aspects of delivering speech, language, and hearing services.

**350—Directed Reading (1-3).** Independent reading; reports. Prerequisite: instructor's consent.

**381—Psycholinguistics (3).** (same as Linguistics 381). Examines the knowledge and processes that underlie the human ability to produce and understand language. Prerequisite: senior or graduate standing.

**382—Speech Perception (3).** (same as Linguistics 382). Selected topics in the perceptual processing of spoken language. Prerequisite: senior or graduate standing.

**400—Problems in Communicative Disorders (cr.arr.).** Individual study not leading to thesis or dissertation. Prerequisite: instructor's consent.

**401—Topics in Communicative Disorders (cr.arr.).** Study of selected topics in speech pathology/audiology. Topic and credit may vary from semester to semester. Prerequisites: instructor's consent, instructor's and departmental consent for repetition.

**402—Developmental Language Disorders (3).** Nature, etiology, assessment and management of childhood language disorders. Prerequisites: 202, 302 and Linguistics 340 or equivalent, or instructor's consent.

**403—Acquired Language Disorders (3).** Primary emphasis on etiology, symptomatology, assessment and management of acquired aphasia in adults. Also addressed are the communicative deficits associated with traumatic brain injury, right hemisphere damage, and dementia. Prerequisites: 202, 303, and Linguistics 319 or equivalent, or instructor's consent.

**411—Speech Physiology (3).** Analysis of physiological features associated with speech subsystems; theories of encoding with special emphasis on speech motor control mechanisms. Prerequisites: 201 and 210 or instructor's consent.

**412—Speech Acoustics (3).** Analysis of acoustic and perceptual characteristics of speech including computer-based acoustical processing techniques. Prerequisites: 201 and 210 or instructor's consent.

**420—Motor Speech Disorders (3).** A systematic study of disorders of motor speech control (dysarthria, apraxia) which result from damage to the human nervous system. Emphasis on etiology, symtolatology, assessment and treatment. Prerequisites: 310 and 320 or instructor's consent.

**421—Fluency Disorders (2).** Identification and remediation of fluency disorders in children and adults. Prerequisites: 210, 220, 321, or equivalent or instructor's consent.

**422—Voice and Cleft Palate (2).** Diagnosis and management of communicative disorders resulting from pathologies or abnormalities of the craniofacial structures and from patholgies or misuse of the phonatory systems. Prerequisites: 210 320 and 321 or instructor's consent.

**423—Dysphagia (2).** Diagnosis and treatment of swallowing disorders, including video-fluoroscopic analysis. Emphasis is on acquired dysphagia in adults, but developmental dysphagia is also addressed. Prerequisites: 210, 321, 420 or

instructor's consent.

**425—Clinical Practice in Speech Pathology (3-4).** Supervised clinical practice in speech pathology for graduate students. May be repeated for credit. Prerequisite: 325 or equivalent.

**426—Diagnosis in Speech-Language Pathology (3).** General principles of diagnosis; specific diagnostic tools and procedures for various speech and language disorders. Prerequisite: departmental consent.

**434—Aural Rehabilitation (3).** Identification, evaluation, and management of problems associated with hearing impairment in both children and adults. Includes issues related to speech/language development, communication, education, and social factors. Prerequisites: 230 and 330.

**435—Clinical Practice in Audiology (1-3).** Supervised integrated with diagnostic and rehabilitation programs. May be repeated for credit. Prerequsite: 330.

**450—Research in Communicative Disorders (cr.arr.).** Independent research leading to a report but not to a thesis or dissertation. Prerequisite: instructor's consent.

**460—Seminar: Contemporary Topics in Speech-Language Pathology (1-3).** Advanced study involving critical literature review and research on selected topics in speech and language. May be repeated for up to 6 credits. Prerequisite: instructor's consent.

**461—Seminar: Contemporary Topics in Audiology (1-3).** Advanced study and review of research on special topics in Audiology. May be repeated for up to 6 credits. Prerequisite: instructor's consent.

**490—Research in Communicative Disorders (cr.arr.).** Research leading to thesis or dissertation. Prerequisite: instructor's consent. Graded on a S/U basis only.

# Computer Engineering and Computer Science

**College of Engineering**
**201 Engineering Building West (573) 882-3842**
**www.cecs.missouri.edu**

**CHAIR** H. Tyrer
**ASSOCIATE CHAIR** Y. Saab
**PROFESSORS** S. Chen, J. Keller, H. Tyrer, X. Zhuang
**ASSOCIATE PROFESSORS** P. Gader, Y. Lan, K. Palaniappan, Y. Saab, G. Springer, R. Sun, Y. Zhao
**ASSISTANT PROFESSORS** M. Jurczyk, P. Matsakis, Y. Shang, H. Shi, C. Shyu, M. Skubic, J. Uhlmann
**INSTRUCTORS** J. Burcham, L. Stowe
**PROFESSORS EMERITI** P. Blackwell, O. Plummer, D. Shurtleff, F. Springsteel

**DEGREES** BS CompE, BS CS, MS CompE, MS CS, PhD CECS

The Department of Computer Engineering and Computer Science offers a broad curriculum that spans the theory, design and applications of computing and information technology. Three degrees are offered at the baccalaureate level. These are BS degrees in computer engineering and in computer science and, in conjunction with the College of Arts and Science, a BA degree in computer science (see the Computer Science listing). All prepare their graduates for employment or graduate study in their chosen field.

The department has a flourishing research program in various areas of computer engineering and computer science. Undergraduate students in their junior and senior years often have an opportunity to work with faculty in their research. Qualified students can participate in the Honors Program.

The two BS degrees include strong components of mathematics (both degrees include a minor in mathematics), physical science and computational theory. The BA degree provides more latitude for courses outside of the major.

**THE BACHELOR OF SCIENCE DEGREE IN COMPUTER ENGINEERING** This program includes a special concern for hardware issues. Career opportunities include computer system design, network design and administration, design of hardware and software components, system integration, computer instrumentation, robotics, information technology, and multimedia systems. A balanced emphasis of both hardware and software gives the computer engineering student a broad range of career choices.

The BS degree requires the completion of 126 credit hours, which must include the required courses. To graduate, a student must earn a 2.0 grade point average or better in all courses that have an MU engineering prefix. A grade of C- or better is required in each course that is a prerequisite for a CECS or EE course that the student takes.

It is the goal of the CECS department to produce computer engineers with a background in computer design, engineering and science who will be well rounded individuals capable of leading and participating in the continued responsible growth of the economy and society. Computer engineering graduates will be expected to carry out, independently or in teams, designs in hardware, software or their combination. They will have a background that will enable them to proceed on to careers that will adapt to changing technology, careers in various segments of society, and careers that deal with all aspects of computer science and engineering. With sufficient depth and breadth in mathematics, physical science and engineering sciences, computer engineering graduates will be able to confidently analyze and solve problems they may encounter in their career in the practice of engineering. Computer engineers will also have a selective background in areas of interest where they can see their contributions in the context of the good to society. They will develop an active program life on self-development and growth, which transcends the expected changes in computing practice and technology.

**Engineering Design Experience.** The engineering design cycle begins with design objectives and criteria, analysis, construction, testing and ends with evaluation. A second and equally important component develops student creativity and the ability to synthesize, with the use of open-ended problems. From the freshman year onward, and in several courses, the faculty frames problems through objectives for students to analyze, construct, test and evaluate the results. As the student progresses through the curriculum, the methods and solutions allowed for a single problem expand. The lower and upper-level design experiences culminate in the capstone courses. The faculty covers social impact, ethics, aesthetics, economics, safety and reliability throughout the curriculum.

In the freshman and sophomore years students develop programs using the fundamentals of the design process. Students use their creativity by alternate solution paths while re-enforcing correctness with a unique solution. In the junior year laboratory course, students are given specifications, access to modern development tools and are expected to produce either a hardware or software design that satisfies the specifications; this includes construction testing and evaluation of the result. In class, students are given design problems that are more open-ended but time limited, and in many cases students develop their own problem statements. The senior experience culminates in the capstone course sequence, and students are expected to develop their problem statement, consider various alternatives including production and concurrent engineering, and provide a detailed system description. In the succeeding semester the students will construct and test their design.

Computer engineers may experience a wide range of opportunities and their choice of engineering electives reflects that reality. Students who see their interests in the design and construction of VLSI devices should take materials or solid state courses, while those with a more traditional interest would benefit from courses in engineering mechanics.

**REQUIREMENTS FOR A BS DEGREE IN COMPUTER ENGINEERING**

**Engineering Courses** (49 hours)
CECS 103: Algorithm Design and Programming I (3)
Engr 30: Engineering Graphics (3) or Comm 75: Speech (3)
Engr 124: Circuit Theory I (3)
CECS 126: Introduction to Digital Systems (3)
EE 154: Experimental Electrical Engineering (3)
EE 205: Circuit Theory II (3)
CECS 203: Algorithm Design and Programming II (3)
CECS 226: Logic Design (4)
CECS 332: Software Engineering I (3)
EE 286: Electronic Circuits and Signals I (4)
CECS 326: Microcomputer Architecture and Interfacing (4)
CECS 327: Computer Architecture I or CECS 328: Design of Digital Subsystems (3)
CECS 341, 343, or 345: Theory of Computation I, Compilers I or Principles of Programming Languages (3)
CECS 352: Operating Systems I (3)
CECS 398: Senior Capstone Design I (2 )
CECS 399: Senior Capstone Design II (2)

**Related Courses** (52-54 hours)
Math 80: Analytic Geometry and Calculus I (5)
Math 175: Calculus II (5)
Math 201: Calculus III (3)
Math 226: Discrete Math (3)
Math 304: Differential Equations (3)
Stat 320: Intro to Mathematical Statistics (3)
Chem 31: General Chemistry (2)
Phys 175: University Physics I (5)
Phys 176: University Physics II (5)
Technical elective (15) Upper-level courses in CECS, Engr, Stat, Math, or Physics
Econ 4 or 5, 14, or 51 (3-5)

**Computer Engineering Sample Degree Program**

**First Semester** 14 hours
CECS 103: Algorithm Design and Programming I (3)
Chem 31: General Chemistry I (2)
Math 80: Analytical Geometry and Calculus I (5)
Constitutional elective (3)
Elective (1)

**Second Semester** 16 hours
CECS 203: Algorithm Design and Programming II (3)

Math 175: Calculus II (5)
Phys 175: University Physics I (5)
Engl 20: Exposition and Argumentation (3)
**Third Semester** 17 hours
CECS 126: Intro to Digital Systems (3)
Math 201: Calculus III (3)
Math 226: Discrete Math (3)
Phys 176: University Physics II (5)
Engr 30: Engineering Graphics (3) or Comm 75: Public Speaking (3)
**Fourth Semester** 17-19 hours
Technical elective (3)
Math 304: Differential Equations (3)
Engr 124: Circuit Theory I (3)
EE 154: Experimental Electrical Engineering (3)
Econ 4, 5, 14 or 51GH: Microeconomics or Macroeconomics (3-5)
Elective (2)
**Fifth Semester** 17 hours
CECS 226: Logic Design (4)
EE 205: Circuit Theory II (3)
EE 286: Electronic Circuits and Signals I (4)
Technical elective (3)
Humanities-Social/Behavioral Science (3)
**Sixth Semester** 15 hours
CECS 332: Software Engineering (3)
Stat 320: Introduction to Mathematical Statistics (3)
Technical elective (3)
Humanities-Social/Behavioral Science (3)
Elective (3)
**Seventh Semester** 15 hours
CECS 352: Operating Systems I (3)
CECS 326: Microcomputer Architecture and Interfacing (4)
CECS 398: Capstone Design I (2)
Technical elective (3)
Humanities-Social/Behavioral Science (3)
**Eighth Semester** 14 hours
CECS 327 or 328: Computer Architecture I or Design of Digital Subsystems (3)
CECS 341, 343, or 345: Theory of Computation, Compilers I, or Principles of Programming Languages (3)
CECS 399: Capstone Design II (2)
Technical elective (3)
Humanities-Social/Behavioral Science (3)

**THE BACHELOR OF SCIENCE DEGREE IN COMPUTER SCIENCE** This comprehensive program includes a special emphasis on software, information management and application systems. Career opportunities include operating system programming, computer graphics, system design, networking, intelligent systems, databases, information technology, multimedia systems, and entertainment industry.

The BS degree requires the completion of 120 credit hours, which must include the required courses. To graduate, a student must earn a 2.0 grade point average or better in all courses that have an MU engineering prefix. A grade of C- or better is required in each course that is a prerequisite for a CECS or EE course that the student takes.

**REQUIREMENTS FOR A BS DEGREE IN COMPUTER SCIENCE**
**Computer Science Courses** (46 hours)
CECS 103: Algorithm Design and Programming I (3)
CECS 126: Introduction to Digital Systems (3)
CECS 203: Algorithm Design and Programming II (3)
CECS 227: Digital Logic and Computer Design (3)
CECS 231: Systems Analysis I (3)
CECS 303: Design and Analysis of Algorithms I (3)
CECS 332: Software Engineering I (3)
CECS 352: Operating Systems I (3)
CECS 398: Capstone Design I (2)
CECS 399: Capstone Design II (2)
**Six CECS courses must be chosen from the following list.** One of these courses must be CECS 341, 343, or 345. At least three of the remaining CECS electives must be numbered above 300:
CECS 211: Production Languages (3)
CECS 233: Object Oriented Programming (3)
CECS 253: UNIX Operating System (3)
CECS 280: Internship (1-3)
CECS 283: Intro to the Internet, WWW and Multimedia Systems (3)
CECS 301: Topics
CECS 327: Computer Architecture I (3)
CECS 333: Object Oriented Design I (3)
CECS 338: Database Management Systems I (3)
CECS 341: Theory of Computation I (3)
CECS 343: Compilers I (3)
CECS 345: Principles of Programming Languages (3)
CECS 361: Computer Graphics I (3)
CECS 365: Image Processing (4)
CECS 373: Building Intelligent Agents (3)
CECS 375: Artificial Intelligence I (3)
CECS 381: Computer Networks I (3)
CECS 383: Science and Engineering of the World Wide Web (3)
**Related Courses** (25 hours)
Math 80: Analytic Geometry and Calculus I (5)
Math 175: Calculus II (5)
Math 201: Calculus III (3)
Math 226: Discrete Math (3)
Math 304, 307, 308 or 331: Differential Equations, Numerical Analysis, Numerical Linear Algebra or Matrix Theory (3)
Stat 320: Intro to Mathematical Statistics (3)
Technical elective (200 or above level) (3)
**Science Courses** (12 hours minimum)
Twelve hours in science are required including one of the following two-semester sequences in which both courses include labs.
Physics 175: University Physics I (5)
Physics 176: University Physics II (5)
Chemistry 32: General Chemistry I (3)
Chemistry 33: General Chemistry II (3)
Biology 42: Intro to Biological Systems (5)
Upper Class Biology course with a lab (3-5)
Biology 12: General Botany (5)
Anth 149: Intro to Biological Anthropology (3)
Anth 150: Intro to Biological Anthropology with Lab (5)
Anth 151: Biological Anthropology Lab (prereq: Anthro 149) (2)
Geology 1 or 10: Principles of Geology (5) or Environmental Geology (5)
Upper Class Geology course with a Lab (3-5)
**Science Electives:**
Astron 1: Intro to Astronomy I (4)
Astron 2: Intro to Laboratory Astronomy (2)
Bio 1: General Biology (may not take with bio sequence) (3)
Bio 2: General Biology Lab (may not take with bio sequence) (3)
Chem 15: Atoms and Molecules (may not take with chem sequence) (3)
Chem 31: General Chemistry (2)
Physics 21: College Physics I (may not take with phys sequence) (4)
Physics 22: College Physics II (may not take with phys sequence) (4)

# Computer Engineering and Computer Science

Any course from the science sequence courses listed above
Any Biology, Chemistry, Geology or Physics courses beyond the levels listed above for which the student has the prerequisite

**Computer Science Sample Degree Program**
**First Semester** 14 hours
CECS 103: Algorithm Design and Programming I (3)
Math 80: Analytical Geometry and Calculus I (5)
Constitutional elective (3)
Humanities-Social/Behavioral Science (3)
**Second Semester** 14 hours
CECS 203: Algorithm Design and Programming II (3)
Math 175: Calculus II (5)
Engl 20: Exposition and Argumentation (3)
Humanities-Social/Behavioral Science (3)
**Third Semester** 15-17 hours
CECS 126: Intro to Digital Systems (3)
CECS 231: Systems Analysis I (3)
Math 201: Calculus III (3)
Science sequence (3-5)
Humanities-Social/Behavioral Science (3)
**Fourth Semester** 15-17 hours
CECS 303: Design and Analysis of Algorithms I (3)
CECS elective (3)
Math 226: Discrete Math (3)
Science sequence (3-5)
Humanities-Social/Behavioral Science (3)
**Fifth Semester** 15-18 hours
CECS 332: Software Engineering (3)
CECS elective (3)
Math 304, 307, 308 or 311: Differential Equations, Numerical Analysis, Numerical Linear Algebra or Matrix Theory (3)
Science elective (3-6)
Humanities-Social/Behavioral Science (3)
**Sixth Semester** 15 hours
CECS 227: Digital Logic and Computer Design (3)
CECS 341, 343 or 345: Theory of Computation I, Compilers I or Principles of Programming Languages (3)
CECS elective (3)
Stat 320: Intro to Mathematical Statistics (3)
Non-science elective (3)
**Seventh Semester** 14 hours
CECS 352: Operating Systems I (3)
CECS 398: Capstone Design I (2)
CECS Elective (3)
Non-science elective
General elective (3)
**Eighth Semester** 14 hours
CECS 399: Capstone Design II (2)
CECS elective (3)
Technical elective (3)
Non-science elective (6)

**THE MINOR IN COMPUTER SCIENCE** A minor in computer science is offered through the College of Engineering. To obtain a minor, a student must complete 18 hours of computer science courses with a grade of C or better.
**The sequence of courses must include the**

**following computer science courses:**

CECS 103: Algorithm Design and Programming I (3)

CECS 126: Introduction to Digital Systems (3)

CECS 203: Algorithm Design and Programming II (3)

Three computer science courses approved by the department. At least one must be numbered 300 or above. At least 9 hours must be taken on the University of Missouri-Columbia Campus.

## COURSES

**75—Introduction to Computing (3).** Introduction to word processing, spreadsheets, and database software. Taught in classrooms equipped with microcomputers. May not be taken for credit after a computer science course numbered above 101 or Accounting 258 has been completed. Does not fulfill a mathematical sciences requirement for Arts and Science students. f,w,s.

**101—Topics (cr.arr.).** Topic and credit may vary from semester to semester. May be repeated upon consent of department. Prerequisite: departmental consent. f,w.

**103—Algorithm Design and Programming I (3).** Introduction to the use of digital computers. Provides the student with experience in properly designing, implementing and testing programs written in the procedural language C. Provides students with a basis for computer access, problem solving and program documentation. Prerequisite: Math 10 or 14.

**126—Introduction to Digital Systems (3).** (same as Electrical Engineering 126). Introduces microprocessor-based systems, computer organization, programming concepts, bus control, input-output transfers, subroutines, and interrupts. Prerequisite: CECS 103.

**201—Topics (cr.arr.).** Topic and credit may vary from semester to semester. May be repeated upon consent of department. Prerequisite: departmental consent.

**203—Algorithm Design and Programming II (3).** A study of fundamental techniques and algorithms for representing and manipulating data structures using a procedural language. Topics include data abstraction, recursion, stacks, queues, pointers, linked lists, trees and efficient methods of sorting and searching. Prerequisite: CECS 103.

**211—Production Languages (3).** The study of the syntax, semantics, and applications of one programming language suitable for large scale scientific or commercial projects such as FORTRAN, COBOL, PL/1, C, or ADA. May be taken more than once for credit. Prerequisite: CECS 203. f,w,s.

**226—Logic Design (4).** (same as Electrical Engineering 226). Digital electronics, chip level logic design, algorithmic state machines, microprocessor architecture and interfacing and digital system design methodology. Includes one hour laboratory. Prerequisite: CECS 126.

**227—Digital Logic and Computer Design (3).** Basic tools, methods and procedures to design combinational and sequential digital circuits and systems. Accumulator and register type ALUs, wired and microprogrammed control units, memories, I/O devices and interfacing, bus and control. Prerequisites: CECS 126. f.

**231—Systems Analysis I (3).** An introduction to the analysis and design of information systems. Presents an overview of information systems, emphasizes the fundamental concepts of a systems development life cycle, and offers experience with modeling tools and techniques used in systems analysis. Prerequisites: CECS 203. f,w.

**233—Object Oriented Programming (3).** Building on a prior knowledge of C and data structures, this course covers C++ and object-oriented design, including classes, objects, inheritance, polymorphism and information hiding. Students will apply techniques using C++. Prerequisite: CECS 203 or 211 - C.

**253—UNIX Operating System (3).** Introduction to the UNIX operating system and its interfaces including the file system, shell, editors, pipes and filters, input/output system, shell programming, program development including C, and document preparation. Prerequisite: CECS 203 or 211 - C

**280—Internship in Computer Science (1-3).** Computer-related experience in business or industry jointly supervised by faculty and computer professionals. Students should apply one semester in advance for consent of the supervising professor. Prerequisites: departmental consent. Graded on a S/U basis only. f,w,s

**283—Introduction to the Internet, WWW and Multimedia Systems (3).** This course will attempt to provide a comprehensive understanding of the evolution, the technologies, and the tools of the Internet. In particular, issues pertaining to the World Wide Web and Multimedia (HTML, CGI, Web based applications) will be discussed in detail. Prerequisites: CECS 203 or instructor's consent.

**300—Problems (cr.arr.).**

**301—Topics (cr.arr.).** Topic and credit may vary from semester to semester. May be repeated upon consent of department. Prerequisite: departmental consent.

**303—Design and Analysis of Algorithms I (3).** This course reviews and extends earlier work with linked structures, sorting and searching algorithms, and recursion. Graph algorithms, string matching, combinatorial search, geometrical algorithms and related topics are also studied. Prerequisite: CECS 203 and Mathematics 226. w.

**307—Numerical Analysis (3).** (same as Mathematics 307). Machine arithmetic, approximation and interpolation, numerical differentiation and integration, nonlinear equations, linear system, differential equations, error analysis. Selected algorithms will be programmed for solution on computers. Prerequisites: Math 201 and the ability to program in a high-level language such as Fortran, Pascal or C.

**308—Numerical Linear Algebra (3).** (same as Mathematics 308).

**326—Microcomputer Architecture and Interfacing (4).** (same as Electrical Engineering 326). Advanced microprocessor architecture and programming; special interface devices, such as memory controllers, disk controller, I/O processors, terminal controllers, communication interfaces and coprocessors. Prerequisite: CECS 226.

**327—Computer Architecture I (3).** Architectural features of high-performance computer systems including hierarchical and virtual memory, pipelining, vector processing and an introduction to multiple-processor systems. Prerequisites: CECS 226 or 227.

**328—Design of Digital Subsystems (3).** (same as Electrical Engineering 328). Design techniques including module definition, functional partitioning, hardware design language descriptions and microprogramming; design examples include arithmetic units, programmable controllers, and microprocessors. Prerequisite: CECS 226.

**332—Software Engineering I (3).** Overview of software life cycle processes. Practical and theoretical topics including systems analysis and requirement specification, software design, implementation testing and maintenance. Prerequisite: CECS 231 or departmental consent. f.

**333—Object Oriented Design I (3).** Building on a prior knowledge of program design and data structures, this course covers object-oriented design, including classes, objects, inheritance, polymorphism, and information hiding. Students will apply techniques using a modern object-oriented implementation language. Prerequisite: CECS 303, 233.

**338—Database Management Systems I (3).** Fundamental concepts of current database systems with emphasis on the relational data model. Other topics include the network and hierarchical data models, entity-relationship design, and case studies. Project work involves a modern DBMS using SQL. Prerequisite: CECS 231. f,w

**341—Theory of Computation I (3).** An introductory study of computation and formal languages by means of automata and related grammars. The theory and applications of finite automata, regular expressions, context- free grammars, pushdown automata and Turing machines are examined. Prerequisite: CECS 126 and Math 226. f,w

**343—Compilers I (3).** Introduction to the translation of programming languages by means of interpreters and compilers. Lexical analysis, syntax specification, parsing, error-recovery, syntax-directed translation, semantic analysis, symbol tables for block- structured languages, and run-time storage organization. Prerequisite: CECS 126 and Math 226. w

**345—Principles of Programming Languages (3).** An introduction to the structure, design and implementation of programming languages. Topics include syntax, semantics, data types, control structures, parameter passing, run-time structures, and functional and logic programming. Prerequisite: CECS 203.

**349—Applied Modern Algebra (3).** (same as Mathematics 349).

**350—Special Readings (1-3).**

**352—Operating Systems I (3).** The hardware, firmware and software organization of computer systems; basic operating system concepts, concurrent processes, CPU and disk scheduling, memory management, deadlocks, systems evaluation and simulation, and performance measurement. Prerequisites: CECS 303 and either CECS 226 or 227.

**361—Computer Graphics I (3).** Basic concepts and techniques of interactive computer graphics including hardware, software, data structures, mathematical manipulation of graphical objects, the user interface, and fundamental implementation algorithms. Prerequisites: CECS 303 and Mathematics 175. f

**365—Image Processing (4).** Fundamentals of digital image processing hardware and software including digital image acquisition, image display, image enhancement, image transforms and segmentation. Prerequisites: CECS 303, Statistics 320 or instructor's consent.

**366—Multimedia Engineering and Technology (3).** (same as Electrical Engineering 317). Survey of multimedia applications. Capture, coding, storage, transmission and software tools for developing productions involving text, graphics, images, animation, sound and video. Term Projects. Lecture and laboratory. 4 credits. Prerequisites: EE 226 Logic Design and EE 216 Linear Systems and Circuits.

**371—Expert Systems (3).** (same as Sociology, Veterinary Medicine & Surgery and Anthropology 321). Introduction to the use of expert system shells, designed for graduate students from any department. Students create prototype expert systems under close supervision by faculty experts. Prerequisite: departmental consent.

**373—Building Intelligent Agents (3).** Introduction to the design and development of intelligent agents, particularly emphasizing topics related to sensor-based control of mobile agents. Includes sensor characterzation, mechanics of mobile robot control, reactive behaviors, and intelligent control architectures. Prerequisites: senior or graduate standing. CECS 203 or equivalent.

**375—Artificial Intelligence I (3).** Introduction to the concepts and theories of intelligent systems. Various approaches to creating intelligent systems, including symbolic and computational approaches, insight into the philosophical debates important to understanding AI. Prerequisite: CECS 303.

**381—Computer Networks I (3).** Introduction to concepts and terminology of data communications and computer networking. Basic protocols and standards, applications of networking, routing algorithms, congestion avoidance, long-haul and local networks. Prerequisite: CECS 126 and Mathematics 226. w

**383—Science and Engineering of the World Wide Web (3).** This course will study the science and engineering of the World Wide Web. We will study the languages, protocols, services and tools that enable the web. Emphasis will be placed on basics and technologies.

**398—Senior Capstone Design I (2).** (same as Electrical Engineering 398). Group design projects. Design methodology, project management, development of specifications, examination of alternatives, preparation of proposal. Oral and written reports. Not for graduate credit. Prerequisites: concurrent enrollment in a 300-level design course, senior standing.

**399—Senior Capstone Design II (2).** (same as Electrical Engineering 399). Completion of CECS 398 design project.

Design prototyping, testing, evaluation and preparation of documentation. Lectures on ethics, professionalism, safety, economic considerations. Oral and written reports. Not for graduate credit. Prerequisite: CECS 398.

**400—Problems (1-3).**

**401—Topics (cr.arr.).** Topic and credit may vary from semester to semester. May be repeated upon consent of department. Prerequisite: departmental consent.

**403—Design and Analysis of Algorithms II (3).** Techniques for the design and analysis of correct, efficient algorithms. Topics include graph, geometric, and algebraic/ numeric algorithms, NP-completeness, and parallel algorithms. Prerequisite: CECS 303. f

**409—Computational Geometry (3).** Studies fundamental geometric problems within the framework of analysis of algorithms: convex hull algorithms in the plane and in general dimension, Voronoi diagram construction and applications to the solution of proximity problems, intersection problems, and geometric searching problems. Prerequisites: CECS 303 and Mathematics 201, or approval of the instructor. f.

**410—Seminar (1).** Reviews of recent investigations, projects of major importance. Prerequisite: graduate standing.

**427—Computer Architecture II (3).** Study of array processors, multiprocessors, multicomputers, and networked computing systems. Topics include architectures, interconnection networks, communication mechanisms, distributed memories and security. Introduction to parallel algorithm design. Prerequisites: CECS 326 or 327.

**428—Digital Hardware Systems Design (3).** (same as Electrical Engineering 428). Characteristics and parameters of various hardware subsystems, including main memory, auxiliary memory, arithmetic units, card equipment, etc., and principles of organization into efficient system. Prerequisite: CECS 328.

**432—Software Engineering II (3).** Further discussion of software development methodology. Prerequisite: CECS 332.

**433—Object Oriented Design II (3).** Software system design using classes and their properties of abstraction, inheritance, dynamic binding, and polymorphism. Focus on object-oriented design of systems such as windows, graphics systems, and operating system. Prerequisite: CECS 333.

**438—Database Management Systems II (3).** Further study in the theory, design, organization and implementation of databases and database management systems. Topics include: object-oriented databases; distributed databases; system performance issues; security and management; data mining and data warehousing; multimedia databases. Prerequisite: CECS 338.

**439—Information Storage and Retrieval (3).** Theory and techniques for the organization, storage and retrieval of data. Covers automatic indexing, text processing techniques and file organization techniques. Comparisons of typical commercial and special purpose systems. Prerequisite: CECS 203 and CECS 212.

**452—Operating Systems II (3).** Discusses concurrent processes, distributed/network operating systems; models of processor scheduling, memory management and resource allocation, performance measurement, evaluation and simulation methodology; queuing models; security and reliability. Prerequisites: CECS 352. w.

**461—Computer Graphics II (3).** Further study of computer graphics, focused on 3-D graphics, transformations, geometric and surface modeling, color models, visible surface determination, lighting and shading, standard graphics software (Phigs/OpenGL). Selected current topics in graphics such as visualization, animation and realism. Prerequisite: CECS 361.

**467—Digital Image Compression (3).** Covers digital image formation, information theory concepts, and fundamental lossless and lossy image compression techniques including bit plane encoding, predictive coding, transform coding, block truncation coding, vector quantization, subband coding and hierarchical coding. Prerequisite: EE 307 or CECS 365.

**469—Computer Vision (3).** Principles of computer (robot) vision, including image perception, object representation, stereo analysis, pose, shape and motion estimation. Prerequisite: CECS 365 or instructor's consent.

**475—Artificial Intelligence II (3).** Further discussion of theories and techniques of artificial intelligence. Advanced programming in LISP and Prolog and introduction to the use of A.I. workstations. Prerequisites: CECS 375.

**476—Pattern Recognition (3).** Decision functions, crisp and fuzzy clustering methods, statistical pattern recognition methods, Bayesian classifiers, error probabilities, estimation of density functions, perceptrons, least-mean-square algorithms, feature selection, dimensionality reduction and syntactic pattern recognition. Prerequisites CECS 303, Statistics 320.

**477—Neural Networks (3).** The course will consider computing systems based on neural networks and learning models along with implementations and applications of such systems. Prerequisites: CECS 303, Statistics 320.

**478—Modeling and Management of Uncertainty (3).** Theoretical and practical issues in the modeling and management of uncertainty. Topics include probabilistic uncertainty, belief theory and fuzzy set theory. Applications to computer vision, pattern recognition and expert systems. Prerequisites: CECS 303, Statistics 320.

**481—Computer Networks II (3).** In-depth analysis and evaluation of computer networking architectures, protocols and algorithms, network security, distributed database and computational networks, routing and congestion control, domains and internetworking. Prerequisite: CECS 381. f

**482—System Modeling (3).** System performance requires the assessment of its delay and throughput. Markov theory provides the theoretical basis for such assessment. More general methods describe queues including open and closed queuing networks. Includes performance assessment of computer processors. Prerequisite: Statistics 320 or instructor's consent.

**486—Parallel and Distributed Processing (3).** This course covers basic issues of parallel and distributed processing, including parallel and distributed architectures and models, parallel programming, and parallel algorithms and applications. Prerequisites: CECS 303.

**490—Research (cr.arr.).** Prerequisite: advisor's consent. Graded on S/U basis only.

**491—Research (non-thesis project) (cr.arr.).** Investigation and research of a topic, not leading to a thesis. Prerequisite: departmental consent.

# Computer Science

**College of Arts and Science and College of Engineering**

**Office of Special Degree Programs**

**19 Parker Hall (573) 882-6060**

**Computer Engineering and Computer Science Department**
**201 Engineering Building West (573) 882-3842**
**www.cecs.missouri.edu**
**CHAIR** H. Tyrer
**ASSOCIATE CHAIR** Y. Saab
**PROFESSORS** S. Chen, J. Keller, H. Tyrer, X. Zhuang
**ASSOCIATE PROFESSORS** P. Gader, Y. Lan, K. Palaniappan, Y. Saab, G. Springer, Y. Zhao
**ASSISTANT PROFESSORS** M. Jurczyk, P. Matsakis, Y. Shang, H. Shi, M. Skubic, J. Uhlmann
**INSTRUCTORS** J. Burcham, L. Stowe
**PROFESSORS EMERITI** P. Blackwell, O. Plummer, D. Shurtleff, F. Springsteel

**DEGREE** The College of Arts and Science and the Computer Engineering and Computer Science Department offer a BA degree in Computer Science. The College of Engineering offers BS degrees in Computer Science and Computer Engineering (see the Computer Engineering and Computer Science listing).



**THE BACHELOR OF ARTS DEGREE IN COMPUTER SCIENCE** This program contains a strong core of CECS courses. However, its students are especially prepared for the applications of computer science. Students may choose a business emphasis track or a minor in fields as diverse as geography, political science, English, art or music. Graduates are often employed in systems analysis, software development, or data processing.

The BA program is offered through the College of Arts and Science and the student in this degree program has a strong liberal arts background. The BA degree requires the completion of 120 credit hours which must include the required courses.

**REQUIREMENTS FOR A BA DEGREE IN COMPUTER SCIENCE**

**Computer Science Courses** 30 hours
CECS 103: Algorithm Design and Programming I (3)
CECS 126: Introduction to Digital Systems (3)
CECS 203: Algorithm Design and Programming II (3)
CECS 231: Systems Analysis I (3)
CECS 332: Software Engineering I (3)
CECS 338: Database Management Systems I (3)
CECS 253: UNIX Operating System (3)

**Three upper class CECS courses for which the student has the prerequisite. At least one of the courses must be CECS 211-COBOL or CECS 233. Most students will choose from the following list:**
CECS 211: Production Languages-COBOL (3)
CECS 227: Digital Logic and Computer Design (3)
CECS 233: Objected Oriented Programming (3)
CECS 235: File Processing (3)
CECS 280: Internship (1-3)
CECS 283: Introduction to the Internet, WWW and Multimedia Systems (3)
CECS 345: Principles of Programming Languages (3)
CECS 361: Computer Graphics (3)
CECS 383: Science and Engineering of the Web (3)

**Related Courses** nine hours
Math 60: Finite Math (3)
Math 61: Elements of Calculus (3)
Stat 150: Intro to Probability and Statistics I (3)

**Emphasis Area or Minor** 15 hours
The student may choose a minor or complete an Emphasis Area

**Business Emphasis Area** 15 hours
Stat 250: Intro to Probability and Statistics II (3)
Acct 36: Accounting I (3)
Acct 37: Accounting II (3)
Two upper-class courses from accounting, eco-

nomics, finance, management and marketing (excluding Finance 123) (6)

For a description of Computer Science courses see the Computer Engineering and Computer Science listing.

# Consumer and Family Economics

**College of Human Environmental Sciences**
**239 Stanley Hall (573) 882-7836**
**INTERIM CHAIR** R. Dowdy
**ASSOCIATE PROFESSORS** C. Israelsen, R. Weagley, M. Zelenak
**ASSISTANT PROFESSORS** J. Cavanagh, M. Finke, D. Sharpe,
**INSTRUCTOR** B. Procter
**ADJUNCT INSTRUCTOR** R. James
**PROFESSOR EMERITUS** E. Metzen
**ASSOCIATE PROFESSOR EMERITUS** E. Lieurance, A. Yost

**DEGREES** BS HES in Consumer and Family Economics; MS in Consumer and Family Economics; PhD in Human Environmental Sciences, specialization in Consumer and Family Economics

The Department of Consumer and Family Economics (CFE) offers three undergraduate professional program options:

- Consumer Affairs
- Personal Financial Management Services
- Personal Financial Planning

In each option, the student must complete requirements for:

- General Education
- HES Foundation Courses
- Department Core
- Professional Specialization

Students must complete five to six hours of introductory economics with a grade of C (2.0) or above. A grade in the D range is allowed in only one course under department core and professional specialization.

Students must have a 2.50 cumulative grade point average, based on at least 50 credits attempted at all colleges attended, to be admitted to the professional program of the department (300-level courses).

Students are encouraged to be active in the department's undergraduate student organization, the Consumer Affairs and Personal Financial Management Association, for both professional development experiences and social interaction with students and faculty.

**GRADUATION REQUIREMENT:** Completion of the CFE Department program assessment in May or December just prior to graduation.

**DEPARTMENT CORE**
**The following courses are required:**
CFE 180: Personal and Family Management (3)
CFE 183: Personal and Family Finance (3)
CFE 185: The Consumer in Our Society (3)
CFE 188: Community Agencies and Volunteerism (1)
CFE 380: Family Ecology (3)
CFE 387: Consumer and Household Economics (3)

**PROFESSIONAL SPECIALIZATIONS**
**Consumer Affairs** The consumer affairs option prepares students for positions as consumer affairs professionals and other consumer service positions in business, government and consumer organizations.

Examples of the types of positions previous graduates have obtained are as follows: consumer relations director; customer service manager; consumer information specialist; regulatory agency employee; personnel officer; bank employee; management trainee; real estate broker/sales; sales-related occupations; consultant; training/education director.

**The following courses are required for Consumer Affairs:**
CFE 85: Introduction to Consumer Affairs (1)
CFE 388: Effective Consumer Decision-Making (3)
CFE 389: Consumer Protection and Policy Issues (3)
Acct 36: Accounting I (3)
Econ 251: Theory of the Firm (3)
Mgmt 202: Fundamentals of Management (3)
Mgmt 254: Introduction to Business Law (3)
Mktg 204: Principles of Marketing (3)
Mktg 314: Consumer Behavior (3)
Stat 31: Elementary Statistics (3) or Stat 150: Introduction to Probability and Statistics (3)
Ag 111: Computing and Programming Concepts I (3) or CECS 75: Introduction to Computing (3)
12 additional credits will be selected with advisement from a list of courses approved by the department.

The student may choose elective courses appropriate for personal interests or career goals. These may be selected from general education or professional courses offered by other campus units or from appropriate Human Environmental Sciences courses.

**Personal Financial Management Services**
This option prepares students for entry into a variety of positions that require expertise in the management of individual and family financial resources. Such positions are available in financial counseling, financial planning, employee benefits, customer service, credit counseling, insurance brokerage services, investment services and student financial aid. Graduates take positions with social service agencies, financial planning firms, credit counseling agencies, banks, brokerage firms, insurance companies, trust companies, educational institutions, hospitals, military bases, real estate firms and other business enterprises. Employment responsibilities range from financial counseling for families with limited income or excessive debt loads to consultation regarding asset management for families with moderate or substantial income or wealth.
**The following courses are required for Personal Financial Management Services:**
CFE 83: Introduction to Personal Financial Management Services (1)
CFE 283: Financial Planning: Computer Applications (3)
CFE 382: Financial Planning: Risk Management (3)
CFE 383: Financial Planning: Investment Management (3)
CFE 386: Employee Benefits and Retirement Planning (3)
Acct 36: Accounting I (3)
Econ 229: Money and Banking (3)
Econ 251: Theory of the Firm (3)
Mgmt 254: Intro to Business Law (3)
Stat 31: Elementary Statistics (3) or Stat 150: Introduction to Probability and Statistics (3)
Ag 111: Computing and Programming Concepts (3) or CECS 75: Intro to Computing (3)
12 additional credits will be selected with advisement from a list of courses approved by the department.
Elective courses may be selected to supplement the professional or general education component.

**Personal Financial Planning** This curriculum satisfies the academic requirements for the Certified Financial Planner certification. As is the case for anyone aspiring to that certification, graduates of this program must then complete the CFP examination and the required professional experience to attain the certification. Certified Financial Planner is a respected professional designation that qualifies the individual for a range of positions in the personal financial planning field. This curriculum is approved by the CFP Board of Standards for the CFP Program Registry.
**The following courses are required for Personal Financial Planning:**
CFE 83: Introduction to Personal Financial Management Services (1)
CFE 283: Financial Planning: Computer Applications (3)
CFE 382: Financial Planning: Risk Management (3)
CFE 383: Financial Planning: Investment Management (3)
CFE 386: Financial Planning: Employee Benefits and Retirement Planning (3)
CFE 390: Internship (3)
CFE 393: Financial Planning: Estate and Gift Planning (3)
Acct 36: Accounting I (3)
Acct 37: Accounting II (3)
Acct 353: Introduction to Taxation (3)
Econ 229: Money and Banking (3)
Econ 251: Theory of the Firm (3)
Mgmt 254: Introduction to Business Law (3)
Stat 31: Elementary Statistics (3) or Stat. 150: Introduction to Probability and Statistics (3)
Ag 111: Computing and Programming Concepts I (3) or CECS 75: Introduction to Computing (3)

**COURSES**
**83—Introduction to Personal Financial Management Services (1).** This course will provide the student with a broad, general introduction to personal financial management services. Through readings, discussions, and guest speakers, the student will develop a basic understanding of the many facets of this field.
**85—Introduction to Consumer Affairs (1).** Provides a broad, general introduction to consumer affairs and roles of consumer affairs professionals, through which the student will develop a basic understanding of the field.
**180—Personal and Family Management (3).** Principles of resource management for achieving life satisfaction, with emphasis on interpersonal interaction, balancing career and family demands. Uses family systems perspective. Prerequisites: English 20, and sophomore or above standing.
**183—Personal and Family Finance (3).** Individual and family finance, with particular emphasis on financial planning, savings, insurance, investments, taxes, use of credit, and financial aspects of housing. Prerequisites: Math 10 with grade of C or above, and sophomore or above standing. cor.
**185—The Consumer in Our Society (3).** The economic system and the marketplace from the consumer point of view;

consumer problems, protection, representation. Prerequisites: sophomore or above; 3 hours economics.

**188—Community Agencies and Volunteerism (1).** Students gain understanding and appreciation of the voluntary sector, grants, economics, and community social service agencies. Coursework includes experience as volunteer in a community agency. Prerequisites: 3 hours of Economics, and sophomore or above standing.

**189—Community Service (1).** Service learning in a non-profit community social support agency. Students engage in service experiences, seminars to share insights gained in service activities. Extension of CFE 188. Prerequisite or concomitant: CFE 188.

**283—Financial Planning: Computer Applications (3).** Development of expertise in analyzing family financial case situations via applications of the mathematics of finance, utilizing computer spreadsheets and family financial management software. Prerequisites: 183; Ag 111 or Computer Science 75.

**300—Problems (cr.arr.).** Supervised and independent work. Prerequisites: a 100- or 200-level course in field of problem, and senior standing, and instructor's consent.

**318—Topics (cr.arr.).** Selected current topics in field of interest. Prerequisites: vary with topic.

**350—Readings (cr.arr.).** Prerequisite: 2-3 hours in subject.

**355—Recent Trends (1-3).** For upper-class and graduate students who wish additional knowledge and understanding in specific subject matter areas. Prerequisites: vary with the topic.

**380—Family Ecology (3).** Examination of family economic and lifestyle trends. Consideration of impact of personal and family values, technology, macroeconomy, mass media, and social movements on family resource allocation. Prerequisites: CFE 180, and junior standing or above.

**382—Financial Planning: Risk Management (3).** Analysis of family financial risks and conservation of family assets via risk management, with primary focus on personal lines of insurance. Prerequisites: CFE 283; 5-6 hours of Economics; Statistics 31 or 150.

**383—Financial Planning: Investment Management (3).** Management of family financial investments. Prerequisites: CFE 283; 5-6 hours of Economics; Statistics 31 or 150.

**384—Financial Planning: Real Estate (3).** Family housing and real estate investments as components of the family's quality of life and asset portfolio. Prerequisites: CFE 283; 5-6 hours of Economics, Statistics 31 or 150.

**385—The Consumer and the Market (3).** Economic systems and role of consumers; marketing practices; consumer behavior, problems, legislation. (No credit for students who have completed 185.) Prerequisites: graduate standing, Introductory Economics course.

**386—Financial Planning: Employee Benefits and Retirement Planning (3).** Fundamentals of employee benefits and retirement planning. Consideration of options via government, employer, financial markets. Special circumstances of women, part-time, and contingent workers considered. Prerequisites: 382, 383, or instructor's consent.

**387—Consumer and Household Economics (3).** Consumption as an economic activity; theory of consumer choice; economic policies affecting consumer interests; introduction to household production theory. Prerequisites: Economics 251; Statistics 31 or 150.

**388—Effective Consumer Decision-Making (3).** Theory, concepts, principles underlying consumer decision-making, including rationality, uncertainty, optimal search, heuristics, interactive decisions; strategies for their application in the marketplace. Prerequisites: 185 or 385; 5-6 hours of Economics.

**389—Consumer Protection and Policy Issues (3).** Analysis of significant current consumer issues with focus on consumer rights and responsibilities; consumer protection philosophy, laws and regulations. Prerequisites: 185 or 385, and Management 254.

**390—Internship (cr.arr.).** Prerequisites: junior standing and instructor's consent.

**393—Financial Planning: Estate and Gift Planning (3).** Fundamentals, practical problems and solutions in basic estate and gift planning, business succession planning, and taxation issues. Prerequisites: 382 and 383.

**400—Problems (cr.arr.).** Prerequisites: 300-level course in field of problem and instructor's consent.

**410—Seminar (1-4).** Reports and discussion of recent work in area of concentration. Prerequisite: graduate standing.

**412—Research Methods in Consumer and Family Economics (3).** Introduction to the scope, purpose and methods of research in consumer and family economics, with emphasis on economic survey methods. Prerequisites: graduate standing, an Introductory Statistics course. (Sociology 375 or Statistics 207).

**415—Selected Readings (cr.arr.).** Selected readings. Prerequisites: graduate standing and instructor's consent.

**418—Topics (cr.arr.).** Selected current topics in field of interest. Prerequisites: graduate standing, and instructor's consent.

**419—Internship (cr.arr.).** Internships and/or field experiences under supervision. Prerequisites: graduate standing, and instuctor's consent.

**450—Research (cr.arr.).** Independent research not leading to a thesis. Report required. Prerequisite: graduate standing, and instructor's consent.

**483—Family in the Economy (3).** Multi-disciplinary study of research on families as economic units. Examines trends in family income, wealth, labor market participation, household production, distribution of household resources, use of public goods, and underground economy. Prerequisites: graduate standing; 380 and 387 or instructor's consent.

**485—Human Resource Development and Allocation (3).** Economic analysis of conditions, programs and policies related to development and use of human resources, with special reference to impact on families and households. Prerequisites: graduate standing; 387 or instructor's consent.

**486—Social Policy and the Family Economy (3).** Economic analysis of public programs that directly affect well-being of families: income maintenance, goods transfers, employment, housing, health, transportation, taxes, etc.; consideration of underlying philosophies, policy alternatives. Prerequisites: graduate standing; 387 or instructor's consent.

**490—Research (cr.arr.).** Independent research leading to thesis or dissertation. Prerequisite: graduate standing and instructor's consent. Graded on S/U basis only.

# Curriculum and Instruction

**College of Education**
**303 Townsend Hall (573) 882-6572**
**FAX (573) 884-2917**

**INTERIM CHAIR** B. Reys

**PROFESSORS** S. Abell, L. Barrow, R. Birkenholz, L. Kantner, S. Palonsky, B. Reys, R. Reys, R. Robinson, W. Sims, B. Stewart

**ASSOCIATE PROFESSORS** M. Bergee, L. Espinosa, R. Fox, P. Germann, A. Hoard, N. Knipping, L. Schumacher, M. Volkmann, J.M. Wedman

**ASSISTANT PROFESSORS** F. Arbaugh, E. Baker, L. Bennett, J. Dyer, B. Garton, C. Gilles, J. Goldfarb, J. Lannin, J. Tarr, J. Whitenack, K. Wilkinson

**INSTRUCTOR** R. Maiorino

**CLINICAL ASSOCIATES** J. Pye, R. Wilkinson

**DEGREES** For undergraduate offerings see the Teacher Development Program. The department offers the MA, M Ed, EdS, PhD and EdD in curriculum and instruction and career and technical education areas (refer to the Graduate Catalog for specific information).

# Consumer and Family Economics Curriculum and Instruction

## COURSES

**F25—Principles of Sales (3).** Provide the student with the concepts, tools and skills to become a professional salesperson. Emphasis is placed upon participation and performance of sales skills. f.w.

**F34—Advanced Word Processing Applications (3).** Instruction in mastering the keyboard and operative parts of a microcomputer. Preparation of business communications; reports; and legal, medical, and government documents. Special emphasis on developing high standards of keyboarding speed and accuracy. Prerequisites: F33.

**F75—Principles of Retailing (3).** Examines problems, opportunities and trends in retailing. Problems and cases deal with store organization, budgeting, control, personnel and operation. f,w.

**F114—Introduction to Microcomputers (1).** An overview of the hardware and software components of a microcomputer system.

**F125—Merchandising (3).** Develop basic competencies essential to successful merchandising. Studies skills essential in merchandising, and analysis of merchandising functions and activities. f,w.

**F137—Business Communications (2).** Designed for the development of skill in writing business letters, memorandums, reports, and applications for employment and for the improvement of nonwritten business communications. Prerequisites: 45 semester hours of credit and minimal skills in typewriting.

**F139—Office Procedures and Administration (3).** Study of the procedural roles of the administrative assistant, emphasizing decision-making skills and the increased utilization of word processing, machine transcription, reprographics, and micrographics. Prerequisite: F34.

**F164—Field Experiences in PAVTE (1-4).** Supervised observational and instructionally related activities within one of the PAVTE program areas at the secondary or post- secondary level. Student participates 30 clock hours for each semester hour of credit. S/U graded only. f,w,s.

**F175—Directed Occupational Experience (1-4).** Reports based on employment experience in selected occupations combined with related conferences and/or seminars. May repeat until four semester hours accumulated.

**F225—Human Relations in Organizations (3).** Principles, theory, processes and problems of effective human relations in marketing organizations. w.

**F300—Problems (cr.arr.).** Study of professional programs and issues or technical problems related to the field of practical arts and vocational education.

**F301—Seminar (1-3).** Seminar experiences for students within one of the PAVTE program areas. Prerequisite: instructor's consent.

**F307—Coordination of Marketing Internship & Community Based Experience (3).** Study of methods and techniques for organization, management and supervision of students placements in marketing internships and community based learning experiences. f,w,s.

**F308—Coordination of Cooperative Occupational Education (3).** Problems and procedures in the operation of cooperative occupational education programs. Especially designed for those who can qualify as coordinators of occupational education programs of a cooperative nature.

**F314—Utility Software for Microcomputers (2).** An intro-

duction to major types of microcomputer utility programs, including desktop publishing, presentation, spreadsheet, and data base. Prerequisite: F114 or equivalent.

**F321—Vocational Guidance (2-3).** Problems, methods, procedures involved in assisting individuals in choosing, preparing for, entering upon, progressing in their vocation. For teachers, counselors, school administrators.

**F325—Field Study in Occupational Education (1-4).** Directed observation in a cross section of business and industry combined with reports, weekly seminars and/or conferences. May repeat until four semester hours accumulated.

**F335—Word Processing Concepts and Procedures (3).** Comparative study of word processing systems in modern offices; emphasizes advanced-level word processing concepts, procedures, and applications. Prerequisite: F314 or equivalent.

**F345—Business Software Applications (3).** Advanced concepts, features, and applications central to the major types of business software—spreadsheets, database management, word processing, graphics, and communications. Prerequisite: F314 or equivalent.

**F360—Topics (cr.arr.).**

**F365—Occupational Analysis (2).** Techniques, procedures of analyzing occupations into their basic elements. Required of trade teachers, coordinators.

**F372—Methods in Vocational Education for the Disabled & Disadvantaged (3).** (same as Special Education L372).

**F375—Development & Assessment of Vocational-Technical Curriculum (3).** Curriculum development/assessment course focused on competencies, curriculum selection, organization, development, and assessment in the context of the Missouri Vocational Instructional Management System. Prerequisite: A205 and junior standing.

**F380—Laboratory Planning and Management (3).** This course is designed to acquaint the student with the procedures, techniques and skills necessary for proper organization, management, care and utilization of vocational facilities, programs, equipment and materials. Prerequisites: F10, F112 and F154.

**F390—Technology and Industry Education Methods (2-3).** Develops specialized organization and administration capabilities for Industrial and Technology Education. Topics include managing activities, individualized instruction, nontraditional students, students with disabilities, and emerging technologies. Prerequisite: professional standing, senior status.

**F397—Curriculum Content in Marketing Education (3).** Curricular development process, knowledge of core area and competencies of Marketing Education Program. Selection of instructional material. Prerequisite: A205 and B350.

**F398—Methods of Teaching Marketing Education (3).** Instructional materials, methods and techniques used to teach the marketing education curriculum. Includes evaluating delivery of instruction. Prerequisite: F375 and F397.

**F400—Problems (cr.arr.).**

**F405—Research Applications for Vocational Educators (2).** Interpretation, evaluation, and application of research methodologies and findings for vocational educators. Prerequisites: 9 semester credit hours of graduate course work. f,w,s.

**F409—Principles of Business Education (3).** Organization, curriculum, problems, and trends of business education in secondary schools and colleges.

**F410—Seminar in Practical Arts and Vocational-Technical Education (1-3).**

**F411—Philosophy of the Practical Arts and Vocational Education (3).** Nature, purpose of practical arts and vocational education in modern school. For teachers of agriculture, business, home economics, industrial subjects, administrators.

**F415—Curriculum Development in Vocational Technical Education (3).** In-depth investigation of curriculum development theory, research, issues and procedures in vocational, technical and practical arts education as found in public and private sectors. Prerequisites: a curriculum course or instructor's consent.

**F421—Improvement of Instruction in Basic Business Subjects (3).** Recent developments in methods, techniques and materials of instruction in the teaching of basic business subjects.

**F422—Improvement of Instruction in Business Skills Subjects (3).** Developments and trends in the instructional program of business skills courses.

**F451—Measurement and Evaluation in Vocational Education (2-4).** Development of evaluation procedures and the construction of evaluation devices for vocational education. Emphasizes evaluation of student progress, improvement of instruction, and program evaluation. Prerequisites: course in Curriculum Construction or instructor's consent.

**F459—Administration and Supervision of Vocational Education (2-3).** Types of organization, approved administrative and supervisory practices of vocational, technical, and practical arts programs in secondary and post-secondary institutions. Prerequisite: F411.

**F460—Topics (cr.arr.).**

**F470—In-Service Course in Vocational-Technical Education (cr.arr.).**

**F490—Research (cr.arr.).** Graded on a S/U basis only.

**T42—Learning Strategies for College Students (3).** Students' learning strategies are assessed, and their needs are given greatest emphasis. Learning through reading and listening are given major consideration as are the corollary skills of vocabulary expansion, studying and note taking.

**T84—First Aid (2).** Study of the theory and practice of first aid procedures. Certification available.

**T85—Elements of Health Education (2).** Health needs of university students and school-age children are investigated by knowledge and decision-making activities concerning personal and community health problems.

**T86—Scuba Theory (3).** The curriculum of the class includes bio-physics, hydrostatic pressures, physiology, fundamentals of compressed gases, environmental conditions, mechanics, first aid as it relates to diving, and planning speciality dives such as decompression, night, cave, ice, salvage and wreck diving.

**T160—Aiding: Nursery/Day Care Programs (1-2).** Instructionally related duties in the preschool classroom during semesters and summer. Student works 30 hours with supervision for each credit. Prerequisite: instructor's consent. Graded on a S/U basis only.

**T161—Aiding: Kindergarten (1-2).** Instructionally related activities in kindergarten classroom during semesters and summers. Student works 30 hours with supervision for each credit. Prerequisites: instructor's consent. Graded on an S/U basis only.

**T162—Aiding: Primary Grades (1-2).** Instructionally related activities in primary grades. Student works 30 hours with supervision for each credit. Prerequisite: T40 or instructor's consent. Graded on an S/U basis only.

**T163—Aiding: Intermediate Grades (1-2).** Instructionally related activities in intermediate grade classrooms. Student works 30 hours with supervision for each credit. Prerequisite: T40 or instructor's consent. Graded on an S/U basis only.

**T164—Aiding: Secondary Schools (1-2).** Instructionally related clinical/administrative and monitorial activities in the secondary classroom during semesters and summer. Student works 30 hours with supervision for each credit. Prerequisite: T40 or instructor's consent. Graded on ab S/U basis only.

**T250—Special Readings (1-3).** Directed study of literature and research reports in education. cor.

**T284—Physical Education Activities for the Elementary School (2).** Theory organization of programs, and activities in content areas; fundamental movement skills, rhythmics, self-testing activities, sport related skills and games. Prerequisite: junior and professional standing.

**T299—Student Teaching (cr.arr.).** Hours, credit must be arranged with director of student teaching. Must apply during February for following year. Prerequisites: T240 and special methods courses in area of specialization.

**T300—Problems (1-3).** Studies professional programs and issues in health or physical education. Prerequisite: instructor's consent.

**T303—Emergent Language in Early Childhood (3).** Study of language learning in young children; how meaning of the environment is gained through language; implications for teachers working with children from varying language-learning environments. Prerequisites: T301 or Educational & Counseling Psychology A205.

**T306—Assessment in Early Childhood Education (3).** Development 160 and Educational & Counseling Psychology A205. A study of formal and informal assessment instruments and procedures used to measure progress and determine developmentally appropriate curriculum for children in early childhood settings. Prerequisites: T301 or Child & Family Development.

**T309—Literature in the Elementary School (3).** Surveys the field of literature for children and adolescents, with emphasis on selected readings of various types of literature. Prerequisites: junior standing or instructor's consent.

**T310—Seminar in Curriculum & Instruction (1-3).**

**T313—Literature for Adolescents (1-3).** Selection and organization of materials for teaching literature to adolescents. Emphasizes literature written for adolescents and includes a unit on literature of American ethnic groups. Prerequisite: professional standing.

**T315—Teaching of Reading (3).** Materials, methods used in teaching reading in elementary grades. Prerequisites: Educational & Counseling Psychology A205, professional standing. cor.

**T316—Teaching Reading in the Content Areas (3).** For secondary school teachers. Specific ways teachers can help students improve reading skills in content areas and ways reading can be taught in reading classes. Prerequisite: Educational & Counseling Psychology A205. cor.

**T332—Organization of Public School Art (2).** Purposes, practices of art experiences in elementary and secondary schools. Designed for teachers, supervisors, administrators.

**T350—Social Studies in the Elementary School (3).** Problems in preparation, teaching of units with suitable materials, techniques. Prerequisites: Educational & Counseling Psychology A205, professional standing.

**T355—Administration and Supervision of Music Programs (3).** A study of the organization, management, and supervision of music programs. Prerequisite: instructor's consent.

**T356—Advanced Techniques in Music Teaching (2-5).** A review and evaluation of teaching/learning strategies in selected areas and levels of music instruction. Prerequisites: Music methods or instructor's consent.

**T366—Diagnosis & Remediation of Learning Problems in Mathematics (3).** The study of diagnostic and remedial instructional techniques for the teaching of mathematics. Emphasis is placed on alternative teaching methods and strategies. Prerequisite: T267.

**T367—Teaching Techniques and Curriculum in Elementary School Math (3).** The mathematics program in the elementary school from viewpoint of goals, content, techniques and evaluation.

**T379—Information Literacy in Teaching and Learning (3).** Discusses the nature, value, and power of information as product and process; organization, retrieval, and evaluation of information; explores the Internet and information superhighway; develops skills for resource based learning for classroom instruction; policy issues.

**T384—Health Education in the Elementary School (3).** Defines teacher's role in school health program; investigates health needs of school children; focuses on teaching strategies, health resources and development of elementary school health education curricula and materials.

**T385—Motor Development in Early Childhood (3).** Motor development of infants and children with emphasis on: study of interaction between biological and environmental factors affecting development, motor assessment techniques, and designing programs to enhance motor development. Prereq-

uisite: Educational and Counseling Psychology A205.

**T386—Education in Human Sexuality (3).** The biological, psychosocial and educational aspects of human sexuality with special emphasis on instructional activities related to interpersonal communication, decision-making ability and clarification of values, course is designed for both teachers and health-care personnel. Prerequisite: T85 or equivalent.

**T390—Drug Education (3).** The psychosocial, legal and pharmacological aspects of the recreational use of over-the-counter and street drugs are investigated with emphasis being placed on personal decision making, principles of school and community drug education, rehabilitation and community health services.

**T400—Problems (cr.arr.).**

**T401—Perspectives in Parent Education/Parent Involvement (3).** Consideration of the history and the influences of social, economic, political and educational changes leading to the development of parent involvement program components in the education of children in the primary grades.

**T402—Issues in Early Childhood Education and Curriculum Practices (3).** Focuses on historical and contemporary societal and educational issues affecting current curriculum decisions and practices in kindergarten and primary grades. Prerequisites: Classroom teaching experience or instructor's consent.

**T403—Advanced Early Childhood Curriculum (3).** Study of early childhood curriculum in contemporary educational settings along with selection of appropriate materials and development of instructional strategies for children, prekindergarten through early primary grades. Prerequisites: teaching experience or instructor's consent.

**T407—Whole Language Curriculum (3).** Whole Language Curriculum inquires into whole language theory, beliefs and practices. Students will explore and participate in classroom based inquiry projects, theme cycles, reflective practices, holistic assessment, and other learner-centered experiences such as literature study and writers workshop.

**T408—Teaching Reading Through Literature Response (3).** Teaching Reading Through Literature Response focuses on 1) reading as a personal and social process and 2) multiple responses to literature. Students will examine, use and critique; personalized reading, text sets (conceptually related materials), literature groups and other reading instruction experiences.

**T409—Literature for Children and Youth (3).** Systematic study of selected areas of particular importance to students of literature, teachers, librarians, supervisors, and school administrators. Prerequisites: T209 or instructor's consent.

**T410—Seminar in Curriculum and Instruction (1-3).**

**T415—Practicum in Child Study I (3-5).** Practicum experiences in diagnosing educational problems of school children. Prerequisites: T315 or T316, T318, Educational & Counseling Psychology A303.

**T416—Practicum in Child Study II (3-5).** Practicum experiences in applying remedial procedures to children with educational problems. Prerequisite: T415.

**T417—Practicum in Child Study Supervision (3-5).** Practicum experience in supervising and directing a clinic involved with educational evaluation. Prerequisites: T415 & T416.

**T418—Reading Miscue Analysis (3).** The process in which readers construct meaning by relating their sociopsycholinguistic backgrounds to discourse. 15 studied miscues (text deviations) are analyzed at several linguistic levels. A comprehension centered reading program is developed. Prerequisites: T315 or T316, or equivalent.

**T419—Analysis & Correction of Reading Disabilities (3).** Diagnostic and corrective procedures in reading instruction that may be used for clinical study. Prerequisites: T315 or instructor's consent.

**T420—Issues and Trends in Reading Instruction (3).** Provides intensive study of significant issues and current trends in reading on all instructional levels. Prerequisites: T315, T316 or equivalents or instructor's consent. cor.

**T421—Survey of Science Education (3).** Survey of development of science education and study of changes in methodology and philosophy. Prerequisite: undergraduate course in Science Methods.

**T422—Curricula in Science Education (3).** Advanced study of science education curricula with option for elementary or secondary emphasis. Study of exemplary science programs, curriculum models, curriculum design and construction, concomitant instructional methods and evaluation. Prerequisite: undergraduate course in Science Education.

**T423—Review of Research in Science Education (3).** Studies appropriate research methodologies and reviews research and selected readings in science education. Allows option for elementary or secondary emphasis for specific areas: life, physical or earth sciences. Prerequisite: undergraduate course in Science Education.

**T424—Trends and Issues in Science Education (3).** Provides intensive study of current trends and significant issues of science affecting both the elementary and secondary levels of science education. Prerequisite: undergraduate course in Science Education.

**T425—Advanced Teaching of Elementary Science (3).** A study of science curriculum and teaching in elementary school from viewpoint of research teaching strategies, evaluation, and developing trends. Prerequisites: teaching experience and science methods course.

**T426—Advanced Teaching of Secondary Science (3).** Studies secondary science curriculum and teaching from viewpoint of research strategies, teaching strategies, conceptional formats. Prerequisite: secondary science methods course.

**T430—Survey of Art Education (3).** Provides survey of the development of art education and problems in the field by means of a critical inquiry. Prerequisite: graduate standing.

**T431—Curriculum in Art Education (3).** Advanced study of art education curricula, with option for elementary or secondary emphasis. Study of exemplary art programs, standards of quality, curriculum models, curriculum design and construction, concomitant instructional methods and evaluation. Prerequisite: graduate standing.

**T432—Review of Research in Art Education (3).** Studies appropriate research methodologies and reviews research and selected readings in art education. Prerequisite: graduate standing.

**T440—The Elementary School Curriculum (3).** Studies elementary curriculum with regard to selection of objectives and content, and to provisions for curricular change.

**T443—Tests and Measurements for Elementary and Secondary Schools (3).** Educational tests, measurements from points of view of teachers, supervisors, administrators.

**T445—The Secondary School Curriculum (3).** For secondary school principals, teachers, superintendents. Presents trends in curricular change, methods of curricular investigation. cor.

**T446—Curriculum Construction for Secondary Schools (3).** Designed for those engaged in curriculum revision work and construction of new secondary school courses. Prerequisite: T445 or instructor's consent.

**T449—Managing Classrooms for Learning (3).** Theoretical assumptions, goals, and research that inform various approaches to classsroom management advocated for practitioners. Includes strategies for conducting action research on classroom management. Prerequisites: An educational psychology course or instructor's consent.

**T450—Patterns for Instruction in Social Studies (3).** Presents and evaluates strategies for planning, teaching, and evaluating social studies in elementary and secondary schools.

**T452—Secondary Social Studies Curriculum (3).** Examines current theory, trends and practices in secondary social studies curriculum with a practicum in curriculum development.

**T453—Elementary Social Studies Curriculum (3).** An in-depth study of objectives, goals, patterns and practices in elementary social studies curriculum. Focus will be upon instructional strategies and materials and current trends influencing curriculum development.



**T456—Foundations of Music Education (3).** A study of the history, philosophy and rationale of music education. Prerequisite: instructor's consent.

**T457—Curriculum Materials in Music Education (2-5).** A development of critical abilities in evaluation and selection of music education materials. Section 1: Elementary; Section 2: Secondary Vocal; Section 3: Instrumental. Prerequisite: instructor's consent.

**T458—Techniques in Instrumental Music Teaching (3).** A practical study of the organization and instruction of class teaching, with demonstrations by instructor and class. Prerequisite: instructor's consent.

**T467—Using Manipulative Materials in Teaching Mathematics III (3).** Mathematics laboratory is developed and integrated with experiences in setting. Emphasis on materials for primary and intermediate grades.

**T470—In-Service Course in Curriculum and Instruction (cr.arr.).** Course work adapted to current vocational needs. Prerequisite: instructor's consent.

**T480—Internship in Curriculum and Instruction (cr.arr.).** Provides internship experience under supervision in advanced levels of curriculum and instruction. Prerequisite: departmental chairman's consent.

**T484—Health Promotion and Wellness Education (3).** Design, development, implementation, and evaluation of comprehensive wellness programs. Enables health-related professionals to learn the fundamentals of organizing and administering wellness programs in corporate, hospital, college/university, school, and community settings. Prerequisite: instructor's consent.

**T485—Individual Research (1-3).** Independent research not leading to thesis. Prerequisites: consent required.

**T490—Research in Curriculum and Instruction (cr.arr.).** Graded on a S/U basis only.

**T495—Classroom Research (3).** Study of original classroom research and theories of instruction leading to plans for personal research and theory development. Prerequisites: T448 and advanced graduate standing.

**T496—Ethnographic Research in Education (3).** Investigate practical aspects, nature, and assumptions of ethnographic research in education. Pilot study required. Prerequisites: A354 or equivalent.

# East Asian Area Studies

## (INTERDEPARTMENTAL PROGRAM IN THE COLLEGE OF ARTS AND SCIENCE)

**DEGREE** AB degree in international studies

East Asian Area Studies offer an emphasis area for the AB degree in International Studies, consisting of an integrated pattern of courses that treats the geography, history, culture, politics, religions, and languages of China, Japan, Korea, and other Asian countries. Faculty teaching support courses are drawn from several different departments and disciplines.

Since several required courses have prerequisites, students are encouraged to begin their program as early as possible. Enrollment in Chinese, Japanese or Korean language courses should commence no later than the sophomore year.

Students are urged to fulfill some requirements in an approved study abroad program if at all possible.

A Minor in East Asian Studies also is avail-

able. Students select 15 units of work from at least two departments in consultation with a member of the East Asian Studies Committee or the Director of the Office of Special Degree programs. At least six hours must be at the 200 level or above.

Student advisement is provided by the Office of Special Degree Programs, 19 Parker Hall.

# Economics

**College of Arts and Science**
**118 Professional Building (573) 882-4574**
**CHAIR** M. Podgursky
**PROFESSORS** C. Menezes, M. Podgursky, R. Ratti, R. Wallace
**ASSOCIATE PROFESSORS** C. Geiss, J. Haslag, D. Mandy, P. Mueser, X. (Shawn) Ni, N. Raymon, K. Troske, X. Wang
**ASSISTANT PROFESSORS** T. Gao, M. Jensen, V. Pham
**PROFESSORS EMERITUS** F. Harmston, W. Hicks, W . Johnson, M. Lee, D. Loschky, D. Schilling, P. Smith

**DEGREES** AB, BS, BSBA, MA, PhD in economics

A basic understanding of economics develops insight into the many issues facing our contemporary society. Think about the topics in today's headlines: corporate downsizing, environmental pollution, urban decay, poverty, international trade, health care, educational reform, politics, sports deals—all are driven partly by economics. The Department's global view of economics, with its emphasis on applied problems, is a broad education in itself and a door opener for graduates. An economics major prepares students for careers in business and government and for graduate work in areas such as economics, business and law.

In addition to the AB and the BS degree in the College of Arts and Science, the Economics Department offers the BS BA degree in the College of Business and Public Administration. Details of the BS BA degree can be found under Business Administration in this catalog.

Before an area of concentration in economics will be approved, students in the College of Arts and Science must have an overall grade point average of 2.5 after 30 semester credit hours, or a grade point average in economics of 2.67 after at least eight credit hours of courses in economics.

The departmental honors program is open to all students eligible for honors courses. Participating students enroll in Econ 299, the honors proseminar (capstone course) during the senior year. Interested students should contact the Director of Undergraduate Studies.

Students interested in pursuing a major in economics in addition to another major and students interested in the five-year program for obtaining bachelor's and master's degrees in economics should contact the Director of Undergraduate Studies in Economics for advising. Special arrangements are in place for students with dual majors in economics and mathematics and economics and accounting. Careful choices of electives in addition to required courses can facilitate a dual major in economics and finance, for example. By planning their courses carefully, economics majors can earn a bachelor's and a master's degree in five years.

## REQUIREMENTS FOR THE AB DEGREE

A. Completion of the following economics core courses with a grade of C or above:
Econ 51: General Economics (5), or 5: Principles of Macroeconomics and either 4: Principles of Microeconomics or 14: Fundamentals of Microeconomics (6)
Econ 229: Money and Banking (3)
Econ 351: Intermediate Price Theory (3)
Econ 353: Intermediate Income Analysis (3)
Econ 398: Senior Seminar in Economics (capstone course) (3)
B. Completion of at least two of the following economics courses (at least one of which must be at the 300-level) selected in consultation with the student's adviser and completed with a grade of C or above:
Econ 201: Topics
Econ 224: Introduction to International Economics (3)
Econ 256: Economics of Public Policy: Antitrust (3)
Econ 261: Economic Transformation in Eastern Europe and the Former Soviet Union (3)
Econ 299: Economics Proseminar (3)
Econ 300: Problems (cr. arr.)
Econ 301: Topics in Economics (1-5)
Econ 311: Employment and Wages (3)
Econ 312: Special Topics in Labor Markets (3)
Econ 315: Public Economics (3)
Econ 316: State and Local Finance (3)
Econ 320: Economic Doctrines (3)
Econ 322: Economics of Regulation (3)
Econ 325: The International Monetary System (3)
Econ 326: Economics of International Trade (3)
Econ 329: Banking and Money Markets (3)
Econ 340: Economic Theory of Games (3)
Econ 345: Economics of Education (3)
Econ 335: Economics for Decision-Making (3)
Econ 355: Structure of Industry (3)
Econ 360: Economic Development
Econ 361: Comparative Economic Systems (3)
Econ 362: Welfare Economics (3)
Econ 368: Macroeconomic Forecasting (3)
Econ 370: Introduction to Quantitative Economics (4)
Econ 371: Applied Econometrics (3)
Econ 384: Structural Change in Economic History (3)
Econ 398: Senior Seminar in Economics (3)
Econ 399: Independent Study (cr. arr.)
C. Completion of at least eight hours, including two upperclass courses, in a related subject approved by the adviser or completion of a minor in another department in the College of Arts and Science.
D. Completion of the following courses with a grade of C or better:
Stat 150: Introduction to Probability and Statistics I (3) and Econ 271: Introduction to Econometric Practice (3) or Econ 371: Applied Econometrics (3).
Students wishing to minor in economics must take a minimum of 18 hours of course work in economics. Courses must include Econ 4 (or 14) and 5 (or 51GH instead of the previous two courses), 229, and 251 or 351 plus two economics electives including at least one at the 300 level. Students who take both Econ 251 and 351 will receive credit for only one of these courses.

## REQUIREMENTS FOR THE BS DEGREE

The BS degree is designed for students who plan to attend graduate school in economics.
A. The courses listed in Section A, above, are required, in addition to Econ 370: Math for Economists and Econ 371: Applied Econometrics. Each course must be completed with a grade of C or above.
B. At least two of the courses listed in Section B, above, are required, excluding 398, 370 and 371. Courses should be selected in consultation with the student's adviser and must be completed with a grade of C or above.
C. The student is required to write a senior paper and takes Econ 398 for this purpose. The paper must be completed with a grade of C or above.
D. The following courses are required, for a total of 28 hours:
Math 80: Analytic Geometry and Calculus I (5)
Math 175: Calculus II (5)
Math 201: Calculus III (3)
Math 231: Elementary Matrix Theory (3) or Math 331: Matrix Theory (3)
Stat 325: Introduction to Probability Theory (3) and Stat 326: Statistical Inference I (3); or Stat 320: Introduction to Mathematical Statistics (3) and Stat 385: Regression and Correlation Analysis (3)
CECS 103: Algorithm Design and Programming I (3)
One of the following courses: Math 301: Topics (3), Stat 307: Nonparametric Statistical Methods (3), Stat 395: Analysis of Variance (3) or CECS 203: Algorith Design and Programming II (3).
E. This program presumes that the student will fulfill all of the Basic Skills and General Education Requirements for the BS degree in the College of Arts and Science. One laboratory course is required to fulfill the general education requirement. If the laboratory course is not taken in the behavioral sciences, 13 hours will be required in behavioral sciences and humanities and fine arts courses. At least two courses must be numbered 100 or above.
F. The student may elect to fulfill a special emphasis area instead of taking a foreign language. This area consists of at least 12 hours of courses numbered 100 or above that are not from the parent department, are not normally required of all departmental majors and do not appear elsewhere in the area of concentration. This program is planned by the student's adviser and must be approved by the director of undergraduate studies.
**See Business Administration for BSBA requirements.**

## COURSES

**4—Principles of Microeconomics (3).** Survey of microeconomic principles and their application to contemporary economic issues. Not open to students who have completed 14, 51, 2, 232 or 332. cor.

**5—Principles of Macroeconomics (3).** Survey of macroeconomic principles and their application to contemporary economic issues. Not open to students who have completed 51 or 233. Prerequisites: 4. cor.

**11—Environmental Economics (3).** Deals with the interaction of people with the world around them. Emphasis on the impact of one's actions on others, external to the transaction. A diverse set of problems is considered, ranging from urban congestion to global warming.

**14—Fundamentals of Microeconomics (3).** Elementary analysis of the price system and the allocation of economic resources. Not open to students who have completed 4, 51, 232 or 332. Prerequisite: Prior completion of Math 10 or equivalent with grade of C or better.

**51—General Economics (5).** Introduces economics; emphasizes certain fundamental principles, and their application to questions of policy.

**101—Undergraduate Topics in Economics (1-3).** Orga-

nized study of selected topics. Subjects and credits may vary from semester to semester. Prerequisites: departmental consent for repetition.

**201—Topics in Economics (cr.arr.).** Organized study of selected topics. Subjects and credit may vary from semester to semester. Prerequisites: economics courses, and number of credit hours may vary with topic.

**204—Principles of Economics for Teachers (3).** Covers mostly micro concepts, but includes some macro. Course includes demonstration lessons on how to teach economics K-12. (Limited to Education majors).

**224—Introduction to International Economics (3).** A topical course which emphasizes the application of basic economic analysis to real and current international economic issues. Topics include free trade, protectionism, free trade areas, multilateral trade negotiations, trade and development, exchange rates, the International Monetary System, and economic integration. Prerequisite: 4 or 14 or 51.

**229—Money and Banking (3).** Operation of the U. S. financial and economic system. Covers interest rates, banking regulation, the money supply process and the conduct of the Federal Reserve, inflation and the macroeconomy, exchange rates and the international financial system, rational expectations, and efficient markets. Prerequisites: 1 or 5, and 4 or 14, or 51. cor.

**251—Theory of the Firm (3).** Introduces price theory and the economics of the firm. No credit for students who have completed 351. Prerequisites: 5, and 4 or 14, or 51.

**256—Economics of Public Policy: Antitrust Economics (3).** Competition and monopoly and their roles in the American economy. Prerequisites: 5, and 4 or 14, or 51.

**261—Economic Transformation in Eastern Europe & Former Soviet Union (3).** An analysis of economic stabilization, liberalization and structural transformation in the transition from centralized planning toward a market economy. Prerequisites: 4, 14 or 51 or instructor's consent.

**271—Introduction to Applied Econometric Practice (3).** Introduction to the use of regression analysis of economic data, including simple and multiple regression, dummy variables. Econometric problems considered include heteroscedasticity, autocorrelation, multicollinearity and simultaneous equation issues. Prerequisites: Economics 5, and 4 or 14, or 51 and Statistics 150.

**299—Honors Proseminar (2-3).** Research for graduation with Honors in economics.

**300—Problems (cr.arr.).** Credit arranged by instructor.

**301—Topics in Economics (1-5).** Study in applied or theoretical economics. May be repeated for credit to a maximum of 5 hours. Prerequisite: instructor's consent.

**311—Labor Market, Employment and Wages (3).** Surveys theoretical explanations of wage and employment determination in contemporary labor markets. Prerequisite: 251 or 351.

**312—Special Topics in Labor Market Analysis (3).** Topics illustrate the economics of labor market institutions, including union formation, discriminatory labor market behavior and the structure of compensation. Prerequisite: 251 or 351 or instructor's consent.

**315—Public Economics (3).** Analyzes economic effects of government expenditures, taxes and debt. Expenditure and taxation principles, tax reform, cost-benefit analysis, fiscal policy. Prerequisite: 251 or 351.

**316—State and Local Finance (3).** State and local tax and expenditure problems, intergovernmental fiscal relations, problems of metropolitan areas. Prerequisites: 251 or 351 or instructor's consent.

**320—Introduction to Economic Doctrines (3).** Origins of modern economic thought in the context of social and intellectual environment of the time in which they originated, their contribution to their period and to modern thought. Prerequisites: 5, and 4 or 14, or 51.

**322—Economics of Regulation (3).** Economic issues concerning the role of government regulation. The course examines the rationale for and effects of regulatory policies in public utilities, transportation, and communications industries. Prerequisite: 351 or 251.

**325—The International Monetary System (3).** Study of macroeconomic and monetary relationships between the US and the world. Topics include balance of payments, foreign exchange rates, history of the international monetary system. Prerequisite: 229.

**326—Economics of International Trade (3).** The microeconomic theory of international trade. Topics include comparative advantage, the theory of commercial policy, economic integration, trade with LDC's and the trade effects of economic growth. Prerequisite: 351 or instructor's consent.

**329—The Banking System and the Money Market (3).** Organization of the money market; credit control procedures and aims, effect of bank expansion and contraction on money market and national income deregulation. Prerequisite: 229.

**332—Microeconomics for Managers (3).** Microeconomic concepts presented at the intermediate level, graphic treatment with limited calculus, managerial issues presented at the MBA level. Prerequisites: 4, or 14, Math 60. +/- grading systems. (Not open to economics majors) must have a consent card for MBA program.

**337—Economics of Speculative Markets (3).** Considers the economic purpose of speculative markets and derives their price formation mechanisms. A historical approach is used to develop the problems involved in predicting prices and to evaluate the tools that have been used in attempting prediction. Prerequisite: 5, and 4 or 14, or 51 and a calculus course or instructor's consent.

**340—Economic Theory of Games (3).** An introduction to the theory of games, viewed as a set of tools used widely in economics to study situations in which decision-makers (consumers, firms, governments, etc.) interact. The course introduces the basic theory, emphasizing the concepts and their economic applications. Prerequisite: 251 or 351 or instructor's consent.

**345—Economics of Education (3).** Economic theory is used to analyze the market for educational sevices and education policy. Topics include: human capital theory, cost and performance measures for public and private schools, market based approaches to school reform, school finance, higher education cost and access. Prerequisite: Economics 4 or 14 or 51, and 271 (or one course in Statistics and regression analysis).

**351—Intermediate Price Theory (3).** Theory of rational behavior in consumption, production, and pricing decisions of households and firms. Partial equilibria in product and factor markets under competition, monopoly, oligopoly and monopolistic competition. A brief introduction to general equilibrium and welfare economics is provided. Calculus is employed. No credit for students who have completed 251. Prerequisites: 5, and 4 or 15, or 51, and Math 61 or 80 or 108.

**353—Intermediate Income Analysis (3).** National income concepts; national income accounting; theory of income determination. Prerequisite: 229.

**355—The Structure of Industry (3).** Analyzes the structure of industry; its impact on the operations of the firm; and its significance for public policy. Prerequisites: 251 or 351.

**360—Economic Development (3).** (same as Peace Studies 360). The study of less-developed countries including problems of measuring economic growth, analysis of sources of economic growth, causes of changes in economic and structure, development and trade policies. The consequences of goals and assumptions for development policy are analyzed. Prerequisite: 229, and 251 or 351.

**361—Comparative Economic Systems (3).** Study of capitalism, market socialism, and central planning. Prerequisites: 229, 251, or 351.

**362—Welfare Economics (3).** Role of value judgments; meaning and measurement of economic welfare; interpersonal comparisons; cardinal and ordinal utility; Pareto optimality, conflicts of interest and distribution of income; individual values and social choice. Prerequisite: 351.

**368—Macroeconomic Forecasting (3).** Theory and practice of forecasting macroeconomic variables. Emphasis on acquiring skills in data analysis, basic SAS programming, single equation regression and time-series analysis, and the mathematical principles of forecasting. Prerequisite: Statistics 150 (suggested: 229)

# Economics

**370—Introduction to Quantitative Economics (3).** Introduction to the mathematical language of economic theory. Topics include multivariate calculus, introductory linear algebra, optimization, dynamic analysis, and stability. Prerequisite: Math 80 or equivelent, or instructor's consent.

**371—Applied Econometrics (3).** Study methods for quantitative analysis of economic data. Estimating techniques, tests of significance, prediction and forecasting reviewed with respect to problems presented by economic data and information demands of economic decision models. Prerequisites: 251 or 351, Statistics 150, and Math 61 or instructor's consent.

**384—Structural Change in Economic History (3).** Explores changes in the structure of the American economy from its earliest colonial beginnings. Structural change, an integral part of growth, is related to technical change, population growth and to the content and form of economic theory. Prerequisite: Econ 5, and 4 or 14, or 51 or instructor's consent.

**398—Senior Seminar in Economics (3).** (capstone course). Seminar for graduating seniors who are majoring in economics. Multiple writing assignments will emphasize synthesis of theoretical, empirical, and institutional economics. Not open to non-majors.

**399—Independent Study (cr.arr.).** Individual work, with conferences adjusted to needs of student. Prerequisite: instructor's consent.

**400—Problems (cr.arr.).** Graduate students may select topics for study and investigation subject to approval by supervising faculty.

**401—Topics in Economics (3).** Organized study of selected topics. Subjects and earnable credit may vary from semester to semester. Prerequisite: instructor's consent.

**402—Problems in Economic Education (1).** Seminar devoted to methods of increasing the effectiveness of the teacher of economics.

**405—Advanced Microeconomics Theory I (3).** The theory of rational behavior and partial equilibrium in markets. Topics include consumer behavior, theory of the firm, decision making under uncertainty, perfect competition, monopoly and monopsony, and imperfect competition. Prerequisite: graduate standing or instructor's consent.

**406—Advanced Microeconomics Theory II (3).** Survey of equilibrium theory and market failures in economics. Topics include the structure and modeling of games, and cooperative and non-cooperative equilibrium concepts. Prerequisite: Economics 405 or instructor's consent.

**411—Topics in Wage and Employment Theory (3).** Analysis of the determination of wages and employment and the relation of trade unionism to the economy. Prerequisite: 405.

**412—Workshop in Labor Economics (3).** Applications of contemporary analytical techniques to labor market topics chosen by the instructor. Prerequisites: 405.

**413—Research Workshop I (1-2).** Combines instruction, student presentations, and seminar participation to introduce research methods and practice. Substantial portions of a major research paper are required. May be repeated once for credit. Students may take 413 for two hours credit in one semester only with the approval of the Director of Graduate Studies. Prerequisite: 405 or instructor's consent.

**415—Advanced Public Economics I (3).** Tax incidence and optimal taxation in static economies and issues of taxation in dynamic economies. Prerequisite: 405.

**416—Advanced Public Economics II (3).** Macroeconomic issues of government finance. Theoretical and empirical analysis of Ricardian equivalence. Prerequisite: 405.

**423—Research Workshop II (1).** Research seminar for doctoral students. Requires presentation of original research and attendance at presentations by other students and faculty. May be repeated for credit. Prerequisites: two credit hours of 413 or consent of Director of Graduate Studies. Graded on a S/U basis only.

**425—International Finance (3).** International monetary theory and macroeconomic equilibrium in open economies. Prerequisites: 353 or equivalent; 371 or equivalent.

**426—International Trade (3).** Pure theory of international trade and commercial policy. Prerequisite: 405.

**430—Advanced Money and Banking (3).** The working and structure of institutional arrangements, welfare aspects of structural policies, operation of money and credit markets, and behavior of returns on assets. Prerequisites: 405 and 472.

**431—Central Banking Policies (3).** Examines central banking procedures, policies and the role they play in maintaining economic stability. Special attention to connection of Federal Reserve System with money and capital markets. Prerequisites: 405 and 472.

**452—Seminar in Microeconomics (3).** Seminar covering advanced topics in microeconomic theory, with particular coverage to be announced by the course instructor. Prerequisite: 406.

**453—Advanced Income Analysis (3).** Aggregate models of life-cycle microfoundations, of macroeconomic fluctions and growth. Prerequisite: 353 or equivalent; at least concurrent enrollment in 405.

**454—Seminar in Macroeconomics (3).** Analyzes topics in income analysis, including capital theory and economic dynamics. Prerequisite: 453.

**455—Monopoly and Competition (3).** A survey of the theoretical and empirical literature on the organization of industries. Includes study of monopolized markets, competitive markets, and strategic interaction among firms in imperfectly competitive markets. Both the rationale and practice of anti-trust policy are studied. Prerequisite: 405.

**456—Seminar in Public Utility Regulation (3).** The rationale for and policies towards regulated monopolies. Includes the theory of natural monopoly, Ramsey prices, contestable markets, and sustainability. The economics of regulation, deregulation, and reregulation will be discussed. Prerequisite: 405.

**460—Theory of Economic Development (3).** Theories of economic development critically examined. Sources and consequences of growth processes analyzed in context of economic theory and historical occurence. Prerequisites: 405 and 472.

**470—Dynamic Optimization (3).** Topics to be covered include calculus of variations, optimal control theory, dynamic programming in discrete time variables, and economic modeling. The Euler Equation, the Transversality Condition and the Bellman Equation will also be covered. Prerequisite: 370.

**471—Game Theory (3).** Presents core concepts in game theory and illustrates their uses with a range of applications. Prerequisite: 405 and 406.

**472—Econometric Methods I (3).** Familiarizes students with fundamental techniques found and used in applied economic researh. Topics include: ordinary least squares, generalized least square, instrumental variables, maximum likelihood estimation, and generalized methods of moments. Prerequisite: Statistics 320 or equivalent.

**473—Econometric Methods II (3).** Introduces students to econometric concepts and techniques at a theoretical level, and provides a bridge to understanding the econometric literature. Topics include: probability theory, convergence, simultaneous equations, nonlinear models, and nonparametric estimation. Prerequisite: 472.

**475—Empirical Microeconomics (3).** Introduction to advanced econometric techniques commonly used in applied microeconomic research. The topics covered will be panel data, instrumental variables estimation, limited dependent variables, truncated, censored and selected selected samples, and duration models. Prerequisite: 472.

**476—Applied Time Series Analysis (3).** Provides a student with econometric background in time series terminology and techniques to perform applied research in empirical macroeconomics, microeconomics and finance. Topic include: stationary and nonstationary models, ARCH, unit root tests, VAR, and cointegration. Prerequisite: 472.

**477—Advanced Time Series Analysis (3).** This course equips a student with the tools necessary to read and conduct publishable time series research. Topic include: spectral analysis, functional central limit theorem, unit root test, long memory, and wavelets. Prerequisite: 473.

**479—Advanced Seminar in Quantitative Economics (3).** Current topics in quantitative economics. May repeat for credit. Prerequisite: instructor's consent.

**480—Independent Readings for Ph.D. Comprehensive Examinations (1-6).**

**484—Selected Topics in Economic History (3).** Techniques of the new economic history are explored in the context of European economic development. Prerequisites: 405.

**490—Research (cr.arr.).** Thesis research for M.A. or Ph.D. degree. Graded on a S/U basis only.

# Educational and Counseling Psychology

**College of Education**
**16 Hill Hall (573) 882-7731**

**CHAIR** D. Kivlighan

**PROFESSORS** R. Cox, N. Gysbers, P. Heppner, J. Johnston, D. Kivlighan, J. Koller, S. Osterlind

**ASSOCIATE PROFESSORS** C. Frisby, G. Good, M. Heppner, C. Kardash, R. Lapan, L. Mintz, K. Multon, H. Neville, R. Short, A. Waigandt

**ASSISTANT PROFESSORS**
B. Mallinckrodt, R. McGuire, M. Mobley, R. Worthington

**RESEARCH ASSOCIATE PROFESSOR**
D. Roberts

**CLINICAL ASSOCIATE PROFESSORS**
D. Carr, R. Scholes

**DEGREES** MA, M Ed, Ed Sp and PhD in educational and counseling psychology

The Department of Educational and Counseling Psychology prepares graduate students for careers in human service professions. The PhD program in counseling psychology is fully accredited by the American Psychological Association (APA). The master's specialization in rehabilitation counseling is fully accredited by the Council on Rehabilitation Education (CORE).

Because the department has a controlled admission policy, interested graduate students should contact the departmental director of graduate studies at 16 Hill Hall to receive specific information about degree requirements.

## COURSES

**A101—Introduction to Psychology in Education (4).** This course is a survey of the study of human behavior as applied to educational settings from the perspective of educational counselors and other human service professionals. Topics include personality theories, the self, stress, coping, interpersonal communication and relationships, diversity issues, development, learning, sexuality, health and well-being, counseling and assessment.

**A170—Career Explorations (3).** Contribution of career development theory to choice of career and/or major. Exploration of personal and social determinants of career choice. Class consists of lecture, laboratory experiences, and use of facilities at the Career Planning and Placement Center. cor.

**A180—Introduction to Personal Awareness and Group Process (3).** Small group experiential learning experience designed to provide a catalyst for students to evaluate and clarify attitudes and values reflected in everyday behavior and lives which impact professional functioning. Prerequisite: A101 or instructor's consent.

**A185—Personal and Social Effectiveness (3).** Combination of didactic and experiential learning experiences designed to foster knowledge, skill, and awareness toward the development of personal and professional strategies for optimal human functioning. Prerequisties: A101 or instructor's consent

**A205—Learning and Instruction (2).** The nature of human learning processes with implications for instruction. Emphasis on bases of and readiness for learning, types of learning, memory forgetting and transfer, and related topics. Prerequisites: Psychology 1 or 2. cor.

**A207—Child Development (2).** The psychological, intellectual, social, and physical development of children. Prerequisites: Psychology 1 or 2. cor.

**A208—Adolescent Development (2).** The psychological, intellectual, social and physical development of adolescents. Prerequisite: Psychology 1 or 2.

**A225—African-American Psychology (3).** (same as Black Studies 225). The research, theories and paradigms developed to understand the attitudes, behaviors and psychosocial realities of African-Americans are discussed. Prerequisite: Psychology 1.

**A226—Black Feminism (3).** (same as Black Studies 226). This course outlines the basic principles and practices of Black feminism in the United States. Examiniation of the multiple systems of oppression on Black women's lives and Black women's collective actions against social structures will occur. Prerequisites: Psychology 1 or instructor's consent.

**A245—Psychological Perspectives in Sport (3).** Survey of sport psychology literature with focus upon such topics as personality, positive and negative affect, cognitive and behavioral intervention, motivation, aggression, audience effects, team cohesion, team building, leadership, exercise, and multicultural issues.

**A280—Educational Measurement (2).** Basic concepts of standardized testing, evaluation techniques, and interpretation of test scores for the improvement of the instructional process. Prerequisites: Psychology 1 or 2.

**A300—Problems (1-3).** Prerequisite: instructor's consent.

**A301—Foundations of Educational Psychology (3).** A survey course covering learning, development, and measurement. Prerequisites: Psychology 1 or 2.

**A310—Seminar (1-3).** Prerequisite: instructor's consent.

**A320—Foundations of Counseling Psychology (3).** Survey of contemporary theories underlying both individual and group practice in counseling. Introduction to professional and ethical issues in counseling psychology. Prerequisites: departmental consent.

**A321—Parent Counseling and Consultation (3).** For personnel working with parents in professional settings. Examines current family needs and child-rearing practices. Basic skills in diagnosis, counseling, consultation, parent education are developed. Prerequisite: A320.

**A322—School Guidance Programs (3).** Provides knowledge and skills in the development and management of school guidance programs including program planning, structuring, implementing, and evaluating. Prerequisite: A320.

**A323—Interviewing and Counseling (3).** Study of beginning interviewing and counseling skills applied to helping relationships in human services professions. Emphasis placed on learning helping skills in small group format. Lab required.

Prerequisites: Psychology 1, 2 or 20.

**A350—Readings (1-3).** Prerequisite: instructor's consent.

**A354—Introduction to Educational Statistics (3).** Introduces statistical techniques employed in education, including descriptive statistics, correlation, simple regression and hypothesis testing. cor.

**A361—Foundations of Rehabilitation (3).** The vocational and independent living rehabilitation system for disabled persons. Concept of disability, its social psychological implications, and techniques of preparing disabled persons for adult adjustment. Prerequisites: Psychology 1 or 2.

**A365—Alcohol Abuse and Rehabilitation I (3).** Covers historical perspective, definition and measurement of the problem, classifications and theories about the etiology of alcoholism. Prerequisites: A320 or A361 or instructor's consent.

**A372—Career Resources in Business and Industry (2-4).** Personnel practices, occupational requirements, and career opportunities and resources in business and industry. Applications are emphasized through on-site visits and use of business-industry-labor personnel. Prerequisites: A471 or instructor's consent. S/U graded only.

**A373—Theory and Practice in Career Psychology (3).** Methods and programs for facilitating the career development of individuals over the life span. Organization and development of activities and programs for all ages emphasized. Prerequisite: A471.

**A381—Measurement of Cognitive Abilities (3).** Analysis of the function of psychological testing and a critical examination of various achievement, aptitude, and intelligence assessment instruments. Prerequisite: A380.

**A390—Senior Seminar: Professional Issues in Human Services (3).** Advanced senior seminar, capstone course in human services. Project-based learning activities provided individualized focus and culmination of training. Prerequisites: senior standing and admission to Professional standing.

**A399—Human Services Practicum (1-6).** Supervised practice in a human services agency (approved by the College) focusing on the development and direct practice of human services professional skills. Prerequisites: senior standing; admission to Professional standing.

**A400—Problems (1-3).** Prerequisite: instructor's consent.

**A407—Advanced Child Development (3).** Psychological development from birth to adolescence. Examines the influence of maturation and learning upon the acquisition of normal development tasks. Emphasizes the application of current research and theory with the school-age child. Prerequisite: A301.

**A408—Advanced Adolescent Development (3).** Analysis of normal adolescent psychological development, including the cognitive, affective, academic, physiological, moral and social parameters. Applications with typical adolscent problems are emphasized. Prerequisite: A301.

**A409—Overview of Educational Research (3).** This course is a survey of educational research design and methods of data collection for Master's and Specialist's candidates. Doctoral candidates should take the required departmental inquiry course instead of A409. Prerequisite: A354 or equivalent.

**A410—Seminar (1-3).** Prerequisite: instructor's consent.

**A411—Advisor's Seminar (1).** Prerequisite: departmental consent.

**A413—Role and Function of the School Psychologist (3).** Introduction to major helping relationship approached in School Psychology, applied to various professional settings. History, current issues, trends, professional organizations, legal- ethical standards, discussed. Prerequisites: enrollment in E&CP School Psychology Program.

**A417—Advanced Human Learning (3).** A study of behavioral and cognitive theories of learning with an emphasis on those greatest utility for educators. Experimental evidence forming the theoretical base for educational practice is examined. Prerequisite: A205 or A301 recommended.

**A418—Applications of Human Learning Principles (3).** Examination and evaluation of contemporary research related to motivation learning strategies and instructional psychology. The emphasis is on relating current research to contemporary educational practice. Prerequisites: A417 or consent of instructor.

**A420—Counseling Methods and Practices (3).** Introduction to major theoretical orientations to the counseling process and techniques; laboratory experience in case conceptualization and counseling skills. Prerequisite: A320.

**A421—Counseling With Children (3).** Examines various therapeutic approaches for the amelioration of such childhood problems as depression, withdrawal, hysteria, phobias, aggression, and overdependence. Includes laboratory experiences. Prerequisite: A420.

**A422—Behavioral Therapy With Children (3).** Treatment of abnormal behavior through the utilization of behavioral approaches to therapy with children and adolescents. Design, implementation, and evaluation of individual and group procedures. Prerequisites: A418 and A420.

**A424—Marriage and Family Counseling (3).** Appropriate for students who work with couples and families in a professional setting. Examines major family and marriage theories and research, counseling, skill development communication, and marital/family enrichment. Prerequisite: A420.

**A425—Counseling Psychology Practicum (3-6).** Supervised practice of counseling in an approved counseling setting. Prerequisites: A420, A480, A371 and departmental consent. S/U graded only. May be repeated.

**A426—School Psychology Practicum (3-6).** Supervised practice of psychological assessment, intervention and remediation strategies. Prerequisites: A381, A421 or A422, A481 and departmental consent. S/U graded only. May be repeated.

**A427—Practicum in Marriage and Family Counseling (3-6).** Supervised practice in marriage and family counseling conducted in appropriate laboratories and agencies. Prerequisites: A425 or A426, and A423 or A424, and departmental consent. S/U graded only.

**A428—Studies in Supervision (3).** Instruction and practice in the supervision of counseling conducted in appropriate laboratories and agencies. Prerequisites: A425 or A426 and instructor's consent.

**A430—Advanced Counseling Theories (3).** Historical and contemporary theories of counseling. Advanced study of techniques, and research findings. Prerequisites: A425 or A426.

**A431—Biofeedback in Psychological Practice (3).** Use of biofeedback in achieving voluntary self-regulation and control of stress related behaviors. Prerequisites: A425 or A426 and instructor's consent.

**A432—Psychoanalytic Counseling (3).** A study of the contribution of classical and contemporary psychoanalysis to counseling theory, research and practice. Examination of theoretical and clinical material in a seminar format. Prerequisites: A425 or A426 and instructor's consent.

**A433—Psychological Consultation (3).** The psychological consultation process between the mental health professional and applied settings, including schools, agencies, and hospitals. Techniques, models, research roles, and responsibilities are discussed. Prerequisites: A425 or A426.

**A435—Ethical and Legal Issues in Psychological Practice (3).** Legal and ethical concepts and issues relevant to the practice of psychology and student personnel services. Prerequisites: A320 or instructor's consent.

**A436—Multicultural Issues in Counseling (3).** This course covers the research and theories of counseling racial/ethnic minorities and gays, lesbians, and bisexuals in the U.S. Examination of personal values and education about the interrelationship between race, class, gender, and sexuality are accomplished via structured activities. Prerequisite: A425 or A426.

**A437—Social and Cultural Identity Development (3).** Graduate-level course designed to introduce students to: (a) the dominant social and cultural identity theories and paradigms; (b) how these theories have been operationalized and measured.

# Educational and Counseling Psychology

**A438—Gender Issues in Counseling and Education (3).** Topics include conceptions of gender roles, measurement of gender-related constructs, gender role socialization process, high incidence gender-related problems, and psychoeducational and counseling interventions. Prerequisite: instructor's consent.

**A439—Multicultural Counseling Competencies (3).** Theory, research, assessment, and clinical practice in multicultural counseling.

**A440—Foundations of Student Development (3).** (same as Educational Leadership and Policy Analysis EL445). History, philosophy theory, and issues pertinent to student affairs work. Prerequisites: A320 or instructor's consent.

**A441—Design and Management of Student Development Programs (3).** (same as Educational Leadership and Policy Analysis EL446). Emphasis on program development and research methodology and application. Prerequisites: A440 or ELPA EL445.

**A442—Practicum in Student Development Programs (3).** Supervised practice in student personnel services in an approved agency. Prerequisites: A440 or Higher & Adult Education K462. S/U graded only.

**A443—Rehabilitation Counseling Internship (3-9).** Field-based counseling internship in a community setting serving individuals with disabilities. 600 hour supervised experience designed to combine theoretical and applied program training aspects. Prerequisites: A425, A463, and A486. Graded on S/U basis only. f,w,s.

**A445—Sport Psychology (3).** Current topics of research in sport psychology are examined. Topics include: sport personality, attention, activation and anxiety intervention, motivation, sport aggression, audience effects, team cohesion, leadership, and health psychology. Prerequisite: Psychology 1.

**A446—Sport in America (3).** Sociological perspectives of sport in America. Attention given to the influence of society on sport as in institution, and the role of sport as an agent of social change. Prerequisite: Sociology 1 or Psychology 1.

**A450—Research (3-6).** Supervised research for masters and specialist degree. Prerequisite: departmental consent.

**A451—Methods in Group Counseling (3).** Study of group counseling methods and techniques. Participation in a group is required. Prerequisite: A351.

**A452—Practicum and Theory in Group Counseling I (4).** Supervised practice of group facilitation in an approved setting. Formal study of contemporary theories and advanced techniques is integrated with the practice of group facilitation. S/U graded. Prerequisites: A451 and instructor's consent.

**A453—Practicum and Theory in Group Counseling II (4).** A continuation of A452. S/U graded. Prerequisites: A452 and instructors consent.

**A454—Quantitative Methods in Educational Research I (3).** Topics include simple linear regression, multiple regression, introduction to matrix algebra, partial and semipartial correlation, multiple regression for prediction, hierarchical modeling, polynomial regression, and regression analysis with categorical and continuous property independent variables. Prerequsiite: A354.

**A455—Quantitative Methods in Educational Research II (3).** This course focuses on analysis of variance (ANOVA) and includes the following topics: Simple analysis of variance with follow-up comparisons, factorial designs and follow-up comparisions, repeated measures design, analysis of convariance, nesting, multivariate analysis of variance (MANOVA), factorial MANOVA, and discriminant analysis.

Prerequisite: A454.

**A456—Qualitative Methods in Educational Research I (3).** An introductory course intended to provide a broad understanding of the foundations, purposes, and principles of qualitative research in education, as well as an introduction to a variety of qualitative research designs, data collection methods, and analysis strategies. Prerequisite: A354.

**A457—Qualitative Methods in Educational Research II (3).** The focus of each section of this course would be in-depth study of a specific method (e.g., case study, ethnographic, grounded theory) and various approaches (e.g., critical theory, dialogical). Students will be expected to undertake a substantive pilot study and prepare a qualitative text. Prerequisite: A456 Qualitative Methods I.

**A458—Educational Planning and Evaluation (3).** This course addresses major issues and models used in educational program planning and evaluation, including the appropriate use of various evaluation models and different types of data. Prerequisite: departmental inquiry course, A454 and/or A456.

**A461—Rehabilitation Counseling (3).** A study of the history and current status of rehabilitation counseling, and the role, theory, and practice of counseling in rehabilitation settings with persons with disabilities. Prerequisite: A361

**A462—Medical and Psychological Aspects of Disability (3).** Presentation of medical aspects of major disabilities and their effects upon social, vocational, personal, and economic adjustment. Study of basic restoration and accommodating services. Prerequisite: A361.

**A463—Vocational Placement of Persons with Disabilities (3).** Techniques of job development, placement, job analysis, transferable skill analysis, employer development. Prerequisite: A361.

**A464—Scientific Fdns of Counseling Psych I: Prof Iss & Crit Thinking (3).** For first-year doctoral students in an applied psychology. Includes study of research design and methodological issues in the field of counseling psychology.

**A465—Scientific Foundations of Counseling Psych II: Rsrch, Dsgn & Appl (3).** For first-year doctoral students in applied psychology. Includes study of research design and methodological issues in the field of counseling psychology. Prerequisite: A464 and Psychology 464.

**A466—Methods and Findings in Counseling Process and Outcome Research (3).** This course focuses on contemporary issues in the counseling psychology research literature and psychological writing. Prerequisites: A464/Psychology 464 and A465/Psychology 465.

**A468—Professional Iss. in Sch. Psych. I:Hist., Trends & Ethical Pract. (3).** For first-year doctoral students in school psychology. History, current issues, trends, professional organizations, legal-ethical standards of doctoral level school psychology are discussed. The scientist-practitioner model and scientific reasoning process as they apply to both science and practice are reviewed. Prerequisite: Must be admitted to school psychology program.

**A469—Professional Iss. in Sch. Psych. II: Rsrch. Design & Application (3).** For first-year doctoral students in school psychology. Includes study of research design and methodological issues in the field of school psychology. Prerequisite: Must be admitted to school psychology doctoral program.

**A470—Field Experience in Counseling (3-9).** Prerequisite: instructor's consent. S/U graded only.

**A471—Foundations of Career Psychology (3).** Theoretical orientations to counseling for career development; nature and structure of work, education, and leisure; work and family issues; career concerns of special populations; use of career information in counseling. Prerequisites: Psychology 1 or 2.

**A472—Career Develpment Theory for Women (3).** Consideration of the relevance of theories of career development for women, and their application to the counseling of women. Supervised clinical experience in the application of theories to counseling high school age women.

**A473—Analysis of Research in Career Psychology (3).** Examination of career development theories, the research supporting the theories, and the practical application of these ideas in career counseling and career programs. Prerequisite: A471.

**A478—Foundations of Educational and Psychological Measurement (3).** Basic principles of educational and psychological measurement including test construction, validity, reliability, item analysis, and derived scores. Prerequisites: Psychology 1 or 2 or beginning course in Statistics. Graduate standing required. cor.

**A480—Measurement of Interest and Personality (3).** Interprets educational, interest, and personality test data and data in personnel records; emphasizes use of data in counseling. Prerequisite: A380.

**A481—Individual Intelligence Testing (3).** Limited to students with a strong background in psychology and measurement. Practice in administering and scoring the Stanford Binet Scale and Weschsler's Intelligence Test. Major emphasis on psychological interpretation. Prerequisites: A380 and instructor's consent.

**A482—Psychological Assessment of Adults (3).** Students develop and practice skills in writing psychological reports with special emphasis on assessing psychological social-vocational functioning. Prerequisite: A481.

**A483—Psychological Assessment of Children (3).** Administration, scoring and interpretation of specialized individual tests including the cognitive and perceptual motor domains. The integration of diagnostic information into comprehensive psychological reports is emphasized. Prerequisite: A481.

**A484—Projective Assessment of Children (3).** Administration, scoring and interpretation of individual projective methods for the appraisal of children and adolescent personality. Emphasizes comprehensive psychological reports. Prerequisites: A480 or A481.

**A485—Projective Assessment of Adults (3).** Assessment of personality functioning using projective and inferential testing procedures. Rudimentary skills in using the Rorschach method. Prerequisites: A480 or A481.

**A486—Vocational Assessment of Persons with Disabilities (3).** Assessment of vocational interests, needs aptitudes, and abilities of disabled persons. Work samples, commercial systems, job analysis, job matching systems, and measures of work personality. Lab experience. Prerequisites: A361 and A380.

**A487—Introduction to Theory of Educational Measurement (3).** (same as Educational Research and Statistics R487). Classical and modern test theory, including IRT, gereralizability theory and test bias. Also covered are advanced strategies for investigating reliability and validity. Prerequisites: A380 or equivalent and A354 or equivalent and instructor's consent.

**A488—Application of Multivariate Analysis in Educational Research (3).** The focus of this course will be on applications of multivariate analysis in educational research. Prerequisites: A455 or equivalent and instructor's consent.

**A490—Research (cr.arr.).** Independent research leading to dissertation. Prerequisite: departmental consent. Graded on S/U basis only.

**A491—Internship in Counseling Psychology (1-6).** Supervised experience in counseling psychology on half- or full-time basis in approved internship station. Prerequisite: departmental consent. May be repeated. S/U graded only.

**A492—Internship in School Psychology (1-6).** Supervised practice in school psychology in an institutional or applied setting. Prerequisite: departmental consent. May be repeated. S/U graded only.

# Educational Leadership and Policy Analysis

**College of Education**
**202 Hill Hall (573) 882-8221**
**CHAIR** B. Jones
**PROFESSORS** R. Andrews, I. Cockriel, P. Hall, J. Reid, P. Short, B. Townsend, J. Valentine
**ASSOCIATE PROFESSORS** J. Caplow, K. Cockrell, J. Donaldson, S. Graham, B. Jones, G. Petersen, P. Placier
**ASSISTANT PROFESSORS** B. Bourne, M. Kim, G. Lopez, V. Rosser, J. Scribner, L. Warner, B. Zelenak
**CLINICAL ASSOCIATE** D. Cockrell

**DEGREES** MA, MEd, EdS, PhD, EdD

The Department of Educational Leadership and Policy Analysis (ELPA) is a multifaceted organization with programs focused in the areas of kindergarten through 12th-grade administration, higher and continuing education, and policy studies. Additional information can be obtained from the department or the graduate school catalog.

## COURSES

**EL100—Foundations of Education (1-3).** Focus on developing a theoretical and conceptual knowledge of leadership. In addition, skill building-exercises will take place through group case studies and role playing exercises allowing each student to identify and achieve methods for personal development. Only the Ambassadors section can be repeted up to eight times.

**EL300—Problems in Educational Leadership and Policy Analysis (cr.arr.).**

**EL360—Topics in Educational Leadership and Policy Analysis (cr.arr.).** Group study of topics in educational leadership, policy analysis, and higher and continuing education.

**EL400—Problems (cr.arr.).** Prerequisite: instructor's consent.

**EL401—Educational Leadership (3).** Critical examination of key leadership theories and their application to various educational contexts. Includes consideration of research methods and designs appropriate for the study of leadership and the spectrum of lenses through which educational leadership is studied.

**EL402—Educational Policy Analysis (3).** Course centers on developing multiple understandings of the education policy making process. Theoretical constructs used to advanced those understandings are eclectic in nature, drawing from the fields of political science, history, sociology and economics.

**EL403—Organizational Analysis (3).** Analysis of organizational characteristics and principles in educational organizations. Topics include: Organizational theories and models, organizational culture, communication, innovation, planning, leadership, power and influence, and external environment influences.

**EL404—Inquiry into Educational Leadership and Policy Analysis (3).** A critical overview of theory development, research paradigms, and research ethics in the department of Educational Leadership and Policy Analysis. Required for all ELPA Ph.D. students. Recommended for students who have completed at least 2 semesters of coursework.

**EL405—Seminar in Educational Leadership and Policy Analysis (cr.arr.).**

**EL406—Seminar in Educational Administration (cr.arr.).**

**EL407—Seminar in Educational Policy (cr.arr.).**

**EL408—Seminar in Higher and Continuing Education (cr.arr.).**

**EL409—Learning, Curriculum and Assessment for School Leaders (3).** Addresses assessment, learning and curriculum and the integration of the instructional and assessment processes. Topics include authentic assessment, curriculum alignment, cognition and learning, instructional approaches, and application of student learning theory to the curriculum.

**EL410—Learning Cultures (3).** Integrates the themes of building a common purpose to enhance school culture,

empowering teachers and students, and diversity. Topics include importance of shared mission and vision, the use of group processes and collaboration, the intricacies of school culture, and ethical and moral leadership.

**EL411—Professional Development for Learning (3).** Focuses on the professional development and reflection on practice. Topics include organizational actions and personal responsibility, life-long learning, and public education in a democratic society.

**EL412—School Improvement (3).** This course addresses the topics of organizational management and personal inquiry. It covers issues such as organizational effectiveness, organizing for an effective school environment, legal and fiscal decision-making and responsibilities of school leaders, creating an environment where stakeholders acquire and utilized data to inform decisions and practice, and where action research methods are utilized to evaluate and inform practice.

**EL413—Action Research Internship (3).** Students will be engaged in an action research project in a collaborative relationship with effective administrators in a local school district.

**EL414—Current Issues in Site-Level Leadership (3).** This course is designed to introduce students to the rigors of the principalship. Topics will include issues affecting beginning principals, school cultures, and the use of technology for communication and research.

**EL415—Leadership for Collaborative Cultures (3).** This course will instill an understanding of major components of purposeful, systemic change, interpersonal relationships, communciation and organizational management. The development of an appreciation of diversity, equity, and democracy for all students will be an ongoing theme of the course.

**EL416—Foundations of School Leadership (3).** School leader knowledge of student learning theory and related instructional practices is the focus of this course. The problem-based learning format will include topics on school culture, leadership communication, technology, and conflict resolution. Issues concerning professional relationships are also addressed.

**EL417—Site-Level Organization and Leadership (3).** Student will study state and national regulations that affect Missouri school policies. The student will develop a database on various legal issues. A study of middle level education will conclude with on-site evaluation of a local middle school.

**EL418—Supervision for Learning Environments (3).** Students are prepared to articulate, recognize, and support classroom practices that reflect the most current principles of learning. Effective instructional strategies that link this knowledge to practice will be entered into a computer database.

**EL419—Structures and Processes for Effective Schools (3).** Emphasis is placed on the Missouri Comprehensive Guidance Program and positive stragies for working with challenging students. A continuation of the study of state and national legal and policy issues will focus on special programs and services.

**EL420—Curriculum for Site-Level Leadership (3).** Student and program assessment are the primary topics for this course on curricular leadership. Class participants are engaged in the development of authentic experiences using technology to develop and apply the testing and assessment knowledge appropriate to school leaders.

**EL421—Action Research in School Leadership (3).** Datbases on legal and policy issues are completed and merged into a single database and placed on the specialist program web site. Site and classroom level action research is investigated, concluding with an assessment of local action research efforts in area schools.

**EL422—Advanced Problems of Leadership Practice (3).** This pre-internship course is a study of team building, program assessment, and site-based management. Addressing problems through a comprehensive school improvement approach with practicing principal will serve to prepare the students for internship experiences.

**EL423—Advanced Leadership for Learning Environments (3).** Students will demonstrate their understanding of instructional improvement for all teachers and students by designing and defending a comprehensive strategy for instructional changes in a simulated school. The on going study of learning principles and effective instructional practices will be concluded.

**EL424—The Superintendency (2-3).** This course covers the duties and responsibilities of the superintendent of schools and other district-wide administrators. Local, state, and federal regulations and administrative aspects of finance, school plant, staff personnel and pupil personnel including handicapped and multicultural students are studied.

**EL425—School Surveys and School Facilities Analysis (4).** This course provides information and field experience related to enrollment forecasting, school facility and site evaluation including special provisions for the handicapped. Aspects of school finance and elements of the school evaluation process are also covered. Includes one-hour credit for laboratory field experience.

**EL426—School Community Relations (3).** Principles of good school public relations, unique public functions of various school and community groups. Techniques for conducting school public relations.

**EL427—School Budget Development and Fiscal Management (3).** This course includes an overview of school finance programs of the 50 states, including special funds for exceptional children and compensatory education. Various aspects of planning, accounting, auditing, and reporting related to budget development and fiscal management are covered.

**EL428—Curriculum Leadership (3).** A study of research, theory, and skills necessary for curriculum leadership in educational organizations. Course includes generic curriculum management processes, design trends, controversial issues multi-media, innovative instructional techniques, and program evaluation. Prerequisite: graduate standing.

**EL429—Interpersonal Communication and Conflict Resolution (3).** Study of the research on and skills of interpersonal communication and conflict resolution related to the roles of school administrators at school, community, and district levels. Use is made of lecture, discussion and role playing.

**EL430—Issues in School Finance (2-3).** Exploration of the social, political, economic, and educational issues which influence the methods for providing financial resources for public schools at local, state, and federal levels. Includes consideration of funding needs of specific programs, such as special education. Open to all graduate students.

**EL431—Current Issues in School Administration (3).** Course is designed to acquaint students with current educational issues including those related services for the exceptional child, public and non-public, elementary, secondary and post-secondary, and the development of effective administrative responses to these issues.

**EL432—Analysis of Coaching and Teaching (3).** (same as Curriculum & Instruction T448). Teaching models and a systematic review of literature on instructional behavior and student achievement. Methodological strategies for conducting naturalistic classroom research stressed. For advanced master's and doctoral students. Prerequisite: graduate standing.

**EL433—School Staff Personnel Administration (3).** Principles and practices of modern school staff personnel administration as applied to human relations in educational institutions and programs. Affirmative action procedures, including the employment of minorities and the handicapped are studied.

**EL434—Investigation in School Law (3).** Provides opportunities to develop an in-depth knowledge of current issues in the statutory and case law related to educational institutions, their leaders, personnel and students. Special opportunities for developing legal skills. Prerequisites: instructor's consent.

**EL437—Topics in Educational Leadership and Policy Analysis (cr.arr.).**

**EL438—Introduction to Continuing Education (3).** Historical, philosophical, and conceptual foundations of the theory and practice of continuing education. Includes considersation of basic terminology, the nature of adult students, organizations offering continuing education experiences and credentials, political dynamics, and distance education.

**EL439—Institutional Advancement for Higher Education (3).** The study of basic elements of institutional advancement for higher education including an analysis and rationale for the development or advancement function.

**EL440—Race, Gender, and Ethnicity in Higher Education (3).** (same as Black Studies, and Women Studies 377). Historical relationships of race, gender, and ethnic issues in United States higher education. Issues include: theory and research of curriculum and teaching, diversity within the the academy, and leadership, governance, and policy.

**EL441—The Adult Learner (3).** The identification of learning, motivation and participation patterns among adults will be examined. Learning theories and adult development lifecycle and stage research data will be explored as well as their implications for practice.

**EL442—Curriculum Philosophy and Development in Higher Education (3).** A study of the philosophical foundations of postsecondary curricula, current trends and issues, and approaches to curriculum reforms and revisions.

**EL443—Instructional Strategies for Higher and Continuing Education (3).** An examination of the theoretical foundations and applications of information-processing, behavioral, social, and personal instructional strategies. Emphasis on implementing the strategies and improving instruction through the use of appropriate strategies. Prerequisite: K415.

**EL444—Program Planning in Higher and Continuing Education (3).** Analysis of program planning and evaluation in higher and continuing education. Topics include: conceptualizations of program planning, situational analysis, needs assessment, priority setting, marketing and promotion, and program evaluation.

**EL445—Foundations of Student Affairs Administration (3).** (same as Educational and Counseling Psychology A440.) History, philosophy, theory, and issues pertinent to student affairs work. Prerequisites: A320 or instructor's consent.

**EL446—Student Affairs Administration Methods and Programs (3).** (same as Educational and Counseling Psychology A441). Emphasis on program development and research methodology and application. Prerequisites: A440 or EL445.

**EL447—College Student Culture and Environment (3).** A study of the American College student and aspects of the college environment that impact students. Topics include student development, college outcomes, returning adult and computer students, and aspects of the college environment.

**EL448—College Teaching (2-3).** Primarily for students who expect to teach in junior or senior colleges. Principles and practical issues in college teaching are considered.

**EL449—History of Higher and Continuing Education in the United States (3).** A study of the transformation of the English college tradition to what higher education is currently in the United State. The emphasis in on how institutions of higher learning changed to meet the needs of the nation or failed to do so.

**EL450—Goverance and Culture of Higher and Continuing Education (5).** Principles of administration, academic culture and environment, and structures of goverance of higher and continuing education. A problem-based instructional strategy is employed.

**EL451—Budget and Finance in Higher and Continuing Education (3).** Fiscal planning and management in higher

and continuing education. Topics include budgeting, financial planning, fiscal management, state and federal policy influences, and fiscal management's relation to other administrative functions.

**EL452—Current Issues in Higher and Continuing Education (3).** This course provides an overview of American Higher education. Emphasis is placed on how these institutions currently operate and what issues dominate current discussions of academe.

**EL453—Continuing Education for the Professions (3).** Comparative study of eduction for the professions. Examination of professions as occupations, approaches and goals of preparatory and continuing education, professionals as adult learners and influence of intra-profession issues and societal exchange on education.

**EL454—Introduction to Post-Secondary Law (3).** Examination of the legal structure within which higher education operates. Includes consideration of legal analysis of case law, institutional responsibilities under the law, and analysis of legal issues within postsecondary education.

**EL455—The Community College (3).** An overview of the community college. Topics include historical roots and development of the community college, organization and governance, finance, students, faculty, adminstrators, curriculum, social role, and recurring and emerging issues. cor.

**EL458—Sociology of Education (3).** (same as Sociology 355). Contexts, structures and processes of schooling; effects on class, race, ethnicity and gender; social change, educational policy, and organizational dynamics; higher education and the economy. Prerequisite: Sociology 1 or equivalent.

**EL459—International Education and National Development (3).** Includes the study of comparative education from historical and theoretical perspectives; focuses upon issues related to educational planning, education and modernization, Third World development, adult illiteracy, dilemmas of foreign students, and selected case studies.

**EL460—Philosophic Theory in Education (3).** Examines major ideological movements in modern education; their social antecedents and philosophic underpinnings.

**EL461—Ethics in Education (3).** Explores the ethical dimensions of work within and related to eduational settings focusing on dilemmas that occur in professional practice, theories that inform thinking about ethical issues, and frameworks that guide ethical decision making.

**EL462—History of U.S. Education Policy (3).** Provides overview of major US education issues (primary K-12), explores analytic tools for studying history of education and introduces multiple ways of constructing the history of a particular movement reform or era in education.

**EL463—Issues in Education Policy: Missouri and the Nation (3).** Focuses on current national and state policy issues; provides students with a general background in public policy and the relationship between public policy and educational issues.

**EL464—Theory and Practice in Multicultural Education (3).** Designed to give educational professionals a better understanding of the theoretical foundations of multicultural education as well as current practices in this field.

**EL465—Policy Analysis Using Large Data Bases (3).** Intends to develop students' capacity to process national level large databases and to conduct policy-related research. The prerequisite is an understanding of inferential statistics and experience with SPSS and SAS program.

**EL470—Organizational Analysis for Educational Leadership (4).** Schools of organizational theory, six frames to analyze organizations and their underlying concepts, organizational change and leadership for change, and rationale for reframing organizations. Open only to students in Ed.D. program in Educational Leadership.

**EL471—Educational Leadership Inquiry I (2).** Introductory seminar on evaluating research using, APA Publication guidelines, writing scholary publications, and using computer technology for literature searches. Open only to students in Ed.D. Program in Educational Leadership.

**EL472—Educational Leadership Inquiry II (1).** MU Graduate School policies related to doctoral research, use of multiple search sources, human subjects review process, and research ethics. Open only to students in Ed.D. program in Educational Leadership.

**EL473—Educational Leadership Inquiry III (1).** Knowledge and skills in applying planning procedures for development and implementation of future dissertation research. Open only to students in Ed.D. Program in Educational Leadership.

**EL474—Professional Seminar I (3).** Focuses on diversity and ethics in educational leadership and educational organizations. Students learn about professional development, professional practice, and professional service. Open only to students in Ed.D. Program in Educational Leadership.

**EL475—Professional Seminar II (2).** Problem-based learning via the Internet to make decisions involving professional practice and problem solving. The UCEA Internet program, Information Environment for School Leader Preparation, is used. Open only to students in Ed.D. Program in Educational Leadership.

**EL476—Leadership Theory and Practice (3).** An advanced study of leadership theories, concepts, and inquiry as applied to educational organizations. Explores power and authority in organizations, leader effectiveness, and organzational reform. Open only to students in Ed.D. Program in Educational Leadership.

**EL477—Leadership Theory and Practice Application (1).** Focuses on building understanding of the conduct of leadership in organizations through application and extension of leadership theories in practice. Open only to students in Ed.D. Program in Educational Leadership.

**EL478—Policy Analysis for Educational Leadership (4).** Analysis and investigation of educational policy utilizing various knowledge bases; organizational politics and culture's impact on policy processes; interpretation and application of policy-making activities. Open only to students in Ed.D. Program in Ed. Leadership.

**EL479—Content and Context of Learning (3).** Students develop the knowlege and skills for examining designing, and implementing organizational, classroom, and training conditions that support quality learning experiences for learners. Open only to students in Ed.D. Program in Educational Leadership.

**EL480—Team Building and Group Dynamics (1).** Stages of group development, team building and maintenance, team/group structures, team performance, problem-based learning as team process, and empowerment through development of self-managed teams. Open only to students in Ed.D. Program in Educcational Leadership.

**EL481—Internship in Educational Leadership and Policy Analysis (cr.arr.).** Prerequisite: departmental consent.

**EL490—Research in Educational Leadership and Policy Analysis (cr.arr.).** Graded on a S/U basis only.

# Educational Research and Statistics

*See Educational and Counseling Psychology*

# Electrical Engineering

**College of Engineering**
**213 Engineering Building West (573) 882-2648**

**CHAIRMAN** L. Akers

**PROFESSORS** L. Akers, M. Devaney, J. Gahl, W. McFarland, J. Meese, W. Nunnally, B. Sherman, J. Thompson, K. Unklesbay

**ASSOCIATE PROFESSORS** G. M. Chaudry, C. Davis, M. Guizani, J. Knopp, R. Leavene, C. Lin, R. O'Connell

**ASSISTANT PROFESSORS** C. Beard, D. Chatterjee, C. Chen, R. Curry, G. Engel, K. Gillis, D. Ho, J. Legarsky, D. Skitek, H. Tang, C. Xiao

**PROFESSORS EMERITI** G. Adams, R. Carter, E. J. Charlson, C. Harbourt, R. Hoft, K.F. Lee, R. McLaren, C. Slivinsky, J. Tudor, R. Waid, D. Waidelich

**ASSOCIATE PROFESSORS EMERITI** H. Graham, E. Vredenburgh, Jr.

**DEGREES** BS EE with emphasis areas in communications, digital systems, discrete and integrated electronics, electromagnetics, energy systems and power electronics, networks and system control; MS and PhD in electrical engineering

**ELECTRICAL ENGINEERING** MU electrical engineering graduates are at the forefront of the technological growth leading to the dramatic increase in global communications; the accelerated use of electric power; the dominating influence of the computer on modern society; the increased use of electronic components and equipment for improved health care, transportation, recreation, agricultural production, marketing and manufacturing; and countless other activities. Two factors in particular, the continuing global energy problem and the rapid advances in microelectronics, ensure a constant demand for electrical engineering graduates now and in the future.

The objectives of the undergraduate program in electrical engineering at the University of Missouri-Columbia are to provide students with an excellent education in the fundamentals of electrical engineering, and to prepare them for beginning practice in both the traditional and emerging areas of this discipline. The degree program is organized into a flexible 126 credit-hour structure that provides high-quality education in the fundamentals of engineering, in addition to a thorough coverage of the major specialties within electrical engineering. In addition, a selection of technical electives is provided to allow concentration in depth in selected areas. Electives in humanities, social sciences, and communication techniques stimulate personal growth within the multidisciplinary environment of this campus.

The specific program objectives for the Department of Electrical Engineering are:

1. To provide students with the ability to identify, analyze, formulate solutions, and solve electrical engineering problems by applying fundamental knowledge of mathematics, science, and engineering. This includes the planning specification, design, implementation, and operation of systems, components, and/or processes that meet performance, cost, time, safety and quality requirements. Modern engineering techniques, skills, and tools will be used, particularly recognizing the role that computers play in engineering.
2. To provide students with the ability to design and conduct scientific and engineering experiments, and to analyze and interpret the resulting data.
3. To provide students with the ability to function and communicate effectively, both individually and within teams.
4. To provide students with a solid understanding of professional and ethical responsibility.
5. To provide students with the recognition of the need for, and ability to engage in, life-long learning.

6. To provide students with an academic environment that facilitates and encourages learning and retention.
7. To provide students with curricular choices that span the breadth of electrical engineering. The Department will support a wide range of technical specialties, including recent developments in the field.
8. To provide students with an environment that will encourage cultural diversity within the ranks of the profession by working to include minority and women students.
9. To continually assess the effectiveness of our program goals.

Engineering design in the electrical engineering program is distributed and coordinated with an integrated laboratory structure. Beginning with the first laboratory course, EE 154: **Experimental Electrical Engineering I,** which occurs in the fourth semester, students have a significant design and laboratory experience each semester of their program. In the fifth semester, they take EE 226: **Logic Design,** and EE 286: **Electronic Circuits and Signals I.** Each of these classes has a major design and dedicated laboratory component. In the sixth semester, the students take EE 296: **Electrical Engineering Projects Laboratory,** along with systems courses that have a design component.

In the seventh and eighth semesters, students will complete the two-semester sequence EE 398 and 399: **Senior Capstone Design I and II**. They will also be completing two senior technical electives and two senior EE lecture/laboratory courses. At least one of the senior technical electives must be an EE course and thus will have a design component, while both lecture/laboratory courses have significant design content as well as dedicated laboratory components.

To graduate, a student must earn a 2.0 grade point average or better in all courses that have an MU engineering prefix. All EE courses require a grade of C or better in EE prerequisites.

Students interested in interdisciplinary studies in such areas as medicine, law, business, computer systems, bioengineering or electronics, can choose from a variety of courses offered by the department and by other divisions on campus. The department emphasizes close interaction with industry. Industry engineers visit regularly, and industry-sponsored student projects are provided to give an extra dimension to the program to ensure an excellent electrical engineering education.

Many students combine their BS degree in electrical engineering with a BS degree in computer engineering in a special 140-hour program. Others use their electives to pursue interdisciplinary studies in business, law, medicine, bioengineering, information science or other areas.

**First Semester** 14 hours
Math 80: Analytic Geometry and Calculus I (5)
Chem 32: General Chemistry II (3)
CECS 103: Algorithm Design and Programming I (3)
Constitutional elective (3)
**Second Semester** 16 hours
Math 175: Calculus II (5)
Physics 175: University Physics I (5)
Engl 20: Exposition and Argumentation (3)
Comm 75: Introduction to Public Speaking or Engr 30: Engineering Graphics (3)
**Third Semester** 17 hours
Math 201: Calculus III (3)
Physics 176: University Physics II (5)
Engr 85, 99 or IE 258 (3)
Econ 4 or 5 or 14 or 51
Humanities-Social Sciences (3)
**Fourth Semester** 15 hours
Math 304: Differential Equations (3)
Engr 124: Circuit Theory I (3)
CECS 126: Intro to Digital Systems (3)
EE 154: Experimental Electrical Engr I (3)
Humanities-Social Sciences (3)
**Fifth Semester** 17 hours
EE 205: Circuit Theory II (3)
EE 225: Electromagnetic Fields (3)
EE 226: Logic Design (4)
EE 286: Electronic Circuits and Signals I (4)
Humanities-Social Sciences (3)
**Sixth Semester** 15 hours
EE 216: Linear Circuits and Systems (3)
EE 235: Physical Electronics (3)
EE 266: Power Engineering I (4)
Stat 320: Intro to Math Statistics (3)
EE 296: EE Projects Laboratory (2)
**Seventh Semester** 16 hours
EE 206: Feedback Theory (3)
EE 398: Senior Capstone Design I (3)
EE 3XX: Senior Lecture/Lab Course (4)
EE 3XX: Senior Elective Course (3)
Engr 85, 99 or IE 258 (3)
**Eighth Semester** 16 hours
EE 399: Senior Capstone Design II (2)
EE 3XX: Senior Lecture/Lab Course (4)
Career elective (3)
Free elective (4)
Humanities-Social Sciences (3)

## JOINT ELECTRICAL/COMPUTER ENGINEERING

**First Semester** 14 hours
Math 80: Analytical Geometry and Calculus I (5)
Chem 32: General Chemistry II (3)
CECS 103: Algorithm Design and Programming I (3)
Constitutional elective (3)
**Second Semester** 16 hours
Math 175: Calculus II (5)
Phys 175: University Physics I (5)
Engl 20: Exposition and Argumentation (3)
CECS 203: Algorithm Design and Programming II (3)
**Third Semester** 17 hours
Math 201: Calculus III (3)
Phys 176: University Physics II (5)
Engr 85, Engr 99, or IE 258 (3)
Econ 4 or 5 or 14 or 51 (3)
Math 226: Discrete Math (3)
**Fourth Semester** 15 hours
Math 304: Differential Equations (3)
Engr 124: Circuit Theory I (3)
EE 154: Experimental Electrical Engr I (3)
CECS 126: Intro to Digital Systems (3)
Comm 75: Intro to Public Speaking or Engr 30: Engineering Graphics (3)
**Fifth Semester** 17 hours
EE 205: Circuit Theory II (3)
EE 286: Electronic Circuits and Signals I (4)
EE 225: Electromagnetic Fields (3)
EE 226: Logic Design (4)
CECS 303: Design and Analysis of Algorithms I (3)
**Sixth Semester** 15 hours
EE 216: Linear Circuits and Systems (3)
Stat 320: Intro to Math Statistics (3)
EE 296: EE Projects Lab (2)
CECS 332: Software Engineering I (3)
EE 266: Power Engineering I (4)
**Seventh Semester** 16 hours
EE 206: Feedback Theory (3)
EE 235: Physical Electronics (3)

# Educational Research and Statistics
# Electrical Engineering

EE 398: Senior Capstone Design I (3)
EE 326: Microcomputer Architecture and Interfacing (4)
Humanities-Social Science (3)
**Eighth Semester** 17 hours
EE 399: Senior Capstone Design II (2)
EE 328: Design of Digital SubSystems (3)
Math 307: Numerical Analysis or Math 308: Numerical Linear Algebra or Math 331: Matrix Theory (3)
CECS 352: Operating Systems (3)
CECS 341: Theory of Automata I (3)
Humanities-Social Sciences (3)
**Ninth Semester** 13 hours
EE 3XX: Senior Lecture/Lab Course (4)
Engr 85, Engr 99, or IE 258 (3)
Humanities-Social Science (6)

## COURSES

**10—Introduction to Electrical Engineering (1).** Introduction to department, college and campus computing facilities and software; overview of areas encompassed by electrical engineering; small-team lab/projects. Lectures help sessions, and lab sessions. Prerequisite: freshman status.

**17—Experimental Course (cr.arr.).** For freshman-level students. Content and number of credit hours to be listed in Schedule of Courses.

**117—Experimental Course (cr.arr.).** For sophomore-level students. Content and number of credit hours to be listed in Schedule of Courses.

**126—Introduction to Digital Systems (3).** (same as Computer Engineering and Computer Science 126). Introduces microprocessor-based systems, computer organization, programming concepts, bus control, input-output transfers, subroutines, and interrrupts. Prerequisite: CECS 103.

**154—Experimental Electrical Engineering I (3).** Application of standard electronic test equipment to basic experimental tasks of measurement and characterization of electronic phenomena and devices. Prerequisites: Engineering 124 concurrently.

**205—Circuit Theory II (3).** Continuous and discrete systems analysis; discrete and continuous convolution techniques. Prerequisite: CECS 103, Engineering 124, and Mathematics 304.

**206—Feedback Theory (3).** Feedback system analysis. System modeling methods, performance specifications, construction, and use of root-locus, Bode plots, and Nyquist diagrams. Continuous and Discrete systems are treated in parallel. Prerequisites: 216

**216—Transform Analysis of Signals and Linear Systems (3).** Transform Analysis of Signals and Linear Systems. Laplace transforms, z-transforms, Fourier series and transforms. Prerequisite: EE 205.

**225—Electromagnetic Fields (3).** Elements of vector analysis, electrostatics, magnetostatics, and time-varying fields, plane waves. Prerequisites: Physics 176 and Mathematics 304 concurrently.

**226—Logic Design (4).** Digital electronics, chip level design, algorithmic state machines, microprocessor architecture and interfacing, and digital system design methodology. Lecture and lab. Prerequisites: Engineering 126.

**235—Semiconductors and Devices (3).** Crystal structure; quantum aspects of energy, radiation and matter; quantum mechanics and energy bands in solids; electronic and optical properties of semiconductors; p-n junctions and diodes; bipolar and field-effect transistors. Prerequisites: EE 225.

**266—Power Engineering I (4).** Real and reactive power in

single-phase and polyphase AC circuits; magnetic circuits; transformers; introduction to power transmission and distribution; introduction to electromechnical energy conversion; mechanically commutated DC machines; synchronous and asychronous AC machines. Lecture and lab. Prerequisite: Engineering 124 and EE 154 or equivalent.

**286—Electronic Circuits and Signals I (4).** Electron Devices, modeling and applications to basic electronic circuits, including RC amplifiers and power supplies. Prerequisite: EE 154 and Corequisite: EE 205.

**296—Electrical Engineering Projects Laboratory (2).** Open ended design projects which encourage innovative solutions to design and measurement problems. Students will complete projects from different areas. Special emphasis on written and oral presentation. Prerequisites: at least two of the following: EE 226, 266 and 286. Corerequisite: Statistics 320.

**300—Problems (2-4).** Analytical or experimental problems pertaining to electric circuits, machines, fields or electronics. Prerequisites: 12 hours Electrical & Computer Engineering credit or instructor's consent.

**301—Topics in Electrical Engineering (3).** Current and new technical developments in electrical engineering. Prerequisite: senior standing or equivalent.

**304—Digital Computer Applications in Engineering (3).** (same as Chemical Engineering 304, Mechanical and Aerospace Engineering 304).

**307—Introduction to Digital Signal Processing (4).** Concepts, analytical tools, design techniques used in computer processing of signals; signal representation, sampling, discrete-time systems analysis, recursive and non-recursive filters, design/implementation, discrete Fourier transform. Prerequisites: EE 154, 216 and CECS 126.

**309—Robotic Control And Intelligence (4).** Introduces robotics; robot system charactersitics; robot motive power systems; geometric structure of robots; sensors and feedback; control applications and algorithms; data acquisition and output actuation function; robots and AI; microprocessor applications. Lecture and Laboratory. Prerequisites: 206, 226 and 286 concurrently.

**310—Introduction to Bioengineering (3).** (same as Mechanical and Aerospace Engineering 310). Detailed look at selected biological systems and problems; emphasis on engineering aspects such as measurement, analysis synthesis and modeling. Prerequisites: senior standing

**312K—Microwave Systems (3).** Theory and applications of transmission systems with emphasis on transmission lines at low and high frequencies. Prerequisites: 202K.

**314K—Microwave Engineering (3).** Wave equation, plane wave propagation, transmission line theory, Smith Chart analysis, impedance transformers, waveguides modes, basic antenna theory, impedance matching and tuning, basic microstrip and stripline circuits. Prerequisite: 202K. On demand.

**315—Energy Systems and Resources (3).** (same as Mechanical & Aerospace Engineering 315 and Nuclear Engineering 315) Analysis of present energy usage in Missouri, USA and the world, evaluation of emerging energy technologies and trends for the future. Economics and environmental impact of the developed technologies. Prerequisite: Engineering 99 or equivalent.

**317—Multimedia Engineering and Technology (4).** (same as Computer Engineering and Computer Science 366). Survey of multimedia applications. Capture, coding, storage, transmission, and software tools for developing productions involving text, graphics, images, animation, sound and video. Term projects. Lecture and laboratory. Prerequisites: 226 and 216.

**326—Microcomputer Architecture and Interfacing (4).** (same as Computer Engineering & Computer Science 326). Advanced microprocessor architecture and programming; special interface devices, such as memory controllers, disk controller, I/0 processors, terminal controllers, communication interfaces, coprocessors. Prerequisite: 226.

**328—Design of Digital Subsystems (3).** (same as Computer Engineering & Computer Science 328). Design techniques including module definition, functional partitioning, hardware design language descriptions and microprogramming; design examples include arithmetic units, programmable controllers, and microprocessors. Prerequisites: 226.

**330—Electronic Circuits and Signals II (3).** Advanced study of electronic devices including frequency response of amplifiers, nonlinear effects in transistor amplifiers, oscillators, and feedback amplifiers. Prerequisites: EE 216 and 286.

**331—Physical Electronics (3).** Introduction to physical principles of semiconductors and semiconductor devices; gas, solid state, and semiconductors lasers; electro-optics; plasma physics and gaseous electronics; materials interaction with electric and magnetic fields. Prerequisite: EE 225.

**332—Introduction to Optical Electronics (3).** Principles, devices and materials used to generate, modulate, and detect optical radiation. Review of important properties of light and semiconductors. Light-emitting diodes and lasers. Electro-optic modulation. Thermal and quantum detection. Emphasis on semiconductor-based devices and application to fiber-optical communications. Prerequisite: 235.

**333—Semiconductor Device Theory (3).** Band theory, equilibrium and non-equilibrium semiconductor electronics, junction theory, p-n junction devices, bipolar and field effect transistors including SPICE simulation. Prerequisite: 235.

**334—Microelectronic Fabrication (4).** Basic silicon integrated circuit fabrication processes, basic techniques of wafer processing, economics of fabrication and resulting devices properties, interdependence of process flow and device design. Accompanying laboratory. Prerequisite: EE 235.

**336—Power Electronics I (4).** Power electronic device characteristics, important circuit and component concepts, loss mechanisms and thermal analysis, phase controlled rectifiers, dc-dc converters, and dc-ac inverters. Includes laboratory projects. Prerequisites: EE 235 and 286.

**337—Pulsed Power Engineering (3).** Concepts of energy generation and storage systems used in pulse power engineering, high power opening and closing switches, high voltage engineering, grounding and shielding, high voltage safety. Prerequisite: EE 225.

**340—Photonics (3).** Introduction to the physical principles and optical materials used in diagnostics, optical communications, semiconductor and solid state lasers, optical fiber transmissions, optical detectors, optical signal processing. Prerequisite: EE 225.

**345—Electromechanical Converstion I (4).** Theory and applications of electric machinery. Steady state and transient performance analysis of AC and DC electrical machines with emphasis on internal electromagnetic phenomena. Fundamentals of electronic speed controls. Prerequisite: EE 266.

**346—Introduction to Nuclear Reactor Engineering (3).** (same as Mechanical & Aerospace Engineering 346 and Nuclear Engineering 346). Engineering principles of nuclear power systems, primarily for the production of electrical energy. Prerequisites: Engineering 85, 99 or equivalent.

**356—Control Systems Laboratory (1).** Experiments in computer process control and industrial automation; automated process modeling; control algorithm design; control simulation; direct digital real-time control; transducers; computer interfacing; industrial control mechanisms; Programmable Logic Controllers. Prerequisites: EE 206, 226, 296.

**358—Automatic Control System Design (3).** Techniques for feedback system design and analysis; compensation using root locus and frequency-domain methods; state-variable design methods; techniques for nonlinear systems analysis and design; sample-data control systems. Prerequisite: EE 206.

**359—Computer Process Control (3).** Role of digital computer in process control; digital controller design; computer interfacing; transducers; programmable logic controllers; process modeling; introduction to robotics. Prerequisites: EE 206 and 226.

**361—Introduction to Power Systems (4).** Introduces concepts of equipment, regulation, trade terms and engineering economics applications to power systems. Prerequisites: 266.

**372—Communications Systems (3).** Concepts of communication systems, signal analysis and power spectrum density, signal transmission and filtering, linear modulation, exponential modulation, sampling, baseband digital communication, modulated digital communication, spread spectrum communitation. Prerequisties: EE 216.

**374K—Introduction to Wireless Communication System (3).** Principles of wireless communication analysis and design. Digital communication basics, cellular radio, wireless PCS communications, multiple access techniques, channel coding and equalization, and standards of digital cellular/PCS systems. Prerequisites: 274K; on demand.

**376—Distributed Transmission Systems (4).** Theory and application of transmission systems with emphasis on transmission lines for low and high frequencies. Lecture and laboratory. Prerequisites: 154 and 225.

**377—Antenna Theory and Design (3).** Introduction to antenna theory and design emphasizing engineering aspects of antenna systems, transmitting and receiving antenna parameters, various wire and aperture antennas, the role of parasitic elements, reflectors, and arrays. Prerequisites: EE 225.

**378—Microwave Principles (4).** Maxwell's Equations, transmission lines, plane wave progagation and reflection, waveguides, resonant cavities, microwave devices and components, radiation, radio wave propagation. Lecture and laboratory. Prerequisites: EE 225 and 286.

**379—Fundamentals of Acoustical Engineering (4).** Fundamental concepts of sound waves, sound production and radiation, electro-acoustic devices, sound control. Lecture and laboratory. Prerequisites: 225 and 255.

**382—Lasers and Their Applications (3).** (same as Mechanical and Aerospace Engineering 382, Nuclear Engineering 382). An introductory course in lasers. The course treats the subject from both a conceptual viewpoint and from the application of Maxwell's equations, to develop the optical theory for lasers. The course includes approximately 10 class- room hours of laboratory work with lasers. Prerequisites: Physics 176 and Math 304.

**388—Design and Simulation of VLSI Circuits (4).** Design of CMOS integrated circuits with emphasis on analog applications. Device models are developed for circuit simulation. Lecture and laboratory. Prerequisite: 334.

**398—Senior Capstone Design I (3).** (same as Computer Engineering and Computer Science 398). Group design projects. Design methodology, project management, development of specifications, examination of alternatives, preparation of proposal. Oral and written reports. Not for graduate credit. Prerequisites: EE 296, senior standing, concurrent enrollment in a design designated 300 level course.

**399—Senior Capstone Design II (2).** (same as Computer Engineering and Computer Science 399). Completion of ECE 398 design project. Design prototyping, testing, evaluation and preparation of documentation. Lectures on ethics, professionalism, safety, economic consideration. Oral and written reports. Not for graduate credit. Prerequisites: 398.

**400—Problems (2-5).** Supervised investigation of an electrical engineering problem for an MS project. Study culminates in a project report. Graded on a S/U basis only. Adviser's consent required.

**401—Advanced Topics in Electrical Engineering (3).**

**402—Power Electronics II (3).** Circuit concepts and analysis techniques for transistor switching regulators, thyristor choppers, transistor inverters, self-commutated thyristor investors and cycloconverters. Prerequisite: 336.

**403—Power Simiconductor Devices (3).** A study of the semiconductor devices used in switch-mode power converter circuits. Course surveys the field and discusses selected devices in depth. Prerequisites: ECE 235 or equivalent ECE 332 or 333 or equivalent.

**404—Supervised Study in Electrical Engineering (1-3).** Supervised individual study at the graduate level to be completed within the course of one semester in the form of a brief report. Prerequisite: instructor's consent.

**407—Advanced Digital Signal Processing (3).** Topics in digital signal analysis and filtering. Including hardware implementation, speech synthesis and recognition, multi-dimensional transforms, random-signal concepts, design methods and computer aids to analysis and design. Prerequisite: 307.

**408—State Variable Methods in Automatic Control (3).** (same as Chemical Engineering 408, Mechanical and Aerospace Engineering 408, Nuclear Engineering 408).

**410—Seminar (1).** Reviews of recent investigations, projects of major importance. Prerequisite: graduate standing.

**412—Power Electronic Drives (3).** Advanced study of DC and AC motor drives controlled by power electronic methods, including phase controlled rectifier, DC chopper, cycloconverter, variable frequency inverters. Prerequisites: 402 or instructor's consent. Recommended: 408, 411.

**413—Introduction to Fourier Optics (3).** Diffraction, lenses, and coherence treated in terms of systems and transform concepts with applications; two- and three-dimensional signals, Fourier and Hankel transforms, random signals, diffraction, and holography. Prerequisites: 372 or instructor's consent.

**428—Digital Hardware Systems Design (3).** (same as Computer Engineering and Computer Science 428). Characteristics and parameters of various hardware subsystems including main memory, auxiliary memory, arithmetic units, card equipment, etc., and principles of organization into efficient system. Prerequisite: 328.

**430—Power System Compensation and Control I (3).** Current research in selected aspects of electrical power systems, including reactive power compensation, stability, and control; power system simulation using commercial-grade packages. Prerequisite: 361 or equivalent.

**432—Numerical Analysis of Semiconductor Devices (3).** Basic equations of semiconductor device analysis, associated boundary conditions, and physical models; discretization schemes and numerical solution methods; application to one and two dimensional bipolar and field effect device structures in thermal equilibrium and under DC steady State and transient operating conditions. Prerequisites: 332 or 333 or their equivalent.

**440—Advanced Photonics (3).** Concetrated study of optical system design, including integrated optics, semiconductor lasers, quantum wells, optical materials, and electro-optical effects used in modern optical systems. Prerequisites: EE 340.

**441—Advanced Electromagnetics (3).** Advanced theoretical electromagnetic theory. Investigation of summation problems with general boundary conditions, time varying fields, and time harmonic currents. Basic applications and relationships in classical and relativistic physics. Prerequisites: EE 225.

**442—Advanced Integrated Circuits (3).** Fundamentals of advanced integrated circuit design; diffusion, ion implantation and epitaxy; MOS and bipolar techniques; survey of current LSI design, fabrication and testing.

**443—Solid State Theory I (3).** Principles of quantum and wave mechanics as applied to solid state; Boltzman and Fermi statistics; energy band theory of crystals; electrons, holes in semiconductors. Current flow in P-N junctions, semiconductor devices. Prerequisite: graduate standing.

**444—Solid State Theory II (3).** Fundamentals of crystallography; application of X-ray analysis to the study of crystallinity. Quantum mechanical solution for the wave function of an electron in a solid; concepts of reciprocal space. Prerequisites: 443 or Physics 415.

**447—Magnetogasdynamics (3).** Flow of electrically conducting fluids in the presence of applied electromagnetic field.

**450—Superconductivity and its Applications (3).** (same as Mechanical & Aerospace Engineering 450 and Nuclear Engineering 450). Phenomenology and theory of superconductivity, cryogenic practice, metallurgy of superconducting elements, alloys and compounds. Present and prospective applications.

**455—Biomedical Instrumentation (3).** Biomedical objectives, physical and engineering principles; optimal equipment design and actual performance of biomedical instrumentation; considers practical instrumentation problem solutions and unsolved problems. Prerequisites: 286 or Physics 305 or equivalent, and instructor's consent.

**460—Nueral Networks for Learning Control (3).** Neurocomputing techniques and structures for modeling, learning control, control stabilization, and optimization of performance over time. Prerequisites: at least on 300- or 400- level control course or instructor's consent.

**466—Multivariable Control System Design (3).** This course will cover techniques in multivariable control system design and analysis, including LOG H-2 design, H-oo design, LTR, robust performance, and selected adaptive and learning control techniques for nonlinear control. Prerequisites: EE 408 or acceptable equivalent.

**467—Optimal Control Theory (3).** Analysis and design of dynamic systems using optimal control theory: parameter optimization, dynamic optimization, computational methods, differential games. Prerequisite: 408.

**469—Digital and Sample-Data Systems (3).** Introduces sampling and quantization, design of digital and sample-data systems, digital filters, adaptive sampling and quantization. Prerequisites: 307, Mathematics 310 or instructor's consent.

**472—Advanced Communications Systems (3).** Advanced topics on the performance of communication systems, including probability and random processes, signal space representation, optimal receivers, matched filtering, cohere nt detection of signals in noise, probability of error, and bit rror rate. Prerequisites: EE 307 and EE 372.

**74—Artificial Intelligence (3).** Concepts, theories, and odels pertaining to neural nets, pattern recognition, learning systems, and programmed problem solving. Prerequisites: graduate standing and instructor's consent.

**77—Digital Signal Processing in Telecommunications 3).** Applications of digital signal processing in telecommunication systems; oversampling and quantizations, Delta-Sigma odulation, linear predictive speech coding, adaptive filtering, echo canceller, adaptive receivers and equalizers for ireless communication, digital cellular, CDMA. Prerequisites: EE 307 and EE 372.

**78—Coding Theory and Applications (3).** Basics of information theory and source coding, error control channel oding, linear codes, block codes, convolutional codes, trellis oding, Veterbi decoding, and applications. Prerequisites: E 372.

**80—High Frequency Transmission and Radiation (3).** kin effect; theory of transmission lines, wave guides, resonators.

**81—Antennas (3).** Point and aperture sources; simple ntennas; antenna array; data-processing antennas; and ther broadband and directive antennas.

**82—Probability & Stochastic Processing for Engineers 3).** Introduction to probability, multidimensional complex phaser) random variables and stochastic processes in electrical engineering. Prerequisites: 307, 372, or 413.

**90—Research (cr.arr.).** Independent investigation in a field f electrical engineering to be presented as thesis or dissertation. Graded on a S/U basis only. Prerequisite: adviser's onsent.

# Engineering

**(Interdepartmental Courses in the College of Engineering)**

## COURSES

**17—Experimental Course (cr.arr.).** For freshman-level students. Content and number of credit of hours to be listed in Schedule of Courses.

**30—Engineering Design Graphics (3).** Introduction to computer aided design and drafting, three- dimensional modeling and analysis. Topics include visualization methods, as well as standard techniques for communicating and presenting engineering design graphics information. Prerequisites: none.



**85—Statics and Elementary Strength of Materials (3).** Fundamentals of statics; static equilibrium and introduction to elements of mechanics of elastic materials. Prerequisites: Mathematics 80 and Physics 175 concurrently.

**99—Engineering Thermodynamics I (3).** Fluid properties, work and heat, first law, second law, entropy, applications to vapor and ideal gas processes. Prerequisites: Physics 175 and Mathematics 175.

**117—Experimental Course (cr.arr.).** For sophomore-level students. Content and number of credit hours to be listed in Schedule of Courses.

**124—Circuit Theory I (3).** DC circuit analysis, inductors and capacitors, first-order response, AC circuit analysis, AC power and three-phase, transformers. Prerequisite: Math 304 concurrent and Physics 176 concurrent.

**132—Probabilistic Models (3).** Introduction to logical and probabilistic description of constant-time and variable-time engineering systems. Prerequisite: Mathematics 201 concurrently and Engineering 5.

**195—Intermediate Strength of Materials (3).** Elements of mechanics of elastic materials. Prerequisite: 85.

# English

**College of Arts and Science**
**107 Tate Hall (573) 882-6421**

**CHAIR** M. Camargo

**PROFESSORS** R. Bender, M. Camargo, A. Devlin, J. Foley, C. Hudson-Weems, E. Lawless, T. Materer, L. McMahon, S. Morgan, C. Parke, G. Porter, T. Quirk, E. Ragland, S. Santos, M. Swick, G. Youmans

**ASSOCIATE PROFESSORS** S. Cairns, H. Hinkel, D. Hunt, G. LeSeur, T. Lewis, P. Okker, A. Prahlad, J. J. Williams

**ASSISTANT PROFESSORS** V. Carstens, J. Comas, M. Gordon, N. Heringman, A. Hoberek, W. Kerwin, M. Konkle, E. Lipton, K. Piper, D. Read, S. Sutherland, M. Townsend, N. West, J. R. Williams

**ADJUNCT ASSISTANT PROFESSORS** W. Dawson, E. Hocks, M. Patton

**PROFESSORS EMERITI** D. Anderson, J. Barth, T. Cooke, J. Crowley, L. Dickinson, H. Fulweiler, C. Hinnant, R. Hocks, W. Holtz, W. Horner, W. Jones, D. Lance, J. Roberts, G. Swan

**DEGREES** AB, MA, PhD in English

A major in English develops skills in reading, critical thinking, and writing. Our particular major includes emphases in literature, language, creative writing, and folklore/oral tradition.

A degree in English is not intended to provide specific vocational training but to give a broad, open-ended education that can lead to many different careers, especially those requiring excellent communication skills. Recent graduates have gone on to careers in teaching, publishing, television, film, advertising, public relations, insurance, and government. In addition, English is an excellent preparation for graduate or professional schools, such as law and business. More information about career opportunities for an English major is available at the Career Center

and from the Undergraduate Adviser.

**REQUIREMENTS**
English majors must complete 30 hours of course work in English, plus a minor (usually 15 hours) or related field (eight hours, including two upperclass courses). Of the 30 hours in the major, up to six hours may be in courses numbered 100-199; at least 24 hours must be in courses numbered above 199. The English courses must include the following:

UNIT I: Prerequisite (three hours)
Eng 205: Introduction to Literary Study

UNIT II: Literature (minimum of 18 hours)
At least three hours in each area:
A. Beginning to 1603
B. 1603 to 1789
C. 1789 to 1890
D. 1890 to the Present

UNIT III: Folklore/Oral Literature, Language, Rhetoric, Composition, Theory and Criticism (minimum of six hours)

UNIT IV: Capstone (three hours)
Eng 398: Capstone Experience

OPTIONS
The area of concentration in English offers optional emphases in language, creative writing, folklore, and Honors English. A special emphasis requires 33 hours of course work in English. The requirements in Units II and III above are reduced by three hours each and a student takes nine hours in one of the four emphasis areas:

1) The English language student takes three courses in the English language, choosing from Eng 340: Structure of American English; Eng 341: History of the English Language; Eng 342: Regional and Social Dialects; and Eng 343: Teaching English as a Second Language.

2) The creative writing student takes three courses in creative writing, either in fiction (English 50, English 150, and English 302) or in poetry (English 70, English 170, and English 313). English 150 or 170 counts as three of the six-hour allowance of courses numbered 100-199.

3) The folklore student takes three courses in Folklore and Oral Tradition, choosing from English 185, Introduction to Folklore (or English 187, Introduction to Oral Literature); English 285, American Folklore; English 385, Special Themes in Folklore; English 386, Women's Folklore; and English 387, Oral Tradition. The folklore student also takes a minimum of three courses in associated fields outside the English Department (such as anthropology, linguistics, art history or classics); these courses can be used as Related Field credit or to fulfill general requirements in the College of Arts and Science.

4) Students who maintain a minimum grade point average of 3.3 are eligible for the departmental honors program. These students take English 296, Theory and Criticism; English 297, Literary Periods and Traditions; and Honors Senior Essay, English 290. Further information is available from the English Honors Director.

No more than 40 hours of English courses may be counted toward graduation. The required hours of English composition are excluded from this maximum and must be taken before the student enrolls in any upperclass literature courses.

**THE ENGLISH MINOR** The English minor consists of 15 hours of course work beyond the required composition course. It must include at least six hours in courses numbered 200 or above and may include no more than six hours in special problems, methods or readings courses such as English 250 and 350. The English Department conceives of the minor as a flexible and varied program that can be tailored to individual students' needs. Students wishing to minor in English should consult with the English Department's Undergraduate Adviser.

**THE ENGLISH WRITING MINOR** The Writing Minor is a 15-hour course of study designed to help students in all majors and colleges improve their writing and critical thinking skills. It requires writing courses specified by the department, including six hours in courses numbered 200 or above. Consult with the English Department Undergraduate Adviser for specific requirements.

**COURSES**
**5—Reading Literature (3).** Introduces the student to the values, rigors, and pleasures of reading literature. Intended for first-year, non-English majors.
**15—Introduction to World Literatures (3).** Presents and puts into context works by writers from different nations or ethnic backgrounds, includes works in two or more literary genres. cor.
**16—Themes in Literature (3).** Topics (e.g., The Idea of Progress, Images of Women) announced at time of registration.
**20—Exposition and Argumentation (3).** Stresses writing as a process, with due attention given to critical reading and thinking skills applicable to all college classes, as well as to invention, drafting, revising, and rewriting. English 20 is a prerequisite for any Writing Intensive course. cor.
**20GH—Honors Exposition English (3).**
**50—Creative Writing: Introduction to Fiction (3).** Introduces basic narrative techniques, including writing original stories. cor.
**60—Creative Writing: Introduction to Nonfiction Prose (3).** Introduces the range and basic techniques of creative nonfiction, including composing original work in the genre.
**70—Creative Writing: Introduction to Poetry (3).** Introduces basic poetic techniques, including writing original poems. cor.
**91—Introduction to Film: The Beginnings to 1945 (3).** Surveys the basic techniques of filmmaking, some important film genres and classic films of the period.
**92—Introduction to Film: 1945-Present (3).** Surveys the basic techniques of filmmaking, some important film genres and classic American and European films of the period. 91 is not a prerequisite.
**101—Topics (3).** Underclass topics. Subjects vary from semester to semester. May be repeated to 6 hours maximum.
**102—Topics in British Literature (3).** Topic (e.g., Gothic Literature, The Domestic Novel) announced at time of registration. May be repeated to six hours maximum. Prerequisite: 20.
**103—Topics in American Literature (3).** Topic (e.g., American Culture, The Frontier) announced at time of registration. May be repeated to six hours maximum. Prerequisite: 20.
**104—African-American Literature (3).** (same as Black Studies 104). Surveys writing by African- American authors from early 19th century to the present using a socio-historical approach to show the development of a black literary tradition. Prerequisite: 20. cor.
**105—Introduction to Literature (3).** Introduces the student to reading in three or four genres (fiction, poetry, drama, and non-fiction) and to literary concepts and terms and their application in literary analysis. Prerequisite: English 20.
**108—Introduction to Women's Literature (3).** (same as Women Studies 108). A study of traditional and nontraditional literature written by women from the perspective of feminist themes-love, power, work, family and other relations . Prerequisite: 20.
**110—Popular Literature (3).** Study of literary genres, such as science fiction and the detective novel, that may be overlooked in traditional literature classes. Prerequisite: 20.
**111—Beginning Playwriting (3).** (same as Theatre 111). Study and practice of playwriting fundamentals; emphasizes the one-act play.
**120—Intermediate Composition (3).** Provides intensive guided practice in expository and persuasive writing. Prerequisite: 20 or equivalent.
**135—Major Authors (3).** Focuses on the works of a single writer (e.g., Shakespeare) or set of writers (e.g., William Faulkner and Flannery O'Connor). Topic announced at time of registration. Prerequisite: 20. cor.
**150—Creative Writing: Intermediate Fiction (3).** Provides intensive guided practice in the writing of short fiction. Prerequisite: 50 or equivalent.
**160—Creative Writing: Intermediate Nonfiction Prose (3).** Provides guided practice in the writing of creative nonfiction. Prerequisite: English 60 or equivalent.
**162—Professional Writing (3).** Introduction to the communication required in any professional field, including basic letters and resumes, reviews, reports, and electronic networking, culminating in an extensive report and a related oral presentation. Prerequisite: English 20. f,w.
**170—Creative Writing: Intermediate Poetry (3).** Provides intensive guided practice in the writing of poetry. Prerequisite: 70 or equivalent.
**185—Introduction to Folklore (3).** (same as Anthropology 184). Introduces the study of folklore, including the methodology, approaches and genres of folklore. Prerequisite: 20. cor.
**187—Introduction to Oral Literature (3).** An introduction to works of verbal art from living oral tradition (e.g. Native American and African-American) and to some of our most important literary works with roots in oral tradition (e.g., the Bible, the Iliad, and Odyssey, and Beowulf). Prerequisite: 20.
**189—Twentieth-Century Literature (3).** A multi-genre survey emphasizing American and British works within the intellectual and cultural context of our time. Prerequisite: 20.
**195—Service Learning in English (1-3).** Students perform volunteer service and complete course requirements, which may include class meetings and written and oral assignments. May be repeated with departmental consent. Graded on a S/U basis only. Does not meet A&S general education requirements. Prerequisite: instructor's consent.
**204—Survey of African-American Literature (3).** (same as Black Studies 204). A genre-focused survey of African-American literature from the Harlem Renaissance to the present. Courses may focus on the novel, the essay and other non-fiction forms, poetry, or drama. Prerequisite: 20
**205—Introduction to Literary Study (3).** Instruction in the fundamentals of writing about literature for prospective English majors; emphasizes the basic vocabularies and processes of literary research, interpretation, and criticism. Course covers two or more literary theories and two or more literary genres. Prerequisite: 20 and sophomore standing.
**206—Special Themes in Literature (3-6).** Topics (e.g., Postmodernism, Representations of Nature) announced at time of registration. Prerequisites: 20 or equivalent and sophomore standing. May be repeated to six hours with consent of department.
**208—Survey of Women Writers (3).** (same as Women Studies 208). A study of writing by women from the Middle Ages to the present. Prerequisite: sophomore standing.
**211—Intermediate Playwriting (3).** (same as Theatre 211). Intermediate study of the writing process as applied to theatre, leading to the creation of a full-length play to be

considered for production. Prerequisite: 111.

**215—Survey of British Literature: Beginnings to 1784 (3).** Historical survey from beginnings of British literature through the age of Johnson, with readings representing significant writers, works and currents of thought. Prerequisite: 20 or equivalent. cor.

**216—Survey of British Literature: Romanticism to the Present (3).** Historical survey of British literature from the Romantic period to the present, emphasizing important writers and significant intellectual and cultural movements. Prerequisite: 20.

**225—Survey of American Literature: Beginnings to 1865 (3).** A survey of major writers and movements in American literature from colonialism to Romanticism. Prerequisite: 20 or equivalent.

**226—Survey of American Literature: 1865-Present (3).** A survey of major writers and movements in American literature from realism to postmodernism. Prerequisite: 20 or equivalent.

**233—Performance of Literature (3).** (same as Theatre 233). Analysis and oral interpretation of literary works. Prerequisite: sophomore standing.

**250—Independent Research in English (1-3).** Development of a carefully considered independent research project under close supervision of a faculty member. Open to undergraduate students only. Prerequisites: 205 and departmental consent.

**261—Advanced Composition (3).** An intensive writing workshop in which student essays and related texts receive close reading and analysis. Focus (e.g. The Essay, The Research Paper) announced at time of registration. Prerequisite: 120 or instructor's consent.

**280—Internship (1-3).** Students work in an agency or institution using their English English-related skills for one to three credit hours. Prerequisite: junior standing, department's consent. Graded on an S/U basis only.

**285—American Folklore (3).** (same as Anthropology 284). Focus on regional and ethnic folklore; emphasis on analysis of folklore in context. Requirements include book reports and two analytical papers based on student field research.

**290—Honors Senior Essay (3).** Independent project for completion of honors work in English. Open to departmental honors candidates only.

**296—Honors Seminar: Critical Approaches to Literature (3).** Studies major critics, with emphasis on the application of criticism to the study of literature.

**297—Honors Seminar: Historical Approach to Literature (3).** Introduces the historical approach to the study of literature and the development of major traditions of English literature, with readings selected from several periods.

**301—Topics (cr.arr.).** Organized study of selected topics. Subjects and earnable credit may vary from semester to semester. May repeat to six hours.

**302—Creative Writing: Advanced Fiction (3).** An intensive writing workshop in which student stories and related literary texts receive close reading and analysis. Prerequisite: English 150 or equivalent.

**304—Major African-American Writers (3).** (same as Black Studies 304). An intensive study of selected African-American writers. May repeat to six hours with department's consent.

**305—Internship in Publishing (3).** Offers practical experience working with a literary or scholarly publication edited or sponsored by faculty members. Graduate students in English must take the course two semesters in order to count three hours toward the completion of their program. Prerequisite: instructor's consent.

**308—Major Women Writers (3).** (Same as Women Studies 308.) Study of a limited number (1-3) of significant writers to be read intensively using contemporary feminist critical theory. May repeat to six hours with department's consent.

**308A—Major African-American Women Writers (3).** (same as Women Studies 308 and Black Studies 308A). Study of a limited number (1-3) of significant African-American writers to be read intensively using contemporary feminist critical theory. Prerequisite: two courses in British or American literature. Repeatable with department's consent. Maximum of six hours for 308 and 308A.

**311—Advanced Playwriting: Problems (3).** (same as Theatre 311). Advanced study of the writing process as applied to theatre, including theory and practice. Special playwriting problems and techniques. Prerequisite: 211.

**313—Creative Writing: Advanced Poetry (3).** Poetry regarded as a mode of understanding. Poetic values related to other values. Practical consideration of verse techniques. Prerequisite: English 170 or equivalent.

**314—Creative Writing: Advanced Nonfiction Prose (3).** An intensive writing workshop in which a student's creative nonfiction receives close reading and analysis. Prerequisite: English 160 or equivalent.

**315—Introduction to Old English (3).** (same as Linguistics 316). A beginning study of the Old English or Anglo-Saxon language in its cultural context, with emphasis on gaining a reading knowledge. Prerequisite: junior standing.

**317—Medieval Literature (3).** Representative works from the Anglo-Saxon and Middle-English periods. May repeat to six hours with department's consent. Prerequisite: junior standing.

**321—Renaissance and 17th-Century English Literature (3).** Topics (e.g., The Metaphysical Poets, Themes in Shakespeare) announced at time of registration. May repeat to six hours with department's consent. Prerequisite: junior standing.

**324—Restoration and 18th-Century English Literature (3).** Topics (e.g., Restoration Drama, Johnson and his Circle) announced at time of registration. May repeat to six hours with department's consent. Prerequisite: junior standing.

**327—19th-Century English Literature (3).** Topics (e.g., Victorian Poetry, Non-Fiction Prose) announced at time of registration. May repeat to six hours with department's consent. Prerequisite: junior standing.

**328—20th-Century British Literature (3).** Topics (e.g. Contemporary British Poets, The Post-War Novel) announced at time of registration. May repeat to six hours with department's consent. Prerequisite: junior standing.

**329—Early American Literature (3).** Topics (e.g., Narratives of Discovery and Exploration, The Puritan Heritage) announced at time of registration. May repeat to six hours with department's consent. Prerequisite: junior standing.

**330—19th-Century American Literature (3).** Topics (e.g., American Romanticism, Regionalism) announced at time of registration. May repeat to six hours with department's consent. Prerequisite: junior standing.

**332—20th-Century American Literature (3).** Topics (e.g., American Poetry since T. S. Eliot, The Short Story) announced at time of registration. May repeat to six hours with department's consent. Prerequisite: junior standing.

**334—Ethnic Literature (3).** Explores in depth the literary traditions of one of America's minority ethnic cultures: Native American, African-American, Hispanic American, Asian American. May repeat to six hours with department's consent. Prerequisite: junior standing.

**337—World Literatures (3).** Study of important works and writers from Asia, Africa, Europe, Latin America or the mid-East. Topics (e.g., Survey of World Literature, The Bible) announced at time of registration. May repeat to six hours with department's consent. Prerequisite: junior standing.

**338—Studies in Critical Theory (3).** Focuses on questions raised by various critical theories, includes practice writing criticism that applies the theories to particular works. May repeat to six hours with department's consent. Prerequisite: junior standing.

**339—History of Criticism (3).** Surveys modern and contemporary theories of literary criticism: historical, archetypal, generic, formalist, phenomenological and interdisciplinary. Emphasizes key writers in each field. Prerequisite: junior standing.

**340—Structure of American English (3).** (same as Linguistics 340). Introduction to English linguistics. Study of the grammar and pronunciation of contemporary English, with the major focus on syntax. Prerequisite: junior standing.

# English

**341—History of the English Language (3).** (same as Linguistics 341). Historical changes in the grammar and pronunciation of the English language from Old English to the present. Introduction to Indo-European origins of English. Prerequisite: junior standing.

**342—Regional and Social Dialects of American English (3).** (same as Linguistics 342). The study of regional and social variation in pronunciation, vocabulary, and syntax of American English. Prerequisite: 340, 341 or equivalent.

**343—Principles of Teaching English as a Second Language (3).** (same as Linguistics 343.) Linguistic and pedagogical principles of teaching English to speakers of other languages. Prerequisite: 340, 341 or equivalent.

**344—Topics in Linguistics (3-6).** (same as Linguistics 344). Descriptive and historical studies in English Linguistics. Repeatable to six hours with department consent. Prerequisite: junior standing.

**346—Themes in Literature by Women (3).** (same as Women Studies 315). Examines works by a number of women writers with particular attention to their socio-political context. May repeat to six hours with department's consent. Prerequisite: junior standing.

**350—Special Readings (cr.arr.).** Individual work with conferences adjusted to needs of student. Prerequisites: 300-level course in area of proposed work and written consent of instructor. Restricted to senior English majors in their final semester.

**354—Literature of the Black Diaspora (3).** (same as Black Studies 354). An upper division course which explores other literatures written in English by and about people of African descent from South Africa, West Africa, the Caribbean, Central America, and Canada. Prerequisite: sophomore standing or above with backgrounds in Black history and/or literature.

**360—Historical Survey of Rhetoric (3).** A survey of major works of rhetoric from Plato to the present day, with special attention to those works influencing English language rhetorics and theories of rhetoric. Prerequisites: 20 and sophomore standing.

**361—Topics in Writing (3).** An advanced writing workshop in nonfiction prose. Topics (The Personal Narrative, Nature Writing) announced at time of registration. May repeat to six hours with departmental consent. Prerequisite: 120 or instructor's consent.

**370—Genres (3).** Advanced survey of major movements and writers. Topics (e.g., American Poetry, The Development of the British Novel) announced at time of registration. May repeat to six hours with department's consent. Prerequisite: junior standing.

**371—Comparative Approaches to Literature (3).** Study of works separated by the places or eras of their composition, but united by themes or traditions. Topics (e.g., Poets of African Diaspora, Literatures of Exile) announced at time of registration. May repeat to six hours with department's consent. Prerequisite: junior standing.

**374—Major Authors (3).** Intensive study of the work of a single writer (e.g., Milton) or set of writers (e.g., Whitman and Dickinson). Topic announced at time of registration. May repeat to six hours with department's consent. Prerequisite: junior standing.

**385—Special Themes in Folklore (3).** (same as Anthropology 384). Intensive study in a selected area of folklore: folk narrative, folk song, myth, proverb, etc., folklore of a particular group. May be repeated for a maximum of six hours with department's consent.

**385A—Themes in African-American Folklore (3).** (same as Anthropology 384A and Black Studies 385A). Intensive

study in a selected area of African-American folklore: folk narrative, folk song, myth, proverb, etc., folklore and literature; or the folklore of a particular group. 385 and 385A may be repeated for a maximum of six hours with instructor's consent. Prerequisite: junior standing.

**386—Women's Folklore and Feminist Theory (3).** (same as Women Studies 386). Examines folklore and artistic expression of women in relation to feminist theory and in multicultural contexts. Includes verbal genres (narrative/song) as well as material genres (quilting/arts). Prerequisite: junior standing or instructor's consent.

**387—Oral Tradition (3).** (same as Classical Humanities 387). Study of verbal art from living oral traditions (e.g., Native American and African American) and important literary works with roots in oral tradition (e.g., the Bible, the Iliad the Odyssey, and Beowulf). Prerequisite: junior standing and instructor's consent.

**389—Modern Literature (3).** A study of selected twentieth-century literature within the intellectual and cultural contexts of the modern era.

**398—Capstone Experience (3).** For students in their last semester, this course focuses on a major project and the processes of selection, research, and writing leading to its completion. Includes a professional component (resume, cover letter). Prerequisite: English major with senior standing.

**400—Problems (cr.arr.).** Individual work not leading to preparation of dissertation. Prerequisite: departmental approval.

**401—Topics (cr.arr.).** Organized study of selected topics. Subjects and earnable credit may vary from semester to semester.

**402—Advanced Writing of Fiction (3).** Advanced fiction writing designed primarily for graduate students, with the intention of producing work of professional quality. May repeat to twelve hours with consent of instructor. Prerequisite: instructor's consent and 302.

**406—History of Criticism and Theory (3).** A survey of the history of literary criticism and theory. While comprehensive in scope, the course might focus on specific topics in the history of criticism, such as the dialectic between rhetoric and poetics, the rise of aesthetics, or the relation of art and culture to society. Figures studied will extend from early philosophers such as Plato and Aristotle, through eighteenth-century thinkers such as Kant and Johnson, up to present theorists such as Derrida and Butler.

**407—Contemporary Critical Approaches (3).** A survey of contemporary professional critical methods, such as formalism, poststructuralism, feminism, Marxism, new historicism, psychoanalysis, identity studies, and cultural studies.

**413—Advanced Writing of Poetry (3).** Advanced poetry writing designed primarily for graduate students with the intention of producing work of professional quality. May repeat to twelve hours with consent of instructor. Prerequisite: instructor's consent and 313.

**415—Studies in Old English Literature (3).** Topics in Old English or Anglo-Saxon literature, such as Beowulf, the Exeter Book poems, or the genres of elegy, Biblical narrative, or wisdom poetry. May repeat to twelve hours with department's approval. Prerequisite: 315 or equivalent.

**417—Studies in Middle English Literature (3).** Topics (e.g., Medieval Drama, Chaucer) announced at time of registration. May repeat to twelve hours with department's approval.

**421—Studies in Renaissance British Literature (3).** Topics (e.g., Tudor and Stuart Drama, Shakespearean Tragedy) announced at time of registration. May repeat to twelve hours with department's approval.

**422—Studies in 17th-Century British Literature (3).** Topics (e.g., The Metaphysical Poets, Restoration Drama) announced at time of registration. May repeat to twelve hours with department's approval.

**423—Studies in 18th-Century British Literature (3).** Topics (e.g., The 18th-Century Novel, Historical and Biographical Prose) announced at time of registration. May repeat to twelve hours with department's approval.

**427—Studies in 19th-Century British Literature (3).** Topics (e.g., The Later Romantics, Victorian Poetry) announced at time of registration. May repeat to twelve hours with department's approval.

**428—Studies in 20th-Century British Literature (3).** Topics (e.g., Chief Contemporary Poets, Modernism and the Novel) announced at time of registration. May repeat to twelve hours with department's approval.

**429—Studies in Early American Literature (3).** Topics (e.g., Religious and Philosophical Writings, The Revolutionary Period) announced at time of registration. May repeat to twelve hours with department's approval.

**432—Studies in 19th Century American Literature (3).** Topics (e.g., The Transcendentalists, American Realism) announced at time of registration. May repeat to twelve hours with department's consent.

**434—Studies in 20th-Century American Literature (3).** Topics (e.g., The African-American Novel, Chief Contemporary Poets) announced at time of registration. May repeat to twelve hours with department's consent.

**437—Studies in Criticism and Theory (3).** Principles and practices of selected critics. May repeat to twelve hours with department's consent.

**440—Studies in the English Language (3).** (same as Linguistics 440). Descriptive and historical studies of the English language. Topics (e.g., The Germanic Origins, Modern Syntactic Analysis) announced at time of registration. May repeat to twelve hours with department's approval.

**460—Theory and Practice of Composition (3).** Current and historical theories of rhetoric and composition as applied to the teaching of college composition. Prerequisite: department's consent.

**462—Studies in Rhetoric and Composition (3).** Topics (e.g., The Institutionalization of Rhetoric, Writing Across the Curriculum) announced at time of registration. May repeat to twelve hours with department's approval.

**470—Forms (3).** Topics (e.g., The Epic, The Epistolary Novel) announced at time of registration. May repeat to twelve hours with department's approval.

**485—Studies in Folklore (3).** (same as Anthropology 484 and Religious Studies 475). Focus on the roots of folklore scholarship and methodology and their evolution in modern approaches to the study of oral, traditional verbal genres and their performance in natural folk groups. Graduate standing or permission of instructor. May repeat to twelve hours with department's consent.

**487—Studies in Oral Tradition (3).** Theoretical and interpretive perspectives on works of verbal art that have roots in oral tradition. Emphasis on the variety of approaches employed (performance theory oral theory, ethnopoetics, ethnography of speaking, comparative structural studies, etc.) May repeat to twelve hours with department's consent.

**490—Research (cr.arr.).** Leads to preparation of dissertation. Graded on S/U basis only.

# Entomology

**College of Agriculture, Food and Natural Resources**
**1-87 Agriculture Building (573) 882-7894**
**CHAIR** B. Barrett
**PROFESSOR** M. Linit
**ADJUNCT PROFESSOR** R. Wagner
**ASSOCIATE PROFESSORS** E. Backus, W. Bailey, B. Barrett, R. Sites
**ADJUNCT ASSOCIATE PROFESSORS** T. Coudron, A. McIntosh
**ASSISTANT PROFESSORS** M. Boyd, R. Houseman, Q. Song
**ADJUNCT ASSISTANT PROFESSORS** B. Hibbard, B. Puttler
**PROFESSORS EMERITI** W. Enns, M. Fairchild, F. Jones, A. Keaster, C. Knowles, E. Munson, D. Sanders

**DEGREES** MS and PhD in entomology

Entomology is a branch of zoology that deals with the study of insects, the most diverse group in the animal kingdom. Entomology covers the basic studies of the life processes of insects and the applied studies of how insects impact on human society through their effects on food and fiber production and human and animal health. Students receive a broad scientific training in entomology and related disciplines to prepare them for employment with the USDA, state departments of agriculture and conservation, universities, private industry, or in self-employment in integrated pest management and crop and animal protection.

The Department of Entomology offers advanced degree programs to qualified students. A student desiring undergraduate training in entomology should consult the Department of Entomology coordinator.

**EQUIREMENTS FOR MINOR IN ENTOMOLOGY** The minor shall consist of no less than 15 credit hours as outlined below. At least 12 of the credits must be in courses offered by the Entomology Department.

Ent 208: Introductory Entomology, Ent 209: Insect Diversity, Ent 181: Pesticide Chemicals (3), Ent 302: Morphology (4), Ent 304: Systematic Entomology (3), Ent 306: Aquatic Entomology (3), Ent 312: Insect Pest Management (3) or Ent 321: Entomology Literature and History (2).

The following courses offered outside the Entomology Department may be counted toward the minor provided that the provisions of paragraph one are met: Bio Sci 320: Invertebrate Zoology (5).

**The following entomology courses are available to undergraduates:**
Ent 181: Pesticide Chemicals (3)
Ent 208: Introductory Entomology (2)
Ent 209: Insect Diversity (1)
All 300-level courses are available to advanced undergraduates.

**REQUIREMENTS FOR MINOR IN PEST MANAGEMENT** This is an interdisciplinary minor designed to give students broad experience in areas associated with environmentally compatible crop and animal protection. Pest management practitioners need knowledge in several fields of agricultural science, with special expertise in entomology, plant pathology, weed science and animal damage control.

At present, most professional opportunities in this area are related to agricultural production. In the near future, pest management specialists will be involved in the solution of a wide range of problems related to urban, rural, aquatic and forest environments.

**THE MINOR** consists of at least 15 credit hours as outlined below:
Plant Sci 209: Principles of Weed Science (4)
Ent 208: Introductory Entomology plus Ent 209: Insect Diversity (3)
Pl Path 305: Theories and Concepts of Plant Pathology (3)
**At least two courses from the following:**
PM 180: Principles of Pest Management (3)
PM 181: Pesticide Chemicals (3)
Ent 312: Insect Pest Management (3)

Ent 322: Biological Control of Insects (3)
Ent/Pl Path 361: Insects in Relation to Plant Diseases (3)
Pl Path 306: Introduction of Plant Pathology Laboratory (2)
PM 370: Advances in Insect Pest Management (3)

**COURSES**

**181—Pesticide Chemicals (3).** (same as Pest Management 181). Properties of insecticides, fungicides, herbicides, nematocides, rodenticides, and other chemicals used for pest control. For students in agriculture. Prerequisites: Biochemistry 110 or a course in Organic Chemistry. alt. w, even years.

**201—Topics in Entomology (cr.arr.).** Instruction in select subject matter areas in the field of entomology.

**208—Introductory Entomology (2-3).** (same as Biological Sciences 208). Holistic biology of insects, including anatomy, physiology, behavior ecology, and management. Prerequisites: Biological Sciences 10, 11, 12, or equivalent.

**209—Insect Diversity (1).** (same as Biological Sciences 209). Laboratory emphasizing external insect anatomy, classification, and identification to the family level. Insect collection is required. Prerequisite: Concurrent enrollment or previous satisfactory completion of Entomology/Biology 208.

**300—Problems (cr.arr.).** By arrangement, students may take special problems in different entomology fields as preparation for research. Prerequisites: 10 hours Entomology and Biological Sciences.

**301—Topics in Entomology (cr.arr.).** Instruction in select subject matter areas in the field of entomology. Prerequisites: 208 and 209A.

**302—Comparative Morphology of Insects (4).** Comparative study of external and internal structures and systems of insects, with emphasis on structure-function relationships. Prerequisites: 208 & 209A. f, even years.

**304—Systematic Entomology (5).** (same as Biological Sciences 304). Taxonomy of insects: emphasizes biology and classification of orders and major families. Insect collection required. Prerequisites: 208 or 209A or 10 hours biological sciences f. odd years.

**306—Aquatic Entomology (3).** Identification, life histories, ecology of aquatic arthropods; emphasizes fresh-water insects. For students of wildlife, fisheries management, aquatic biology, advanced entomology. Prerequisites: 208 and 209A and Biological Sciences 11 and 304 or equivalent. w, odd years

**312—Insect Pest Management for Plant Protection (3).** Identification and importance of insect pests of crops, detection techniques, economic injury levels, and recent development in control techniques of importance to insect management decisions. Prerequisites: 208 and 209A. w, even years.

**316—Principles of Insect Physiology (4).** (same as Biological Sciences 316). (3 hrs. lecture, 2 hrs. lab) Major concepts of insect physiology emphasizing functions of organ-systems sensory physiology hormones in development, nutrition. Prerequisites: 208, 209A and 302 or equivalent. f, odd years.

**322—Biological Control of Insects (3).** Presents principles of biological control of insects, emphasizing parasites, predators, diseases of insects, characteristics of natural insect populations. Prerequisites: 319 and 304 or instructor's consent. f, odd years.

**350—Special Readings (cr.arr.).** Publications in a chosen field will be studied to acquaint students with technical literature.

**361—Insects in Relation to Plant Diseases (3).** (same as Plant Pathology 361). Ecology, behavior, physiology and molecular biology of insect transmission of plant pathogens. Lectures and discussions. Prerequisites: Plant Pathology 305 or 405 and Entomology 208, or instructor's consent. w, odd.

**370—Advances in Insect Pest Management (3).** (same as Pest Management 370). Presents current concepts, techniques, and applications for developing and implementing pest management systems. Prerequisites: 312, Pest Management 180, Biological Sciences 362 or equivalent. w, odd years.

**400—Problems (cr.arr.).** Advanced individual studies; includes minor research problem.

**401—Topics in Entomology (cr.arr.).** Instruction in specific subject matter areas in the field of entomology. Prerequisites: graduate standing & instructor's consent.

**405—Taxonomy of Immature Insects (3).** Identification of orders, families, genera, species of insects in immature stages. Surveys pertinent literature. Prerequisite: 304 or equivalent. f, even years.

**410—Seminar (cr.arr.).** Reviews of current literature, reports on original investigations. Prerequisite: graduate standing or instructor's consent. Grading system dependent on section. f,w.

**415—Medical and Veterinary Entomology (3).** Insects, related pests of humans, animals. Special attention to those transmitting diseases. For advanced students in entomology, medicine, sanitary engineering. Prerequisites: 208 and 304 or instructor's consent. w, even years.

**419—Insect Ecology (3).** Ecological aspects of insect populations and communities including population dynamics, predator-prey interactions, competition, diversity and stability. Quantitative methods are emphasized. Prerequisites: 208 and 209A Statistics 207; Biological Science 362. w, even years.

**420—Insect Toxicology (3).** Mode of action, metabolism, and relation of chemical structure to toxicity of insecticides. Recent developments in insecticides, attractants, repellents, and chemosterilants. Prerequisites: 10 hours Entomology or instructor's consent. f, even years.

**450—Research (cr.arr.).** Original investigation not leading to preparation of dissertation.

**490—Research (cr.arr.).** Original research in economic entomology, biological control of insects, insect taxonomy, toxicology, morphology, physiology, ecology, behavior, forest entomology, and medical and veterinary entomology. Reading knowledge of French, German, desirable. Prerequisite: 20 hours Entomology. Graded on S/U basis only.

# Environmental Design

**College of Human Environmental Sciences**
**137 Stanley Hall (573) 882-7224**
**http://www.missouri.edu/~envugwww/**

**CHAIR** R. Brent
**PROFESSORS** R. Brent, M. Uddin
**ASSOCIATE PROFESSORS** R. Phillips, B. Schwarz
**ASSISTANT PROFESSOR** D. Naegele
**INSTRUCTOR/ENVIRONMENTAL DESIGN STATE SPECIALIST** A. Mahmood
**ADJUNCT INSTRUCTORS** C. Davis, L.A. Fields, J. Francis, T. Gilk, M. Goldschmidt, T. Mann, B. Morgan, W. Nolan, F. Schmidt, T. Underwood
**ADJUNCT ASSISTANT PROFESSORS** M. Alexander, H. Chaudhury
**PROFESSORS EMERITI** R. Helmick, G. Hennigh, P. Hilderbrand, K. Rogers

**DEGREES** BS HES, MA and MS in environmental design; PhD in human environmental sciences

Undergraduate programs in Environmental Design include interior design and interior design with a choice of three pre-architecture options.

The interior design program is the four-year, first-professional baccalaureate interior design program accredited by the Foundation for Interior Design Education Research (FIDER).

The interior design program with either of two pre-architecture options provides students with the accredited interior design program plus additional course work to prepare students for application to architecture programs to complete a Master's Degree in Architecture.

The third pre-architecture option enables the student to attend MU for three years, then apply for transfer to any of the cooperating universities to complete the fourth year toward the bachelor's degree and continue to complete a Master's in Architecture.

Environmental Design students may wish to consider a minor in art to complement their undergraduate degree. More information may be obtained from the director of undergraduate studies in the Art Department.

Several scholarships and financial awards are available through the department and college. All of the awards are granted each year during the winter semester.

**PHILOSOPHY** Environmental design describes the processes, procedures, observations, and techniques essential to the development of designs for human living, leisure and work environments.

MU programs of Environmental Design are oriented in the arts and humanities, placed between the world of physical realities and the imaginary. They use the exact sciences for stability and durability with its visual, thermal, and acoustic capabilities and the social sciences for a better understanding of people's relationship with places and time.

Synthesis of the functional, technological, aesthetic, and symbolic attributes of interior design and architecture occurs in department course work. Consistent attention is given to the planning and design of physical environments that support human needs and aspirations. Curriculum requirements include courses in supportive areas such as the human and physical sciences, art, humanities, and allied design professions.

**MINOR IN ENVIRONMENTAL DESIGN**
Students complete 15 credit hours in environmental design:
EDn161: Fundamentals of Environmental Design (3 credits) and an additional 12 credits from the following list:
EDn 110: Visual Design (3)
EDn 120: Architectural Drafting and Working Drawings (3)
EDn 121: Computer Aided Drafting with AutoCAD (3)
EDn 231: Building Technology for Interior Design (3)
EDn 323: Computer Applications for Design (3)
EDn 341: History of the Designed Environment to 1750 (3)
EDn 342: History of the Designed Environment after 1750 (3)
EDn 355: Recent Trends (3)
EDn 361: Housing Concepts and Issues (3)
EDn 362: Environment and Behavior (3)
EDn 442: Design Theory (3)

**DENMARK INTERNATIONAL STUDY PROGRAM** Study at the University of Copenhagen during the summer months and transfer credit back to MU to meet degree requirements. Classes are taught in English. Contact the MU International Center or the Department of Environmental Design for further information.

**PROFESSIONAL OPPORTUNITIES** Graduates of the interior design program become designers with design studios, retail establishments, architectural firms, and corporate institutions. They design offices, commercial and institutional facilities, health-care facilities, and residential settings. As interior designers they cooperate with related professions in the design of solutions to social and environmental problems, especially those involving the near environment. Students completing the BS in Environmental Design and continuing their education to earn a Master's in Architecture become architects sensitive to the human behavioral aspects of interior design.

Students may become student members of the American Society of Interior Designers (ASID). This group has evolved into an organization with multiple programs and services dedicated to promoting design excellence and to enhancing recognition of interior design as a profession. It is currently the largest professional interior design organization in the world with more than 28,000 members.

The International Interior Design Association (IIDA) is another professional organization that offers students insight into the interior design field.

**STUDIO EXPERIENCE** Design studio experiences are the core of the undergraduate design curriculum. It is in the studio where knowledge and skills gleaned from pre- and co-requisite courses are synthesized and applied in physical design problem-solving exercises. Studio exercises focus on a cyclical refinement of the design process and the integration of increasingly complex problem parameters. Vertically integrated studios encourage interactive dialogues among instructor and students of differing levels in the design studio sequence. The vertical format refers to a single classroom integration of students enrolled in one of three sequential successive levels of design studio (Interior Design Studio I, II, and III).

**APPLICATION FOR PROFESSIONAL PROGRAMS** Students must apply for admission to the interior design studio sequence required for all of the undergraduate program options.

Applications must be made at the end of the fall semester of the sophomore level for enrollment in EDn 181: Environmental Design Studio and EDn 162: Environmental Analysis in the winter semester. Application forms with deadlines are available from the department. Admittance decisions are based on:

1. Review of design work submitted in a portfolio. Design work should include a range of the student's best work from at least two courses (or equivalent course) of the following three: EDn 120: Architectural Drafting and Working Drawings, EDn110: Visual Design (or Art 20: Basic Design or Art 2: Intro. to Art) and Art 60: Beginning Drawing.
2. Overall GPA (including transfer courses), grades received in courses completed, and ACT scores (or equivalent for transfer students).
3. Enrollment capacity (approximately 40 students).

**INTERIOR DESIGN** The professional interior designer is qualified by education, experience, and examination to enhance the function and quality of interior spaces. For the purpose of improving the quality of life, increasing productivity, and protecting the health, safety, and welfare of the public, the professional interior designer:

- Analyzes the client's needs, goals, life and safety requirements
- Integrates findings with knowledge of interior design
- Formulates preliminary design concepts that are appropriate, functional, and aesthetic
- Develops and presents final design recommendations through appropriate presentation media
- Prepares working drawings and specifications for nonload-bearing interior construction, materials, finishes, space planning, furnishings, fixtures, and equipment
- Collaborates with professional services of other licensed practitioners in the technical areas of mechanical, electrical, and load-bearing design as required for regulatory approval
- Prepares and administers bids and contract documents as the client's agent
- Reviews and evaluates design solutions during implementation and upon completion

The definition was prepared by the National Council for Interior Design Qualification and approved by the major interior design professional organizations.

**First Semester** 15-16 hours
HES 10: Introduction to Human Environmental Sciences (1) (required for freshmen)
EDn 110: Visual Design (3) or Art 20: Basic 2-D Design (3) or Art 2: Intro. to Art (3)
General Education (12)
**Second Semester** 15 hours
EDn 120: Architectural Drafting and Working Drawings (3) or Art 60: Drawing I (3) *(take 1 freshman w, 1 sophomore f)*
General Education (12)
**Third Semester** 16 hours
EDn 120: Architectural Drafting and Working Drawings (3) or Art 60: Drawing I (3) *(take 1 freshman w, 1 sophomore f)*
EDn 161: Fundamentals of Environmental Design (3)
EDn 171: Design Resource Management (1)
TAM 180: Textiles (3)
Elective or General Education (6)
**Fourth Semester** 15 hours
Art 21: Basic 3-D Design (3)
EDn 121: AutoCAD (3)
EDn 162: Environmental Analysis (3)
EDn 181: Environmental Design Studio (3)
Elective or General Education (3)
**Fifth Semester** 16 hours
EDn 221: Design Communication I (3)
EDn 231: Building Technology (3)
EDn 282: Interior Design Studio I (4)
EDn 341: History of the Designed Environment to 1750 (3)
Elective or General Education (3)
**Sixth Semester** 16 hours
EDn 232: Resources and Materials (3)
EDn 283: Interior Design Studio II (4)
EDn 322: Design Communication II (3)
EDn 342: History of the Designed Environment after 1750 (3)
EDn 362: Environment and Behavior (3)
**Seventh Semester** 16 hours
EDn 372: Design Business Practices (3)
EDn 384: Interior Design Studio III (4)
EDn 385: Programming (1)
**Human factors elective (3)
Electives or complete General Education (5)
**Eighth Semester** 16 hours
EDn 386: Thesis Design Studio (4)
Electives or complete General Education (12)

****Human Factors Electives:** A minimum of six credit hours of human factors electives may be chosen from the following list or other courses may be proposed to the adviser for consideration.

HDFS 175: Introduction to the Study of Families (3)
HDFS 250: Early and Middle Childhood (3)
HDFS 251: Adolescence and Young Adulthood (3)
HDFS 252: Adulthood and Aging (3)
HDFS 262: Infant-Toddler Development and Programs (3)
HDFS 363: Parent-Child Relations Over the Life Course (3)
HDFS 368: Family Interaction (3)
Psych 30: Applied Psychology (3)
Psych 170: Child Psychology (3)
Psych 190: Social Psychology (3)
Psych 304: Industrial/Organizational Psychology (prereq. Stat 31) (3)
Psych 387: Psychology of Aging (Psych 170 recommended) (3)
Soc 130: Social Perspectives on Aging (3)
Soc 200: Class, Status and Power (3)
Soc 214: The Family (3)
Soc 219: Organizations and Institutions (3)
Soc 224: Sociology of Health (3)
Soc 322: Sociology of Aging (prereq. six hours sociology and junior standing) (3)
Soc 323: Death and Dying (3)
Soc 324: Sociology of Health Systems (junior standing) (3)

**INTERIOR DESIGN WITH PRE-ARCHITECTURE OPTIONS** The Department of Environmental Design offers options that prepare students at the undergraduate level for application to architecture programs to continue their education and receive a Master's in Architecture. These program options were developed in cooperation with the University of Kansas, University of Nebraska, Arizona State University, and Washington University in St. Louis. Options I and II include the accredited interior design program. All students interested in a cooperative program are encouraged to maintain regular communication with the cooperating institution since application and transfer procedures are subject to change.

**Interior Design with Pre-Architecture**
**Option I —** The University of Kansas, University of Nebraska, and Arizona State University
**Unique features:** four years at MU; takes advantage of reciprocity agreement with in-state tuition when beginning professional graduate programs at KU or NU; recommended option for students who wish to complete FIDER accredited interior design program at MU; summer leveling course work at KU before entering MArch program; 6-1/2 years to complete BS and MArch.
**First year**
Art History 10 or 11 (3)

Social Sciences (3)
EDn110: Visual Design or Art 20: Basic 2-D Design (3) or Art 2: Introduction to Art (3)
Eng 20: Exposition and Argumentation (3)
HES 10: Introduction to Human Environmental Sciences (1) required for freshmen*
EDn120: Architectural Drafting and Working Drawings (3)
Math 10: College Algebra (3)
Psychology 1: General Psychology (3)
Biological Science (4-5)
**Second year**
Successful acceptance to the EDn professional program at end of fall semester.
Art 60: Drawing I (3)
Art 21: Basic 3-D Design (3)
EDn 161: Fundamentals of Environmental Design (3)
EDn 162: Environmental Analysis (3)
EDn 171: Design Resource Management (1)
EDn 181: Environmental Design Studio (3)
EDn 231: Building Technology (3)
Math 61: Elements of Calculus (3)
Physics 21: College Physics (4)
TAM 180: Textiles (3)
**Third year**
EDn 221: Design Communication I (3)
EDn 232: Resources and Materials (3)
EDn 282: ID Studio I (4)
EDn 283: ID Studio II (3)
EDn 322: Design Communication II (3)
EDn 341: History of Designed Environment to 1750 (3)
History or Government (3)
Elective (2)
Human Factors Elective (6)
**Fourth year**
Communication (3)
EDn 342: Hist of Designed Environment after 1750 (3)
EDn 362: Environment and Behavior (3)
EDn 372: Design Business Practices (3)
EDn 384: ID Studio III (4)
EDn 385: Programming for Thesis Design Studio (1)
EDn 386: Thesis Design Studio (4)
HES Foundation Courses (6)
Elective (2)
Elective (3)
**Total course work from MU to receive a BS** 125-126 credits

**Students must enroll in a five-credit summer course in Statics and Strengths at the KU campus during the summer between attending MU and KU.** Students admitted to the KU MArch program are given advanced standing and begin the fall semester in the second year of the program. If students would like to delay graduation from MU until they have successfully passed the five-credit Statics and Strengths course at KU, they can transfer this course to MU to count toward the minimum 125-credit requirement for graduation in Environmental Design.

**Interior Design with Pre-Architecture**
**Option II —** The University of Kansas, University of Nebraska, and Arizona State University
**Unique features:** four years at MU; takes advantage of reciprocity agreement with in-state tuition when beginning professional graduate programs at KU or NU; option completes FIDER accredited interior design program at MU; begins with advanced placement in math; more emphasis in math and engineering than Options I or III; recommended option for students transferring from engineering; 6-1/2 years to complete BS and MArch.
**First year**
Art History 10 or 11 (3)
Eng 20: Exposition and Argumentation (3)
HES 10: Intro to HES (1) required for freshmen*
History or Government (3)
Humanities (5)
EDn 120: Architectural Drafting and Working Drawings (3)
Math 10: College Algebra (3)**
Psychology I (3)
Science (4-5)
EDn 110: Visual Design or Art 20: Basic Design 1 (3) or Art 2: Introduction to Art (3)
Elective ** (1)
**Second year**
Successful acceptance to the EDn professional program at end of fall semester.
Art 60: Drawing I (3)
Art 21: Basic 3-D Design (3)
EDn 161: Fundamentals of Environmental Design (3)
EDn 162: Environmental Analysis (3)
EDn 181: Environmental Design Studio (3)
EDn 231: Building Technology (3)
Math 9: Trigonometry (2)
Physics 21: College Physics (4)
TAM 180: Textiles (3)
**Third year**
EDn 221: Design Communication I (3)
EDn 232: Resources and Materials (3)
EDn 282: ID Studio I (4)
EDn 283: ID Studio II (3)
EDn 322: Design Communication II (3)
EDn 341: History of Designed Environment to 1750 (3)
Math 80: Analytical Geometry and Calculus I (5)
Math 175: Calculus II (5)
**Fourth year**
Communication (3)
EDn 342: Hist of Designed Environment after 1750 (3)
EDn 362: Environment and Behavior (3)
EDn 372: Design Business Practices (3)
EDn 384: ID Studio III (4)
EDn 385: Programming for Thesis Design Studio (1)
EDn 386: Thesis Design Studio (4)
Engr 195: Inter Strength of Materials (3)
HES Foundation Courses (6)
**Total course work from MU to receive a BS** 125-126 credits

**Pre-Architecture**
**Option III —** The University of Kansas, Arizona State University or Washington University
**Unique features:** three years at MU; senior year at KU, Arizona State University or Washington University; takes advantage of reciprocity agreement during KU graduate program - no reciprocity with in-state tuition during senior year; 6-1/2 years to complete BS and MArch. This option does not include the complete accredited Interior Design Program.
**First year**
Art History 10 or 11 (3)
HES Foundation Course (3)
Eng 20: Exposition and Argumentation (3)
HES 10: Intro to HES (1) required for freshmen*
History or Government (3)
Humanities (5)
Math 10: College Algebra (3)**
Psychology I (3)
Biological Science (5)
**Second year**
Successful acceptance to the EDn professional program at end of fall semester.
Art 60: Drawing I (3)
Art 21: Basic 3-D Design
EDn 110: Visual Design or Art 20: Basic 2-D Design (3) or Art 2: Introduction to Art (3)
EDn 161: Fundamentals of Environmental Design (3)
EDn 162: Environmental Analysis (3)
EDn 181: Environmental Design Studio (3)
EDn 120: Architectural Drafting and Working Drawings (3)
Math 61: Elements of Calculus (3)
Physics 21: College Physics (4)
TAM 180: Textiles (3)
**Third year**
EDn 221: Design Communication I (3)
EDn 231: Building Technology (3)
EDn 232: Resources and Materials (3)
EDn 282: ID Studio I (4)
EDn 341: History of Designed Environment to 1750 (3)
EDn 342: History of Designed Environment after 1750 (3) (for KU only)
History 1: Foundations of Western Civilization (3) (for Washington University only)
EDn 362: Environment and Behavior (3)
HES Foundation Course (3)
Speech Communication (3)
**Total course work from MU to receive a BS** 94-95 credits

**Fourth year** Course work taken during senior year at the University of Kansas, Arizona State University or Washington University is transferred back to MU for graduation with a BS HES in Environmental Design to total 125-126 credits.

**Transfer** During the junior year the student applies to the School of Architecture at the University of Kansas, Arizona State University or Washington University. If accepted on the basis of transcript and design portfolio, students have advanced standing toward the professional master's program in architecture.

** If a student enters as a freshman, HES 10 is required. If entering as a sophomore, HES 10 is recommended. If entering college with junior standing, HES 10 is not recommended.*

*** A student's math background may determine how much entry-level math is required. If students do not have enough math background to place out of Math 10, Math 10: College Algebra is required.*

## COURSES

**110—Visual Design (3).** Studio in basic creative development emphasizing principles of visual organizations, exploration of perception, notions of structure, empathetic realization of the designed environment, nature of materials, sense of phenomenal space.

**120—Architectural Drafting and Working Drawings (3).** Beginning drafting including equipment and materials; lettering; floor plans, sections, elevations; orthographic and axonometric drawings; working drawings; and details.

**121—Computer Aided Drafting with AutoCad (3).** Introduction to computer aided drafting and design with AutoCad software. Emphasis will be placed on development of skills and problem solving related to the professions of environ-

mental and interior design.

**131—Materials and Methods (3).** Inherent qualitites of materials used in the design of interior environments. Manufacturing, application, and installation methods. Site visits.

**161—Fundamentals of Environmental Design (3).** Survey of the architectural environment emphasizing design fundamentals such as use, aesthetics, stability of structures and human relationships with places and time.

**162—Environmental Analysis (3).** Introduction to skills of environmental analysis and assessment. Survey and examination of key underlying design tenants; philosophies; and social, cultural and behavioral factors in applied environmental settings. Prerequisite: 120 and 161. w.

**171—Design Resource Management (1).** Field experience (5 hours per week) in organization and management or resources used by interior designers, including references, product information, and samples of materials and finishes. Prerequisite: EDN students, sophomore standing. Graded on a S/U basis only. f,w.

**181—Environmental Design Studio (3).** Analysis and application of the design process and basic elements used in environmental design. Prerequisite: 110 or Art 20, and EDn 120. Prerequisites or co-requisites: Art 60, Art 21. w.

**221—Design Communication I (3).** Beginning studio course in techniques and conventions of graphic communication as an aid in the design process for interior designers. Prerequisites: 120 or equivalent; Art 60 or equivalent. f.

**231—Building Technology for Interior Design (3).** Integrated systems of structure, construction, and environmental comfort. Concepts of loading; building geometry; materials; interior systems; environmental comfort and safety. Prerequisites: EDn 120, Math 10.

**231L—Building Technology Lab (1).** Experimental learning setting involving building construction systems, renovation, materials and finishes testing and experimentation. Focus on hands-on opportunities investigating building technology properties in detail. Laboratory 3 hrs/ week. Course may be repeated. f,w,s.

**232—Resources and Materials (3).** Furniture, finishes, fixtures, equipment and lighting for interior design specifications and installation. Professional liabilities, regulations, and performance criteria. Prerequisites: TAM 180, Math 10 EDn 120, 231. w.

**282—Interior Design Studio I (4).** Introductory design, problem solving, synthesizing pre- and corequisite course work. Prerequisites: 162, 181, 190, instructor's consent. Corequisites: 221, 231, 341, and 361. f,w.

**283—Interior Design Studio II (4).** Continuation of 282. Intermediate design problem solving, synthesizing material from pre-and co-requisites: Prerequisites: 282, and instructor's consent. Co-requisites: 232, 322, 242, and 362. f,w.

**300—Problems (cr.arr.).** Supervised independent work. Prerequisites: 200-level course in field of problem and junior or senior standing and instructor's consent.

**318—Topics (cr.arr.).** Selected current topics in field of interest.

**322—Design Communication II (3).** Advanced studio course in techniques and conventions of graphic communication as aids in the design process. Prerequisite: 221. w.

**323—Computer Graphic Application for Design (3).** Introduces applications of computer graphics for design and art; includes visualization, animation and creative development. Prerequisite: junior standing. May repeat up to 12 credit hours maximum.

**341—History of the Designed Environment to 1750 (3).** An in-depth study of the designed environment including housing interiors, and furniture of the major historical periods from prehistory to the Industrial Revolution. Prerequisites: Art History 10 or 11.

**342—History of the Designed Environment after 1750 (3).** An in-depth study of the designed environment, including housing, interiors, and furniture of the major historical periods from the Industrial Revolution to today. Prerequisites: Art History 10 or 11. w.

**350—Readings (cr.arr.).** Readings in recent research materials. Prerequisite: graduate standing.

**355—Recent Trends (cr.arr.).** For upper-class and graduate students seeking additional knowledge and understanding in specific subject matter areas.

**361—Housing Concepts and Issues (3).** Evaluate housing policies, regulations, codes, programs; global and ecological perspectives of environment and behavior; historic preservation; financial issues; trends and projections. Prerequisite: junior standing.

**362—Environment and Behavior (3).** Evaluate relationships between human behavior and environmental design. Survey of environment and behavior theoretical foundations examining how these concepts translate into a more responsive theory of design. Prerequisites: junior standing. w.

**372—Design Business Practices (3).** Analysis of the basic professional, human, and business skills necessary for the successful practice of interior design. Prerequisites: Anticipated graduation within one year. f.

**384—Interior Design Studio III (4).** Continuation of 283. Advanced design problem solving, synthesizing material from pre- and corequisite. Prerequisites: 283, and instructor's consent. Corequisites: 372. f,w.

**385—Programming for Thesis Design Studio (1).** Develop written comprehensive program for thesis design studio project. Supervised by student-selected committee — one departmental thesis advisor and at least one additional faculty member. Prerequisites: 283, and instructor's consent. f,w.

**386—Thesis Design Studio (4).** Capstone student-defined design problem synthesizing previous course work. Prerequisites: 384, 385 and instructor's consent. f,w.

**390—Internship (cr.arr.).** Field experience in design under professional and educational supervision. Prerequisites: 146 or equivalent; junior standing; and instructor's consent. S/U graded only.

**400—Problems (cr.arr.).** Prerequisites: 300-level course in field of problem and instructor's consent.

**410—Seminar (1-4).** Reports, discussion of recent work in area of concentration.

**412—Research Methods (3).** A comparative study of quantitative and qualitative methods in environmental design with emphasis on research results and analyses. Lectures and seminar discussions. Prerequisite: 12 hours advanced design.

**415—Readings (cr.arr.).** Readings in recent research materials. Prerequisite: 350 and graduate standing.

**423—Computer Graphic Application for Design II (3).** Creative computer graphic modeling, rendering and animation projects related to the academic background and interests of individual students. Prerequisite: 323. May be repeated to 6 hours maximum.

**442—Design Theory (3).** Formal environmental design theory concerning historical precedents, current aesthetic trends, and design processes. Assignments investigate philosophical influences, architectonic vocabularies, and communication of idea and artifact. Prerequisite: graduate standing or instructor's consent. May be repeated up to 12 credit hours.

**450—Research (cr.arr.).** Independent research leading to a creative project.

**460—Dissertation Proposal (1).** A formal dissertation proposal is written and presented to the dissertation committee for approval. Prerequisite: instructor's consent.

**461—Pilot Project for Disseration (cr.arr.).** Working with advisor, student proposes, conducts, and reports the findings from a pilot study germane to the dissertation topic in preparation for the dissertation research. Prerequisite: instructor's consent.

**462—Environment and Behavior Seminar (3).** Synthesis of environment and behavior themes in design research and application to professional practice. Research on sociobehavioral phenomena, user groups, places. Emphasis on integrated interactive character of elements. Prerequisite: graduate standing or instructor's consent.

**480—Thesis Project Proposal (1).** The formal opportunity to express the intent and scope of the thesis project. Prerequisite: instructor's consent.

**487—Graduate Design Studio (cr.arr.).** Advanced graduate level design experience emphasizing project complexity, design skill refinement, and optional development of thesis project strategies. Prerequisites: instructor's consent. f,w.

**490—Research (cr.arr.).** Independent research leading to thesis or dissertation. Graded on a S/U basis only.

# Environmental Studies

**(An Interdisciplinary Program in the Office of the Provost)**
**204 Lowry (573) 882-7116**
**envstudy@showme.missouri.edu**
**DIRECTOR** Jan Weaver

Many environmental careers require the kind of discipline-specific education available in the traditional majors, but employers look especially for students who can understand the larger ramifications of environmental issues and who can work in interdisciplinary teams to solve problems. The Environmental Studies Certificate is designed to give a student the necessary breadth to address a variety of environmental problems. The certificate also prepares students for entry into graduate and professional programs.

The certificate is available to all majors at MU, but because of the variety of majors offered and the certificate's goal of creating a complementary educational experience, students working on a certificate are required to select courses for the certificate in consultation with the office of Environmental Studies. Courses with environmental content are not necessarily approved for a particular student's certificate program. Advising by Environmental Studies will complement but not replace advising in the student's degree program. Courses for the certificate are drawn from a variety of departments across campus. A list of courses with environmental content is available on request from the Environmental Studies program, or it can be reached from our Web page: http://www.missouri.edu/~esiwww/courses.html.

## CERTIFICATE REQUIREMENTS

- Completion of a program of study in an existing major leading to an MU bachelor's degree
- Completion of two foundation courses
- Completion of three hours of environmentally related seminar courses
- Completion of six hours of environmentally related courses at the 200 level or above
- Completion of a three-hour interdisciplinary capstone experience

## FOUNDATION COURSES (course descriptions are listed in the respective departments)

Bio Sc 6: Basic Environmental Studies (3)
Geol 10: Environmental Geology (4)
Nat Res 60: Ecology and Conservation of Living Resources (3)
Geog 103: Environmental Geography (3)
Rural Soc 120: Population and Ecology (3)

## SEMINAR COURSES

Env Studies 70: Ecological Economics (3)
Env Studies 110: Analysis of Environmental Issues (3)

## COURSES

**70—Introduction to Ecological Economics (3).** (same as Agricultural Economics 70). Examines current environmental and natural resource issues using a systems perspective

and key economic concepts. Explores connections between the environment and the economy based on problems at the local, national, and international levels. w.

**101—Topics (1-3).** Selected topics not in regularly offered courses.

**110—Analysis of Environmental Issues (3).** Using a case study approach, students will develop the analytical and communication skills necessary to investigate environmental problems and create workable solutions. Prerequisites: Biology 6, Geography 103, Geology 10, Natural Resources 60, and Rural Sociology 120 or instructor's consent.

**150—Directed Independent Study (1-3).** Working with Environmental Studies you will find and develop a research project or an internship with the university, a government agency, a business or a non-profit agency. The project will be directed towards solving an environmental problem. Prerequisite: instructor's consent.

# Exercise Physiology Graduate Program

**College of Human Environmental Sciences**
**DIRECTOR** T. Thomas

**DEGREES** MA and PhD degrees are offered by the Exercise Physiology Graduate Program in the Department of Nutritional Sciences.

Exercise physiology develops new knowledge in the area of exercise training, exercise metabolism and fitness and nutrition. The mission of the Exercise Physiology Graduate Program is to train graduate students who will provide professional leadership and educational services in the public and private enterprise. Contact the director, Dr. Tom Thomas, ThomasTR@missouri.edu, for more information.

# Finance

**College of Business**
**214 Middlebush Hall (573) 882-6272**
**CHAIR** S. Ferris
**PROFESSORS** S. Ferris, J. Howe, R. Pettway, J. Stowe, D. West
**ASSOCIATE PROFESSOR** T. Miller
**ASSISTANT PROFESSORS** C. McDonald, C. Stephens, D. Witte, X. Yan
**PROFESSORS EMERITI** R. Lansford, J. Pascucci, F. Stubbs
**ASSOCIATE PROFESSOR EMERITUS** M. Peterson
**ADJUNCT ASSISTANT PROFESSOR/ INSTRUCTOR** J. Stansfield

**DEGREE** BSBA with emphasis areas in finance and banking and real estate

**FINANCE AND BANKING** This curriculum is designed for the student anticipating a career in the financial section of a corporation, in a bank or other financial institution, in an investment management firm or in the financial division of a government or non-profit organization.

**Required Core Courses to be Completed on Campus in the Junior Year** 18 hours
Acct 258: Computer-Based Data Systems (3) or CECS 103: Algorithm Design and Programming I (3)
Econ 229: Money and Banking (3)
Fin 203: Corporate Finance (3)
Mgmt 202: Fundamentals of Management (3)
Mgmt 254: Introduction to Business Law (3)
Mktg 204: Principles of Marketing (3)
**Required courses** 18-21 hours
Fin 323: Financial Management (3)
Fin 333: Investments (3)
Fin 343: Financial Intermediaries and Markets (3)
Econ 251: Theory of the Firm (3) or Econ 351: Intermediate Price Theory (3)
Acct 305: Financial Accounting Concepts (3) or Acct 326: Financial Accounting I (3) and Acct 346: Financial Accounting II (3)
Mgmt 308: Operations Management (3)
**Six hours selected from the following courses**
Fin 326: Financial Management Policy (3)
Fin 328: International Finance (3)
*Fin 342: Real Estate Finance (3)
Fin 353: Security Analysis (3)
Fin 355: Portfolio Management (3)
Fin 357: Financial Futures and Options (3)
Fin 363: Management of Financial Institutions (3)
**Three to six hours selected from the following courses**
College of Business or economics courses numbered 200 or higher and non-business courses selected and approved by the department.

**Required Core Course to be Completed on Campus in the Senior Year** three hours
Mgmt 375: Management Policies and Problems (3)
**Total** 51 hours
**Cannot be counted more than once*

**REAL ESTATE** This curriculum provides a basic education for students contemplating a career in real estate, real estate management or associated fields.

**Required Core Courses to be Completed on Campus in the Junior Year** 18 hours
Acct 258: Computer-Based Data Systems (3) or CECS 103: Algorithm Design and Programming I (3)
Econ 229: Money and Banking (3)
Fin 203: Corporate Finance (3)
Mgmt 202: Fundamentals of Management (3)
Mgmt 254: Introduction to Business Law (3)
Mktg 204: Principles of Marketing (3)
**Required Courses** 18 hours
Fin 323: Financial Management (3)
Fin 333: Investments (3)
Fin 343: Financial Intermediaries and Markets (3)
Fin 340: Principles of Real Estate (3)
Fin 341: Real Estate Appraisal (3)
Fin 342: Real Estate Finance and Investment (3)
**Six hours selected from among the following**
Acct 353: Introduction to Taxation (3)
Ag Ec 338: Rural Real Estate Appraisal (3)
Econ 251: Theory of the Firm (3) or 351: Intermediate Price Theory (3)
Fin 218: Personal Risk Management and Insurance (3)
Fin 326: Financial Management Policy (3)
Fin 328: International Finance (3)
Fin 353: Security Analysis (3)
Fin 355: Portfolio Management (3)
Fin 357: Financial Futures and Options (3)
Fin 363: Management of Financial Institutions (3)
Forest 253: Light Construction (3)
EDN 349: Advance Design Studio (3)
EDN 361: Housing Concepts and Issues (3)
Mgmt 356: Law of Commercial Credit Transactions (3)
Mktg 336: Sales Management (3)



**Professional Electives** six hours
College of Business or economics courses numbered 200 or higher and non-business courses selected and approved by the department.

**Required Core Course to be Completed on Campus in the Senior Year** three hours
Mgmt 375: Management Policies and Problems (3)
**Total** 51 hours

A student in finance and banking or real estate may count a maximum of 30 semester hours of finance courses to meet the 120-hour requirement for the undergraduate degree.

**COURSES**

**123—Principles of Finance (3).** Financing business, consumer, and government activity; stocks, bonds, real estate, and financial markets; risk; insurance; inflation; cash and income management; capital accumulation and appreciation. Students admitted to COB upper level degree program cannot enroll.

**203—Corporate Finance (3).** Financial decision-making in a corporate environment. Time value of money, capital budgeting, cost of capital, working capital management and financial instruments issued by the firm. Prerequisites: completed 45 semester hours, Accountancy 36 and 37, Statistics 150, in addition to Economics 51 or Economics 4 (or 14) and 5.

**218—Personal Risk Management and Insurance (3).** Teaches the importance of risk in personal endeavors and the intelligent handling of such risk. Life, health, auto, homeowner and liability risks are treated. Prerequisite: sophomore standing.

**300—Problems (cr.arr.).** Independent study, reports on selected topics.

**305—Topics in Finance (3).** Selected topics in finance, insurance or real estate. Offered on an experimental basis.

**323—Financial Management (3).** Theory and techniques of financial management, study of firm valuation, dividend policy, capital budgeting and capital asset pricing. Prerequisite: 203.

**326—Financial Management Policy (3).** Application of the concepts and tools of finance to cases in working capital management, capital budgeting analysis and capital structure decisions. Prerequisite: Finance 323; Corequisites: Accountancy 346 or 305, senior standing.

**328—International Finance (3).** Application of domestic corporate finance to the international arena. Emphasis on international capital budgeting, working capital management, foreign exchange risk management, international capital markets, balance of payments, international monetary system, and exchange rate determination. Prerequisites: 323, senior standing.

**333—Investments (3).** Security valuation and analysis, formulation of personal and professional investment programs. Prerequisite: 203.

**340—Principles of Real Estate (3).** Principle factors influencing land use, practices in real estate business. Prerequisites: 203, Management 254 or senior standing. f.

**341—Real Estate Appraisal (3).** Procedures for valuing industrial, commercial, residential realty by market, income, replacement cost approaches. Case method, field investigations. Prerequisite: 340 and senior standing. w.

**342—Real Estate Finance and Investment (3).** Financing of residential, commercial, and industrial real estate and real estate development. Instruments, institutions, and markets; role of government agencies; investment qualities of real estate. Prerequisite: 340 and senior standing. w.

**343—Financial Intermediaries and Markets (3).** Functions

of intermediaries in the aggregation and allocation of funds, creation and transfer of assets, and distribution of risks. Regulation of financial institutions; financial institutions as instruments of public policy. Prerequisites: 203 and Economics 229.

**353—Security Analysis (3).** Classifies and analyzes securities, markets, industries. Formulation of investment policy for institutions, aggressive personal investors. Prerequisites: 333 and Accountancy 346 or Accountancy 305, senior standing.

**355—Portfolio Management (3).** Development and application of the principles of modern port- folio theory to financial assets. Analysis of the concepts of diversification, portfolio construction, portfolio revision, and use of types of financial assets in effective portfolio management. Prerequisite: 333 and senior standing.

**357—Financial Futures and Options (3).** A basic overview of financial futures and options markets. Topics include: theoretical pricing of financial futures contracts and stock options, institutional aspects of these markets, hedging, and speculative strategies. Prerequisites: 333 and senior standing. w.

**363—Management of Financial Institutions (3).** Operating principles of major financial intermediaries, including commercial banking, savings, insuring, lending and investing institutions. Analysis of cases; study of current problems. Prerequisite: 343 and senior standing.

**390—Professional Finance Internship (3).** Provides students experience with financial activities in business organizations (or, occasionally, in a governmental or not-for-profit setting). Students are required to prepare and execute a plan of study approved by the instructor and to complete written assignments detailed in the plan. Prerequisite: 203, College of Business students with a finance concentration or international business students with a finance emphasis, and instructor's consent.

**400—Problems (1-3).** For independent investigation and analysis, graduate students select topics suggested by the foregoing undergraduate courses.

**405—Topics in Finance (3).** Selected topics in finance, insurance or real estate. Offered on experimental basis. Prerequisite: instructor's consent.

**423—Advanced Financial Management (3).** Examination of the modern theory of finance. Capital budgeting capital structure, dividend theory and valuation. Prerequisite: Business Administration 344.

**424—Working Capital Management (3).** Financial planning and short-term financial management; integration of quantitative techniques, microeconomics, and financial decisions; analysis of decisions about profit planning, financial forecasting, accounts receivable, cash management, and financial short-term assets. Prerequisite: 423.

**425—Capital Budgeting (3).** An investigation of long-term financial decisions. Topics include capital budgeting, leasing, long-term financing. Extensive use of cases. Prerequisite: 423.

**433—Security Markets and Investments (3).** Valuation of securities including stocks, bonds, options and futures; risk-return analysis of financial assets. Prerequisite: Business Administration 344 or equivalent.

**443—Financing Multinational Business (3).** Unique problems of financing inter- and intra-national investment, operation, trade of private multinational business. Analysis of cases illustrating theoretical, environmental, functional, institutional consideration.

**453—Investment Policy and Portfolio Management (3).** Intensive study of investment policies and procedures with emphasis on construction and management of portfolios of institutional investors. Application of programming techniques to selection and administration of securities.

**457—Derivative Financial Securities (3).** Comprehensive overview of derivative securities including financeial futures and options, swaps, and financial engineering. Major topics: institutional aspects of these markets, advanced pricing models, pricing relationships among derivative securities, and risk shifting. Prerequisite: 433. w.

**461—Financial Markets (3).** Operations and structure of financial markets, including stock markets, bond markets, mortgage markets, and derivatives markets. Prerequisite: Business Administration 344.

**463—Management of Financial Institutions (3).** Study and analysis of policies, goals, practices and organizational changes in the management of financial institutions and intermediaries. Prerequisite: Business Administration 344.

**480—Topics Seminar (1-3).** Reading and critical evaluation of selected current finance literature and research. Prerequisites: Ph.D. students only. Departmental consent. May be repeated. Graded on S/U basis only.

**483—Seminar in Corporate Finance (3).** Advanced theory, investigation of current research in financial management. f.

**484—Research in Corporate Finance (3).** Advanced topics in corporate finance. Prerequisite: 483. w.

**485—Financial Economics (3).** Utility analysis, efficient frontier mathematics, asset pricing and related topics. Prerequisite: instructor's consent. f.

**486—Seminar in Investment Analysis (3).** Develops integrated theory and analytic techniques for evaluating investment potential of financial instruments. Emphasizes corporate securities. Selected cases and readings. w.

**487—Advanced Topics in Finance (3).** Selected topics in finance. Prerequisite: instructor's consent. s.

**490—Research (cr.arr.).** Thesis research for Ph.D. degree. Graded on a S/U basis only.

# Fisheries and Wildlife Sciences

**College of Agriculture, Food and Natural Resources**
**302 Anheuser-Busch Natural Resources Building (573) 882-3436**

*For additional information, see The School of Natural Resources in the College of Agriculture, Food and Natural Resources section of the catalog.*

**DEPARTMENT CHAIR** J. Jones
**PROFESSORS** R. Drobney, J. Faaborg (adjunct), L. Fredrickson, J. Jones, C. Rabeni,
**ASSOCIATE PROFESSORS** D. Galat, R. Hayward, C. Nilon, D. Noltie, M. Ryan, F. Thompson
**ASSISTANT PROFESSORS** S. Jones (adjunct), J. Millspaugh
**PROFESSORS EMERITI** R. Campbell, W. Elder, A. Witt

**DEGREES** BS FW in fisheries and wildlife; MS and PhD in fisheries; MS and PhD in wildlife

**COURSE REQUIREMENTS FOR THE BSFW DEGREE** The Fisheries and Wildlife undergraduate degree is based on a common foundation of communication, analytical, social science, humanities and professional courses that provide students with prerequisites for additional professional courses as well as with a basic liberal education.

**GENERAL EDUCATION CORE** 45-48 hours
**Communication Skills** six hours
Eng 20: Exposition and Argumentation (3)
Comm 75: Introduction to Speech Communication (3)
Writing Intensive courses: three
**Analytical Skills** nine hours
Math 108: Calculus for Social and Natural Sciences (3) (Prerequisite of Math 10: College Algebra)
Comp Sci 75: Introduction to Computing (3) or Ag 111: Computer and Programming Concepts I (3) or NATR 80: Computer Applications for Natural Resources
Stat 185: Statistical Methods in Natural Resources (3) (Prerequisite of Math 108 and a computer course)
**Physical Sciences** 13-15 hours (complete three course sets)
Chem 31: General Chemistry I (2) and Chem 32: General Chemistry II (3)
Geol 1: Principles of Geology (3) or SAS 100: Soil Science (3) and SAS 106: Soil Science Lab (2)
Physics 21: College Phys (4) or SAS 50: Intro to Meteorology (3)
**Social Sciences** nine hours minimum
**Required Courses** five-six hours
Ag Econ 41: Agricultural Economics (3) or Ag Econ 70: Introduction to Ecological Economics (3)
Course to satisfy state law requirement
**Humanities** nine hours minimum
Courses to be selected from approved humanities fields
**Electives** 9-17 hours
Courses to be selected from approved social science fields

**REQUIREMENTS FOR THE BS DEGREE IN FISHERIES AND WILDLIFE** The curriculum in Fisheries and Wildlife is designed to prepare undergraduate students for professional careers in the diverse field of natural resource conservation. By completing the core curriculum and one of several elective options, students are qualified to pursue a variety of careers.

Most students take courses that prepare them for entry-level, technical positions in fisheries, wildlife or water quality management with local, state or federal agencies. Such training usually involves taking courses that meet the standards set by The Wildlife Society or the American Fisheries Society to become certified, professional wildlife or fisheries biologists.

Other students may complete a program that emphasizes more advanced study and prepares them for careers in resource management, research or administration.

Career opportunities in natural resource conservation include areas such as nature interpretation, conservation education, aquaculture, wildlife photography and journalism.

The curriculum in Fisheries and Wildlife is flexible enough to allow students to select courses that will qualify them for careers in these areas.

**In addition to the general education core, the following courses are required**:
NATR 70: Ecology and Renewable Resource Management (3)
NATR 211: Biometrics (3)
NATR 380: Resource Practicum (3)
Bio Sci 42: Intro to Biological Systems (5)
Bio Sci 12: General Botany (5)
Bio Sci 214: Plant Taxonomy (4)
Bio Sci 202: Genetics (4) or Animal Sci 213: Genetics of Agriculture (4)
Bio Sci 362: General Ecology (5)
Physio 201: Elements of Physiology (5) or Animal Sci 254: Physiology of Domestic Animals (5)
F&W 120: Colloquium in Fisheries and Wildlife (1)
F&W 333: Animal Population Dynamics and Management (3)
Ag Ec 257: Rural and Agricultural Law or Ag Ec 356: Environmental Law and Policy (3)
**Concentration Areas** Take six courses, at least three from the Terrestrial or Aquatic block and two from the other.

**Aquatic**
F&W 301: Fisheries Technique (3)
F&W 311: Ichthyology (4)
F&W 324: Limnology (4)
F&W 328: Fisheries Management (3)
NRES 315: Natural Resource Management and Water Quality (3)

**Terrestrial**
F&W 266: Ornithology (4)
F&W 307: Mammalogy (4)
F&W 316: Waterfowl Biology & Management (3)
F&W 323: Wildlife Management Techniques (4)
F&W 325: Introduction to Conservation Biology (3)
F&W 327: Wildlife Conservation (4)
F&W 336: Urban Wildlife Management (3)

**Disciplinary Elective** Select one course from the approved list.

**Undesignated electives to total 125 hours**

## COURSES

**120—Colloquium in Fisheries and Wildlife (1).** Case studies in the biology and management of fish and wildlife and their environments. Prerequisite: Fisheries and Wildlife majors. S/U graded only. f.

**201—Topicis in Fisheries and Wildlife (cr.arr.).** Organized study of selected topics. Intended primarily for undergraduate Forestry, Fisheries & Wildlife students. Subjects and credit may vary from semester to semester. f,w,s.

**266—Ornithology (4).** (same as Biological Sciences 266). Structure, identification, habits, importance of regional birds. Field work, lectures, lab. Prerequisites: 5 hours Biological Sciences or instructor's consent. w.

**300—Problems (cr.arr.).** Topics in forestry, fisheries and wildlife. f,w,s.

**301—Topics in Fisheries, & Wildlife (cr.arr.).** Organized study of selected topics. Intended for upper division and graduate student. Subjects and credit may vary from semester to semester. f,w,s.

**307—Mammalogy (4).** (same as Biological Sciences 309). Taxonomy, distribution, structure, habits, importance of mammals; emphasizes those of central United States. Prerequisite: junior standing or instructor's consent. f.

**311—Ichthyology (4).** (same as Biological Sciences 311). A broad introduction to the biology and ecology of fishes. Emphasis will be placed on understanding the adaptations fishes exhibit to aspects of their environment. Prerequisite: 8 hours Biology or equivalent. w.

**316—Waterfowl Biology and Management (3).** Taxonomy of waterfowl of the world. Emphasis on ecology, behavior, population dynamics, physiology and management of North American waterfowl. Prerequisites: 266 or instructor's consent. f, even years.

**323—Wildlife Research and Management Techniques (4).** Research and Management methods for wildlife populations and their habitats. Prerequisite: 70. Weekend field trips required. f.

**324—Limnology (3-4).** (same as Biological Sciences 324) (lecture/lab: 4 hrs.; lecture only: 3 hrs.) Ecology of inland waters with emphasis on productivity. Prerequisites: senior standing or Biological Sciences 362. f.

**325—Introduction to Conservation Biology (3).** Introduction to principles of conservation biology. Application of ecological concepts and conservation biology principles to management of endangered species, biodiversity and threatened ecosystems. Prerequisite: Biological Sciences 362. w.

**327—Wildlife Conservation (4).** Integrates the biological principles of wildlife conservation with the human dimensions (e.g., political issues) of such efforts in the context of a simulated natural resource agency. Prerequisites: Biological Sciences 362. Letter grading only. f.

**328—Fisheries Management (3).** Introduction to the scientific principles and techniques of fishery management. Integrates ecological principles with social, economic and legal considerations. Prerequisites: Biology 362 and statistics 185. w.

**331—Environmental Toxicology (3).** Introduction to classes of chemicals, tools, methods, and approaches used in environmental toxicology. Emphasizes fundamentals of toxicology, dose-response relationships, evaluation of contaminant issues, strategies, and exposure analysis/toxicity assessment strategies in a risk assessment.

**333—Animal Population Dynamics and Management (3).** Quantitative modeling approach to examining principles and analysis techniques of fish and wildlife population dynamics. Emphasis on approaches useful in the management of exploited species. Prerequisites: 10 hours Biology, Mathematics 207 or equivalent. f.

**336—Urban Wildlife Management (3).** Reviewing the theory and practice of applying ecological concepts to the management of wildlife species in urban areas. Corequisites: 327, or instructor's consent. f, even years.

**345—Techniques for Fisheries Management and Conservation (3).** Introduction to techniques (field and analytical/quantitative) used by fisheries and conservation biologists. Fosters understanding of techniques uses, advantages, limitations biases, and data interpretation. Extended weekly field outings require chest waders and life jackets. Prerequisites: NRES 70, and either one F&W Professional Concentration or 300-level Professional Core course (or equivalents). f.

**350—Special Readings (cr.arr.).** Critical review of current literature and research in forestry, fisheries and wildlife, and methods of presenting research results. f,w,s.

**401—Topics (cr.arr.).** Organized study of selected topics. Subjects and credit may vary from semester to semester. Prerequisite: instructor's consent. f,w,s.

**410—Seminar (1).** Discussions of current developments in forestry, fisheries and wildlife, and critical study of research programs. f,w.

**420—Ecosystem and Landscape Ecology (3).** Historical review and contemporary overview of ecological concepts related to the functioning of ecological systems and the causes and effects of spatial heterogeneity. Emphasis is on review papers and discussing the concept of ecosystem landscape. Prerequisite: Biological Sciences 362 or equivalent. w, even yrs.

**424—Urban Ecosystems Seminar (2).** Seminar course focusing on current topics in urban ecology and urban ecosystems science. Prerequisites: Biology 362 or permission of instructor.

**426—Fish Ecology (3).** Advanced study of the interactions between fish and their environment. Topics include behavioral, physiological, population and community ecology of fishes, with emphasis on development and application of ecological theory in fishery management. Prerequisites: 311, 324, Biological Science 362 orequivalent . w.

**427—Advanced Limnology (3).** Physical, chemical and biological processes of lakes and streams emphasizing biological production, water quality and modern problems. Field, laboratory techniques in limnology research. Prerequisites: 324, Biological Sciences 362, 207 or equivalent . w, even years.

**429—Wetland Ecology (3).** A survey of the wetlands of North America; emphasis on nutrient dynamics, habitat structure, management, legislation and regulations, and man's impacts. Prerequisites: 324, Biological Sciences 362 and instructor's consent. f, odd years.

**432—Stream Ecology (3).** Ecological principles applied to flowing waters. Emphasis on ecological processes within algal, invertebrate and fish communities. The influence of geomorphic processes, hydrologic principles and physical-chemical factors on the biota. f, even years.

**433—Quantitative Fish and Wildlife Assessment (4).** Methods to assess space use patterns, animal abundance and population status are drawn into quantitative framework for making inferences to wild populations. Practical application and limitations of techniques are emphasized through analysis and interpretation of field data. Prerequisite: Natural Resource 211 or equivalent.



**435—Wildlife Nutritional Ecology (3).** A comprehensive and comparative treatment of vertebrates interact with their environment to satisfy nutrient and energy requirements. Emphasis on nutrient requirements, food processing, bioenergetics and foraging strategies. Prerequisite: Biological Science 362 or instructor's consent. w, even years.

**436—Advanced Waterfowl Ecology (3).** Advance studies of waterfowl ecology. Emphasis on mating systems, foraging ecology, energetics, and post-breeding and wintering ecology. Prerequisites: 266, 316 and Biological Science 362 or instructor's consent. w, odd years.

**439—Conservation Biology/Endangered Species Management (3).** In-depth study of the ecological, legal, sociological aspects of the conservation of biodiversity. National and international focus on endangered species conservation; endangered species conservation; review of current literature. Prerequisite: Biological Science 362 or equivalent. f.

**440—Vertebrate Behavioral Ecology (3).** In-depth study of the behavioral adaptations of vertebrates. Topics include reproductive strategies, mate selection, parental care, predator avoidance, habitat selection, foraging strategies and spacing patterns. Prerequisites: Biological Sciences 342 and 362 or equivalents. w, odd years.

**444—Applied Data Analysis (2).** Advanced study of statistical procedures for Natural Resources research. Prerequisites: Statistics 385, 395 or instructor's consent. f, even yrs.

**450—Research (cr.arr.).** Original research not leading to preparation of dissertation. f,w,s.

**490—Research (cr.arr.).** Original investigation for presentation in a dissertation. Graded on a S/U basis only. f,w,s.

# Food Science

**College of Agriculture, Food and Natural Resources**
**215 Agricultural Engineering Building**
**(573) 882-2369**

**CHAIR** J. Tan
**PROFESSORS** H. Heymann, F. Hsieh, R. MacDonald, N. Unklesbay
**ASSOCIATE PROFESSORS** A. Clarke, S. Gaiko (Program Leader, Hotel and Restaurant Management), D. Holt (Program Leader, Food Science)
**ASSISTANT PROFESSORS** J. Groves, I. Grün, C. Lorenzon, A. Mustapha,
**INSTRUCTORS** M. Keene, M. Weber
**PROFESSORS EMERITI** M. Bailey, M. Fields, H. Hedrick, D. Heldman, R. Marshall, H. Naumann, W. Stringer
**ASSISTANT PROFESSOR EMERITUS** D. Shelley

**DEGREES** Agriculture, Food and Natural Resources: BS in food science; BS in hotel and restaurant management; MS and PhD in food science

**DEPARTMENT REQUIREMENTS** Students are encouraged to meet with an adviser to clarify their goals, to decide the best option for their particular circumstance and to select specific courses to meet the requirements and prerequisites of their specific program. Students must complete all the general education requirements in the college.

**FOOD SCIENCE**
Typical employment areas include quality assurance, quality control, product development, sensory science, flavor chemistry. The Food Science curriculum meets the standards established by the Institute of Food Technologists.
**Biological and Physical Sciences**
General Biology and Laboratory (5)
General Chemistry and Laboratory (6)
Organic Chemistry and Laboratory (5)
Biochemistry (3)
Physics (4)
**English and Communications**
Students may take a three-credit course in each of two departments plus a three-credit course numbered 100 or above in one of the same departments or having one of the courses as a prerequisite.
**Humanities and Fine Arts** (9)
Students may take a three-credit course in each of two departments plus a three-credit course numbered 100 or above in one of the same departments or having one of the courses as a prerequisite.
**Math and Statistics**
College Algebra (3)
Calculus (5-6)
Statistics (3)
**Social and Behavioral Sciences** (9)
Students will take Micro-Economics, Macro-Economics and a Social Science elective.
**State Law History Requirement** (3)
Students may choose an approved three-credit course in Political Science or History.
**Food Science**
FS 30: Food Science and Nutrition (3)
FS 172: Elements of Food Microbiology (3)
FS 199: Seminar in Professional Development (1)
NS 234: Human Nutrition I (3)
FS 250: Physical Principles for Food Processing (3)
FS 305: Food Analysis (3)
FS 309: Food Chemistry I (5)
Food Processing Elective (3)
FS 360: Food Quality Assurance (3)
FS 372: Food Microbiology (3)
FS 373: Food Microbiology Laboratory (2)
FS 375: Sensory Analysis of Food (4)
FS 399: Food Product Development (3)
**Additional Requirements and Electives**
Computer Science (3)
Electives (17)

**FOOD BUSINESS EMPHASIS AREA** Students choosing this course of study will be prepared for employment in the sales, marketing and managerial aspects of the food industry, especially production management.
**Biological and Physical Sciences**
Biochemistry (3)
General Biology and Laboratory (5)
General Chemistry and Laboratory (6)
Organic Chemistry and Laboratory (5)
**English and Communications** (6-9)
Students may take a three-credit course in each of two departments plus a three-credit course numbered 100 or above in one of the same departments or having one of the courses as a prerequisite.
**Humanities and Fine Arts** (9)
Students may take a three-credit course in each of two departments plus a three-credit course numbered 100 or above in one of the same departments or having one of the courses as a prerequisite.
**Math and Statistics**
College Algebra (3)
Finite Math or Calculus (3)
Statistics (3)
**Social and Behavioral Sciences** (9)
Students will take Micro-Economics, Macro-Economics and a Social Science elective.
**State Law History Requirement** (3)
Students may choose an approved three-credit course in Political Science or History. (3-5)
**Food Science**
**Core Courses**
FS 30: Food Science and Nutrition (3)
FS 172: Elements of Food Microbiology (3)
FS 199: Seminar (1)
NS 234: Human Nutrition I (3)
FS 309: Food Chemistry I (5)
FS 360: Food Quality Assurance (3)
FS 399: Food Product Development (3)
**Specialized Area Courses**
Students will choose 10 hours from the following selection of courses:
FS 111: Science of Food Production (5)
FS 204: Principles of Meat Science (3)
FS 228: Principles of Food Systems Management (3)
FS 231: Principles of Dairy Food Science (3)
FS 304: Processing Muscle Foods (3)
FS 331: Frozen, Concentrated and Dry Dairy Foods (3)
FS 375: Sensory Analysis of Foods (4) or other courses with advisor's consent.
**Business Core Courses**
Accounting (6)
Business Law (3)
Computer Science (3)
Finance (3)
Management (3)
Marketing (3)
Business Electives (6)
**Additional Requirements and Electives**
Electives (12)

**MINOR IN FOOD SCIENCE** A minor in food science must include FS 30: Food Science and Nutrition (3) plus a minimum of 12 hours of approved food science courses numbered 100 or above.

**COURSES**
**20—World Food and You (3).** (same as Plant Sciences 20). Basic scientific principles involved in production agriculture, food processing, marketing and consumption. Evaluation and understanding or current agriculture issues that affect human foods and required nutrients. f,w.
**30—Food Science and Nutrition (3).** Basic principles of science and technology as applied to the problem of providing safe, nutritious, and desirable food for man. f,w.
**104—Meat Classification, Grading and Judging (2).** (same as Animal Science 104). Factors affecting quality; classification, grading, judging of beef, pork, and lamb. Field trip. f.
**172—Elements of Food Microbiology (3).** Basic course stressing principles of microbiology applied to foods. Prerequisite: sophomore standing. f.
**195—Grapes and Wines of the World (1).** (same as Plant Science 195). Reviews historical development of the wine industry and associated development of the grape industry, the wine making process, the various types of wine product, wine-producing regions of the world, various classification schemes and quality components. f,w.
**199—Seminar in Professional Development (1).** Readings and discussion related to professional development for the industry. Prerequisites: senior or second semester junior. f,w.
**200—Problems (cr.arr.).** Supervised study in a specialized phase of food science and nutrition. f,w,s.
**204—Principles of Meat Science (3).** (same as Animal Science 204). Study of the principles involved in the conversion of living animals to meat and by-products; efficient utilization of meat as a food. Laboratory stresses the application of scientific principles in the meat industry. Prerequisite: one course in Biology. f.
**231—Principles of Dairy Foods Science (3).** (same as Animal Science 231). Technology, chemistry and microbiology related to milk and its transformation into fluid milk products, fermented dairy foods and spreads. (2 hours of lecture and two hours of laboratory per week.) Prerequisite: organic chemistry. f.
**250—Physical Principles for Food Processing (3).** Introduction to basic engineering concepts used to process raw materials. Energy balance. Pipe flow. Viscosity, Heat exchange. Refrigeration. Prerequisites: 1 calculus course and 1 physics course. w.
**300—Problems (cr.arr.).** Advanced problems in a selected field of food science and nutrition. f,w,s.
**301—Topics in Food Science (cr.arr.).** Instruction in specific subject matter areas in the field of food science and nutrition.
**304—Processing Muscle Foods (3).** Materials and technologies for the manufacture of muscle food products from red meats, poultry and seafood. Experience problem-solving through further processing of complex ingredients and develop skills by practicing operations in a pilot plant facility. Prerequisites: Organic Chemistry 115 and FSHN 204 or equivalent. (2 hrs of lecture and 2 hrs of laboratory per week.). w.
**305—Food Chemistry and Analysis Laboratory (3).** The quantitative determination of the constituents of food. Prerequisites: Analytical Chemistry and Biochemistry. f.
**309—Food Chemistry and Analysis (4).** Structure, composition and chemical properties of food. Prerequisite: 12 hours Chemistry, including Biochemistry. f.
**311—Investigation of Food Properties (3).** Study of the chemical and physical properties of foods and the interaction of food components. Lecture and laboratory. Prerequisites: 121 and Organic Chemistry.
**330—Principles of Food Processing (4).** Basic principles of food processing, with emphasis on blanching, pasteurization, commercial sterilization, refrigeration, freezing, concentration, dehydration and packing. Impacts of processing on product quality are evaluated.
**331—Frozen, Concentrated and Dry Dairy Foods (3).** Technology, chemistry and microbiology related to transformation of milk into frozen, concentrated and dry dairy foods. Prerequisites: Organic Chemistry 115 and FSHN 231 or equivalent. (2 hours lecture and 2 hours lab per week.) w.
**350—Readings (cr.arr.).** Prerequisites: 8 hours of course work in field of subject and instructor's consent.
**360—Food Quality Assurance (3).** Interprets regulations concerned with protection of the nation's food supply. Applies protection and sanitary practices to insure consumers of wholesome and healthful foods. Prerequisite: General Microbiology. w.
**372—Food Microbiology (3).** Study of bacteria, yeast and molds. Includes dominant flora, public health significance, characterization of organisms, examination of foods representative of major food groups, spoilage, preservation, food fermentations and physiological groups. Prerequisites: Bacteriology and Organic Chemistry. f.
**373—Food Microbiology Laboratory (2).** Examination of foods for microorganisms and characterization of major species. Prerequisite: 372 or concurrently. f.
**375—Sensory Analysis of Food (4).** Principles, theory, methodology of sensory analysis. Recommended: a statistics course. w.
**390—Field Training (cr.arr.).** Prerequisites: junior or senior standing and instructor's consent.
**391—Internship in Food Science (1-6).** Combines study, observation and employment in an area of food science and nutrition. Written reports, faculty evaluation . Prerequisites:

90 hours including 3 courses in department and instructor's consent.

**399—Food Product Development (3).** Capstone course integrating the various disciplines of food science to create new food products. Prerequisites: English 20, senior in food science and nutrition, or instructor's consent. f.

**400—Problems (cr.arr.).** Individual studies include a minor research problems.

**401—Topics in Food Science (cr.arr.).** Specialized topics in the area of food science and nutrition. Prerequisites: instructor's consent and graduate standing.

**402—Research Methods in Food Science (2).** Introduction to research. Defining research problems, developing hypotheses, searching scientific literature, designing experiments, presenting data, writing scientific papers and theses, making oral presentations. Prerequisite: graduate standing. f.

**404—Meat Investigations (3).** Discussion of literature, special reports, assigned readings, techniques, interpretation of results. Prerequisites: 304 and 309.

**405—Advanced Microbiology of Foods (4).** Principles of microbial physiology, taxonomy, analytical methods applied to study of microorganisms added to foods and those causing food spoilage or food-borne illness. Roles of microorganisms in manufacture/distribution of foods. Prerequisite: 372.

**409—Food Chemistry II (4).** Study of chemical content of food, emphasizing aspects that exist uniquely in food. Prerequisite: 309.

**410—Seminar (1).** Provides students with opportunities for development in depth of advanced aspects of food science through reviews of research in progress and of current scientific publications. f,w.

**414—Meat Quality (3).** (same as Animal Science 414). Discussion of factors affecting meat quality in beef, pork, lamb and poultry. Prerquisites: 204 or equivalent. w, even yrs. Graded on A/F basis only.

**415—Readings (cr.arr.).** Prerequisites: 15 hours course work in field of subject and instructor's consent.

**417—Food and Industrial Fermentation (3).** Microbiological, physical and chemical aspects of the utilization of microbial cultures in controlled fermentations of foods and food constituents. Prerequisites: 6 hours Microbiology and 5 hours Organic Chemistry or Biological Chemistry.

**419—Field Training (cr.arr.).** Internships and/or field experiences under supervision. Prerequisites: graduate standing and instructor's consent.

**421—Advanced Experimental Foods (3).** Further development of the concepts and experience in planning, conducting, interpreting and reporting food preparation research. Prerequisites: 321 and Statistics at 200 level.

**450—Research (cr.arr.).** Original investigations, usually in connection with one of the research projects of Agricultural Experiment Station. Written report required.

**460—Advanced Food Quality Assurance (3).** Analyzes concepts of integrating laws, TQM and statistical process control into HACCP and ISO systems required for the quality of the global food industry. Prerequisites: 360; Statistics 207.

**470—Advanced Studies in the Science & Technology of Food Preservation (4).** Thermal processing of canned foods, fermentation, radiation and freeze-dehydration, food additives. Current literature, lectures, lab discussion. Prerequisites: 309, 330, 372 or instructor's consent.

**475—Advanced Sensory - Instrumental Analyses (3).** Integration of human sensory perception with instrumental analyses. Statistical analyses will be emphasized. Advances in Sensory Techniques will be discussed. Prerequisites: FS&HN 375, Statistics 395.

**490—Research (cr.arr.).** Original investigation of advanced nature, leading to dissertation. Graded on a S/U basis only.

# Forestry

**College of Agriculture, Food and Natural Resources**
**203 Anheuser-Busch Natural Resources Building (573) 882-7242**

*For additional information, see the School of Natural Resources in the College of Agriculture, Food and Natural Resources section of the catalog.*

**PROFESSORS** B. Cutter, H. Garrett, W. Kurtz, M. Linit, S. Pallardy, C. Settergren, A. Vogt
**ASSOCIATE PROFESSORS** J. Dwyer, M. George, D. Larsen
**ASSISTANT PROFESSORS** H. He, Rose-Marie Muzika, P. Nygren
**PROFESSORS EMERITI** G. Cox, D. Duncan, G. Henderson, A. McGinnes, J. Nichols, J. Slusher, R. Smith
**ASSOCIATE PROFESSOR EMERITUS** J. Pastoret
**ASSISTANT PROFESSOR EMERITUS** R. Musbach

**DEGREES** BSF, MS and PhD in forestry

**COURSE REQUIREMENTS FOR THE BSF DEGREE** The forestry undergraduate degrees are based on a foundation of communication, analytical, social science, humanities and professional courses that provide students with prerequisites for additional professional courses as well as with a basic liberal education.

**GENERAL EDUCATION CORE** 30 hours
**Communication** three hours
Eng 20: Exposition and Argumentation (3)
(Two Writing Intensive (WI) courses are also required; at least one must be in your major).
**Math Skills** nine hours
Math 108: Calculus for Social and Natural Sciences (3)
Natr 80: Computer Applications in Natural Resources (3)
Stat 185: Statistical Methods in Natural Resources (3)
**Social Science Group** nine hours*
State Law Course (Hist. 3, 4 or 20; Pol. Sci. 1 or 11) (3)
Ag. Econ. 41, 70 or 40 (one of three) (3)
**Humanities** nine hours
Nine hours from humanities fields.

*Nat. Res. 353 may be applied toward the Social Science requirement of 9 hours

**REQUIREMENTS FOR THE BS DEGREE IN FORESTRY**
All forestry options require the following science and forestry courses.
**Science Core** 21-23 hours
Bio Sci 12: General Botany (5) or Plant Sci 110, 120: Plant Growth and Culture (3); Plant Sci Lab (1)
Chem 31 & 32: Gen'l Chemistry I & II (5)
Geology 1: Principles of Geology (4) or Geology 10: Environmental Geology (4)
Soils 100: Intro to Soils (3) and Soils 106: Intro to Soils Lab (2)
Physics 21: College Physics (4) or Atm Sci. 50: Intro. Meteorology (3)
**Professional Forestry Core** 35 hours
Nat Res 70: Ecology and Renewable Resource Mgmt. (3)
Nat Res 211: Biometrics (3)
Nat Res 353: Resource Policy & Administration (3)
Nat Res 380: Resource Practicum (3)
Forestry 151: Dendrology (4)
Forestry 302: Forest Ecology (4)
Forestry 303: Silviculture (3)
Forestry 309: Water Quality and Watershed Mgmt (3)
Parks, Rec & Tour 231: Principles of Interpretive Outdoor Recreation (3)
**Forestry Summer Field Studies**
Forestry 140: Forest Surveying (1)
Forestry 141: Forest Utilization (1)
Forestry 142: Forest Measurement and Inventory (1)
Forestry 143: Forest Ecology Field Studies (1)
Forestry 144: Introduction to Silviculture and Management (1)
Forestry 145: Forest Management Planning (1)

**FOREST RESOURCE MANAGEMENT OPTION** The goal of the forest management curriculum is to prepare students to deal with the ever-changing complexities of multiple-use resource management. Emphasis is on the applications of forest management technology in a production and operations mode.

Graduates will be qualified to develop project plans, mobilize the inputs of production and complete the forest management operation in an environmentally safe, cost-efficient and effective manner at both the stand and the forest level. Graduates will be prepared to enter the workforce in either the public or private sector.

**In addition to the core curricula listed above, the following courses are required:**
**Field Studies-Summer Session** six hours
Forestry 204: Wood Technology (3)
Forestry 304: Tree Physiology (3)
Forestry 306: Forest Information Systems (3)
Forestry 314: Forest Resource Management (3)
Forestry 318: Forest Economics (3)
Fisheries & Wildlife 327: Wildlife Conservation I (3)
Forestry 212: Forest Health and Protection (4)
Forestry 207: Forest Fire Ecology and Control (2)
**Undesignated electives to total 125 hours**

**URBAN FORESTRY OPTION** Urban forestry is involved in the maintenance of vigorous and aesthetic tree systems that enhance the urban and suburban environments and make them desirable places to live and work. The responsibility of the "urban forester" is to establish, develop and administer tree management systems for metropolitan areas and other population centers.

Students in urban forestry will learn communications and public relations skills as well as mid-level management procedures that will prepare them to organize, staff, finance, plan and supervise urban forestry programs within an appropriate legal and biological framework. Courses in management, administrative strategies and scientific foundations are incorporated into the urban forestry curriculum.

**In addition to the core curricula listed above, the following courses are required:**
**Field Studies-Summer Session** six hours
Forestry 212: Forest Health and Protection (4)
Forestry 290: Urban Forestry (2)
Forestry 304: Tree Physiology (3)
Plant Science 211: Ornamental Woody Plants (3)
Plant Science 233: Plant Propagation (3)
Plant Science 254: Landscape Design (3)
Plant Science 257: Landscape Maintenance (3)

Plant Science 357: Nursery Crop Production and Management (4)
**Undesignated electives to total 125 hours**

**INDUSTRIAL FOREST MANAGEMENT OPTION** This option is intended for students interested in working in the private sector either in large corporations or for forest products entrepreneurs. The curriculum includes courses in business, economics, management and in production-oriented forestry.

Graduates will receive a background in forest management and logging operations, business principles and communications. They will be prepared to accept decision-making positions in private sector forest management companies.

**In addition to the core curricula listed above, the following courses are required:**
**Field Studies-Summer Session** six hours
Forestry 204: Wood Technology (3)
Forestry 306: Forest Information Systems (3)
Forestry 314: Forest Resource Management (3)
Forestry 318: Forest Economics (3)
Forestry 370: Logging Systems (3)
Ag Econ 156 or 256 or 257: Env Law, Ag and Biotech Law or Rural and Ag Law (3)
Finance 123: Principles of Finance (3)
**Undesignated electives to total 125 hours**

**INDIVIDUALIZED STUDIES IN FORESTRY** Study program of 27 credits to be determined by student and three-member faculty committee, two of whom must be Forestry faculty. This curriculum allows students with interests in both forestry and an allied field (wildlife biology and management, ecology, environmental science, environmental studies, interpretation of natural resources, environmental law, soils and others) to obtain a degree in forestry combined with a customized specialization in a field of interest.
**Designated electives** (13-21)
**Undesignated electives to total 125 hours**

## COURSES

**101—Topics in Forestry (1-3).** Organized study of selected topics in forestry. Intended for undergraduate students. f,w.

**140—Forest Surveying (1).** Elementary land surveying, topographic maps and their use. Introduction to GPS and GIS. Prerequisites: Soils 100, Forestry 151 and Forestry 141, 142, 143, 144 and 145 concurrently. s.

**141—Forest Utilization (1).** Field studies of logging and milling of timber. Prerequisites: Soils 100, Forestry 151 and Forestry 140, 142, 143, and 144 and 145 concurrently. s.

**142—Forest Measurement and Inventory (1).** Field measurement of standing trees including diameter, height and age. Estimation of forest timber resources using a variety of sampling schemes and techniques. Introduction to Arcview and growth models. Prerequisites: Soils 100, Forestry 151 and Forestry 140, 141, 143, 144 and 145 concurrently. s.

**143—Forest Ecology Field Studies (1).** Field studies of vegetation, soils, habitats and ecological units. Application of ecological principles of natural resource management and understanding of natural and managed forested communities with an emphasis on southeastern Missouri. Prerequisites: Soils 100, Forestry 151 and Forestry 140, 141, 142, 144 and 145 concurrently. s.

**144—Introduction to Silviculture and Management (1).** Management objectives and stand prescriptions, regeneration and intermediate silvicultural treatments, management on private and federal forest lands, tree evaluation and timber marking. Prerequisites: Soils 100, Forestry 151 and Forestry 140, 141, 142, 143 and 145. s.

**145—Forest Management Planning (1).** Preparation and presentation of a written forest management plan using material and data developed in prerequisite courses. Prerequisites: Soils 100, Forestry 151 and Forestry 140, 141, 142, 143 and 144 concurrently. s.

**151—Dendrology (4).** An introduction to the biology of trees, emphasizing identification in the field, taxonomy, ecology, geographic distribution and economic significance of foerst species. Prerequisites: Biological Science 12 or Plant Science 120 and 130 or instructor's consent. f.

**201—Topics (cr.arr.).** Organized study of selected topics. Intended primarily for undergraduate Forestry, Fisheries & Wildlife students. Subjects and credit may vary from semester to semester. f,w,s.

**204—Wood Technology (3).** Structure and identification of commercial woods. Relation of growth to physical and chemical properties of wood. f.

**207—Forest Fire Control and Use (2).** Fundamentals of all phases of fire protection. Objectives and techniques in use of fire. f.

**212—Forest Health and Protection (4).** Fundamental concepts of forest pathology and forest entomology including emphasis on ecological principles and management strategies. Prerequisite: 151. w, odd yrs.

**290—Urban Forestry (2).** The culture and management of trees in urban areas, including ownership patterns, species composition, growth environment, amenities provided and evaluation. One-day field trip required. Prerequisites: 151 or Plant Science 211, or instructor's consent. w, odd years.

**298—Seniors Honors Research (1-3).** Prerequisites: 3.30 GPA and instructor's consent. f.

**299—Senior Honors Research (1-3).** Prerequisites: 3.30 GPA and instructor's consent. w.

**300—Problems (cr.arr.).** Topics in forestry, fisheries and wildlife. f,w,s.

**301—Topics (cr.arr.).** Organized study of selected topics. Intended for upper-division and graduate student. Subjects and credit may vary from semester to semester. f,w,s.

**302—Forest Ecology (3).** Lectures and Labs on the interrelationships of forest vegetation and the environment. Prerequisites: Forestry 151 or Biological Science 214 or consent.

**303—Practice of Silviculture (3).** Applied ecological principles, cultural practices, tree improvement techniques and treatments to forest stands and other lands for systematic production of goods and services. Prerequisite: 302. w.

**304—Tree Physiology (3).** Lectures on physical and chemical phenomena involved in the functions and activities of trees. Prerequisites: Biological Sciences 12; Chemistry 32 or instructor's consent.

**306—Forest Information Systems (3).** Applied course in the area of aerial photogrammetry, forest inventory, and simple GIS applications for developing, maintaining, and utilizing these tools in a forest management. Prerequisite: Natural Resources 80 or instructor's consent. f.

**307—Wildland Fire Management (3).** Management, administration, and organization of wildland and prescribed fires and other natural and manmade disasters. Emphasis placed on organizational arrangements of incidents rather than on either strategy or tactics. Prerequisites: Forestry 207 or equivalent.

**309—Watershed Management and Water Quality (3).** Hydrologic processes on wildland watersheds. Effects of forest land management on streamflow, erosion and water quality. Prerequisites: 141 or instructor's consent. f.

**314—Forest Resource Management (3).** Teaches resource managers how to develop a plan for the management of forest resources using managerial, economic, silvical and wildlife techniques for its enhancement and to meet the landowner's objectives. Prerequisites: 303 and 318. f.

**318—Forest Economics (3).** Economic principles applied to production/marketing of goods and services from forest land: emphasizes capital and land factors and investment alternatives related to time. Prerequisites: Mathematics requirement completed; Agricultural Economics 40, 41, or 70. w.

**350—Special Readings (cr.arr.).** Critical review of current literature and research in forestry, fisheries and wildlife, and methods of presenting research results. f,w,s.

**370—Logging Systems: Operations and Analyses (3).** A systems approach to timber harvesting from acquisition through engineering to log transport. Regional aspects and influences will be considered. Prerequisites: 143, 144. w, odd years.

**375—Forest Stand Dynamics (3).** Examine the development of forest structure, the role of disturbance on forest change and the use of this knowledge in applying silvicultural systems. Both forest stand dynamics theories, structure diagrams, forest growth models, and long term data sets are used to understand stand dynamics. Prerequisite: Forestry 303 or instructor's consent. w, even years.

**385—Agroforestry I: Theory, Practice and Adoption (4).** Understand biophysical, ecological social and economic features of temperate and tropical agroforestry. Covers the basics of design, planning and implementation of agroforestry practices. Prerequisite: junior standing. f.

**401—Topics (cr.arr.).** Organized study of selected topics. Subjects and credit may vary from semester to semester. Prerequisite: instructor's consent. f,w,s.

**403—Low Temperature Physiology of Plants (3).** Physiologic bases of resistance and adaptation of plants to chilling and freezing temperatures. Prerequisite: Biological Sciences 313 or equivalent. Letter grading. w, odd years.

**405—Forest Soils (3).** Physical, chemical and biological properties of forest soils in relation to tree growth. Prerequisites: 303 or instructor's consent. f, even years.

**407—Applied Silviculture (3).** Ecological and economic factors affecting application of silviculture in each of eighteen forest regions in United States. Prerequisite: 303. f.

**410—Seminar (1).** Discussions of current developments in Forestry, Fisheries and Wildlife, and critical study of research programs. f,w.

**414—Advanced Forest Management (3).** Modern quantitative methods to facilitate decision-making in harvest scheduling and regulation, land use allocation, and production planning in natural resource management. Prerequisite: 314. w. odd, yrs.

**416—Applied Research Methodology (2).** Interrelated roles or logic, observation experiment in scientific method, research components, ethical aspects, scientific publication and communication, and research direction. Prerequisite: instructor's consent. f, odd yrs.

**417—Ecological Modeling (3).** An introduction to the topics and philosophy of ecological modeling. The course will guide you through the process of developing a conceptual model, formalizing the model, formulating, parameterizing, and running the model as well as analyzing the results. Prerequisites: graduate standing or instructor's consent. w, odd years.

**418—Social Forestry (3).** Issues with using forestry as an international development tool; planning, implementing and evaluating farm and community forestry projects. Prerequisite: Forestry 318, or Ag Econ 270, or equivalent and instructor's consent.

**419—Ecosystem Management: The Human Dimension (3).** Overview of cultural, social, political and economic dimensions of natural resource problems and issues from an ecologically- grounded management perspective. Prerequisite: Natural Resources 353 or equivalent.

**421—Plant-Water Relations (3).** Absorption, translocation, utilization and loss of water by plants . Biophysics of water movement in the soil-plant-atmosphere continuum. Effects of water deficits on physiological processes. Prerequisite: Biological Science 313 or equivalent. w, even years.

**423—Plant-Water Relations Laboratory (2).** Introduction to techniques and instrumentation used in studies of plant-water relations. Corequisite: 421. w, even years.

**425—Tree Growth-Quality Relationships (3).** Response of tree growth (wood formation) to such environmental influences fertilization, moisture, nutrient supply, wounding pruning, etc. Prerequisites: 204 or 303 or instructor's consent. w, odd years.

**450—Research (cr.arr.).** Original research not leading to preparation of dissertation. f,w,s.

**490—Research (cr.arr.).** Original investigation for presentation in a dissertation. Graded on a S/U basis only. f,w,s.

# French

*See Romance Languages*

# General Agriculture

**(INTERUNIT PROGRAM IN THE COLLEGE OF AGRICULTURE, FOOD AND NATURAL RESOURCES)**
**2-64 Agriculture Building (573) 882-8301**
**http://ssu.missouri.edu/**

**DEGREES** BS in general agriculture

The General Agriculture degree program is for students searching for a well-rounded education that builds on the diversity of the other degree programs in the College of Agriculture, Food and Natural Resources. The flexibility of General Agriculture enables students to tailor a program to fit their individual interests.

Students choose General Agriculture for a variety of reasons. Some may enter the program with a specific career goal in mind. Others may choose General Agriculture to get a broader education that will give them more flexibility.

**DEGREE PROGRAMS** To complete the degree requirements for General Agriculture, students must complete the general requirements for the College of Agriculture, Food and Natural Resources. These general requirements include courses in communications, natural science and math, social science and humanities and business and economics (see general requirements for the BS in agriculture in College of Agriculture, Food and Natural Resources).

- Students in General Agriculture also must complete three areas of concentration from CAFNR programs that offer a major or a minor. The primary concentration area requires completion of 18 or more hours. Two additional concentration areas of at least 12 hours each from degree programs are also required.
- These courses shall not be used to fulfill the requirements of a minor.
- Within each area, at least 50 percent of the credit hours must be earned on the MU campus.
- Hours used to meet the general education requirements can be used to meet requirements in emphasis areas.
- Not more than six credit hours in the primary area and up to three credit hours in the additional areas may consist of problems, readings, internships, travel courses and other non-structured courses.
- The Capstone experience for General Agriculture majors can be a capstone course in a concentration area, an internship, or international experience.

Overall, a minimum of 42 credit hours of course work must be taken in the College of Agriculture, Food and Natural Resources out of the total of 128 hours needed to satisfy degree requirements. Also, a minimum of 50 credit hours must be in courses numbered 100 and above. A minimum of 24 of these 50 hours must be in courses numbered 200 and above.

**ADVISING** Faculty advisers take a personal interest in the success of students in the College of Agriculture, Food and Natural Resources. Typically, a faculty member from the student's primary concentration area will serve as an adviser. In addition to helping students plan a program of study, faculty advisers provide support, encouragement and career advice.

**CAREER OPPORTUNITIES** Students in General Agriculture are well prepared for a variety of careers. For example, a student interested in a career related to production agriculture might choose emphasis areas in animal sciences, plant science and agricultural systems management. A student interested in agricultural business related to livestock might choose emphasis areas in agricultural economics, animal sciences and food science and human nutrition. The emphasis areas chosen by the student provide a background for careers within these areas. Career options available to students in General Agriculture are as varied as the students themselves.

# General Studies

**Office of Special Degree Programs**
**College of Arts and Science**
**210 Switzler Hall (573) 882-6060**
*For more information on General Studies, see the College of Arts and Science section of the catalog*
**DIRECTOR** M.J. Porter

**COURSES**

**101—Topics in General Studies (cr.arr.).** Experimental and/or interdisciplinary course open to students both in and outside of the College of General Studies. Subjects and earnable credit may vary from semester to semester.

**275—Special Project (1-6).** With adviser's approval, student works with a faculty member on a major reading, research, or creative project, usually of interdisciplinary nature. Total credit may not exceed 12 hours toward B.G.S. degree. Open only to students pursuing the bachelor of general studies degree.

**280—Internship (1-6).** Internship limited to students pursuing the bachelor of general studies degree. S/U graded only.

**350—Special Readings (1-6).** Independent readings with supervisory faculty member. Open only to General Studies majors. May be repeated to a maximum of six hours.

# Geography

**College of Arts and Science**
**8 Stewart Hall (573) 882-8370**
**CHAIR** C. Salter
**PROFESSOR** C. Salter, J. Hobbs
**ASSOCIATE PROFESSORS** M. Cowell, G. Ludwig,
**ASSISTANT PROFESSORS** J. Hipple, E. Kinman, W. Schroeder, M. Urban
**INSTRUCTOR** T. Haithcoat
**PROFESSORS EMERITI** J. Kostbade, W. Noble

**DEGREES** AB and MA in geography

The undergraduate program of the Department of Geography has five purposes:

- To teach students to think spatially and solve spatial problems
- To acquaint students with past and present patterns of cultural landscape development and physical-environmental landscape change and with the tools and skills necessary for their analysis
- To instill concern for intelligent management of the earth's environmental systems
- To prepare motivated students for graduate study in Geographic Information Science, environmental management, and a broad realm of additional geographic fields of study reflecting a diverse faculty
- To provide an intellectual focus for students seeking a broadly based liberal education

**AREA OF CONCENTRATION REQUIREMENTS** A geography major requires a total of 33 semester hours of geography courses and eight hours in a related area or 15 hours in a minor. The geography courses consist of 21 hours of core courses, at least nine hours of courses in one of the five geography tracks and three hours selected in consultation with an adviser.

**Core courses.** All majors must take the following courses:
Geog 1: Regions and Nations of the World I
Geog 2: Regions and Nations of the World II
Geog 47: The Language of Maps
Geog 105: Intro to the Humanized Earth
Geog 111: Physical Geography
Geog 344: Computer-Assisted Cartography
Geog 299: Senior Seminar in Geography

**Regional/Cultural Geography Track.** This track deals with aspects of human geography related to cultural origins and dispersal, cultural ecology, environmental perception and sense of place, cultural landscapes, environmental stewardship, and landscape change. The focus is upon both the spatial attributes of culture and the interaction between culture and environment. It is intended for prospective secondary school teachers, journalists, businesspersons, and government workers who wish to pursue a traditionally broad-based geographic education in regional, environmental, and international studies. It is also intended for those who wish to learn, in an integrated and comprehensive fashion, about Missouri, North America, and the world.

**Students must take three of the following courses:**
Geog 103: Environmental Geography
Geog 116: United States and Canada
Geog 180: World Political Geography
Geog 317: Historical Geography of North America
Geog 225: Geography of Missouri
Geog 273: East Asia
Geog 275: Geography of the Middle East
Geog 340: Mexico, Central America and Caribbean
Geog 341: South America

**Physical/Environmental Geography Track.** This track emphasizes the study of biophysical environmental processes, environmental change, environmental management, and human modification of the environment at regional and global scales. The focus is on geomorphological and biogeographical systems and landscapes. The goal is to provide a sound background in the origin, function, and dynamic change characterizing environmental systems and the landscapes they create. This track is intended for students interested in understanding the biophysical environment and the ways in which humans interact

with it.

**Students must take three of the following courses:**

Geog 50: Introductory Meteorology
Geog 103: Environmental Geography
Geog 225: Geography of Missouri
Geog 301: Topics (Process Geomorphology)
Geog 301: Topics (Biogeography)
Geog 311: Physical Geography of the United States
Geog 366: Climates of the World

**Urban/Economic Systems Track.** This track embraces such topics as competitive vs. generative growth within urban systems, urban travel behavior, the role of cities in regional development, international commodity trade flow, the fiscal dilemmas of cities, and migration behavior. This track is designed to familiarize students with the intellectual antecedents of this research domain, methods of geographical analysis, and research design and implementation. The track also prepares students for career opportunities in such fields as transportation planning, regional development, urban environmental issues and management, and urban management in both the public and private sectors.

**Students must take three of the following courses:**

Geog 210: Economic Geography
Geog 304: Spatial Analysis in Geography
Geog 325: Urban Geography
Geog 346: Geography and Planning

**Geographic Information Sciences Track.** This track allows students to develop technical skills central to the discipline of geography and spatial analysis. The goal of this track is to familiarize students with the intellectual antecedents of this research arena, methods of geographical analysis, and research design and implementation. Students will acquire skills in the graphical display of geographical data and the ability to produce or analyze such data through drawing, drafting, computer graphics, or Geographic Information Systems.

**The following three courses are required:**

Geog 304: Spatial Analysis in Geography
Geog 345: Remote Sensing
Geog 347: Geographical Information Systems 1

**General Geography Track.** This track is designed for students with a broad interest in geographical studies that does not fall within one of the other tracks. Due to the general nature of this track, students must develop in consultation with their adviser a personal plan of study outlining specific goals and course requirements.

**Related Area Requirement.** All geography majors are required to take Statistics 25, or 31, or a higher level statistics course as part of the related area requirement. If a minor is chosen, the statistics course is still required. Other related work may be drawn from such fields as natural resources, geology, atmospheric science, soil science, forestry, statistics, computer science, math, history, sociology, anthropology, economics, and political science.

**MINOR IN GEOGRAPY** A geography minor comprises 15 hours of credit approved by the department. A minor must include one of the following courses: 47, 247, 304, 344, 345, 347. At least nine hours must be in courses numbered 100 or above.

**MINOR IN GEOGRAPHIC INFORMATION SCIENCE** A minor in Geographic Information Science (GISc) comprises 15 hours of credit approved by the department. A minor must include the following courses: 247 and 347. At least 9 hours of courses must come from the following: 304, 315, 344, 345, 439, 447. Students may earn both the minor in geography and minor in geographic information science provided that the coursework is unique for each minor. Students earning a major in geography are not permitted to do the minor in geographic information science.

**HONORS IN GEOGRAPHY** The geography honors program requires independent research during the senior year, usually under Geography 296 or 297. Consult the geography honors director for further information.

**PROFESSIONAL OPPORTUNITIES** Geographers are employed as cartographers, including map editors; planners with governmental agencies and private firms; area intelligence specialists; environmental planners and analysts; natural resource managers; retail trade and marketing specialists; location analysts for retail and manufacturing firms; map librarians; land use specialists; remote sensing and air photo interpreters; cultural resource specialists; industrial development specialists; travel agents; demographers; professors and teachers; and in positions related to marketing, transportation and placement of health care and recreational services. An internship program (Geography 280) is available.

Jobs in the mapping sciences and Geographic Information Systems (GIS) are rapidly expanding for geography graduates. These include computer cartographers, air photo interpreters, remote sensing specialists, and Geographic Information Systems (GIS) specialists. Students are encouraged to contact the department and potential employers early in their program of study because special course work may be required for certain jobs, and useful internships may be available.

The department cooperates with the MU Career Planning and Placement Center to find appropriate jobs for its majors and will assist them in designing programs that are compatible with their individual career objectives and ambitions. Further information on jobs and careers in geography is available from the Association of American Geographers, 1710 16th St. N.W., Washington, D.C. 20009 gaia@aag.org; for teachers, from the National Council for Geographic Education, Department of Geography, Indiana University of Pennsylvania, Indiana, PA, 15705; for cartographers, from the American Congress on Surveying and Mapping, 210 Little Falls Street, Falls Church, VA, 22046.

## COURSES

**1—Regions and Nations of the World I (3).** Introductory analysis for general education. Regional character, spatial relationships, major problems of Europe, North America (United States and Canada) and Latin America. Organized around basic concepts in field of geography. f,s. cor.

**2—Regions and Nations of the World II (3).** Introductory analysis for general education. Regional character, spatial relationships, problems of environment and development of the former Soviet Union, Pacific World, Monsoon Asia and Middle East. Organized around basic concepts in field of geography. May be taken independently of Geography 1.

**47—The Language of Maps (3).** Introduction to methods of map interpretation and geographic communication through maps. Primary emphasis is on the development of skills in map analysis, with laboratory work and possible field analysis.

**50—Introductory Meteorology (3).** (same as Atmospheric Science 50). cor.

**101—Topics in Geography (1-3).** Organized study of selected topics. Subjects and earnable credit may vary from semester to semester. Prerequisites: sophomore standing, departmental consent for repetition.

**101GH—Regions and Nations Gneral Honors (5).**

**103—Environmental Geography (3).** Historical perspectives on the human agency in transforming the earth, with emphasis on international environmental problems. Topics include basic biogeography; environmental impacts of population growth, underdevelopment and overdevelopment; and new approaches to management of global resources. Prerequisite: 1 or 2.

**105—Introduction to the Humanized Earth (3).** Examines human culture as a geographical element; the power of culture and human institutions in human-environmental interaction and the creation of agriculture, folk culture, popular culture, cities, and a broad range of cultural landscapes. Prerequisite: 1 or 2 or sophomore standing.

**111—Physical Geography (3).** Introductory study of the physical environment: maps, water, landforms, environmental systems. Prerequisite: Geography 1 or 2 or sophomore standing. cor.

**116—United States and Canada (3).** Intensive examination of selected areas and distributions. Regional systems, problems and planning. Prerequisite: sophomore standing.

**117—Geography of Europe (3).** Survey of Europe's lands and peoples; emphasis on historical areal relationships as reflected in Europe's changing economic and political organization. Prerequisite: sophomore standing.

**180—World Political Geography: Patterns and Processes (3).** (same as Peace Studies 184). Geographic factors in the development of political boundaries traditions, and societal perspectives. Spatial patterns and geopolitical processes are explored in selected regions of the world. Prerequisites: Geography 1 or 2 or sophomore standing.

**210—Economic Geography (3).** Geographical location and organization of world's major economic activities. Emphasizes agricultural and industrial patterns, commodity flows, transport networks, geographical principles of market and industrial location, internal spatial organization of cities, land-use models, geographic aspects of economics growth.

**225—Geography of Missouri (3).** Physical, human, economic, and political geography of Missouri; regions of the state; geography applied to current state issues. Prerequisite: sophomore standing. cor.

**247—Introduction to Geographic Information (3).** Introduction to methods of organizing and interpreting spatial information, including remote sensing, Geographic Information Systems and computer cartography.

**273—Geography of East Asia (3).** Cultural, physical and economic geography of China, Japan, and Korea, with emphasis on China. Landscape analysis, determination of regional identities, and study of political forces evident in the development of the contemporary scene are stressed. Prerequisite: Geography 2.

**275—Geography of the Middle East (3).** Cultural, physical and historical geography of Middle East, with emphasis on cultural adaptations to environments and conflicts over the resources. Prerequisite: Geography 2 or equivalent.

**280—Internship in Applied Geography and Cartography (1-3).** Regularized individual work experience with local, regional, state or national agencies, with guidance and readings supplied by faculty coordinator. May repeat to maximum of 6 hours. Prerequisites: upper-level standing in Geography, cartographic training, and departmental consent.

**296—Honors (3).** Special work for Honors candidates in geography. f.

**297—Honors (3).** Special work for Honors candidates in geography. w.

**299—Senior Seminar in Geography (3).** A seminar in selected themes in Geography. Class will focus on research, writing, presenting, and discussing themes in contemporary geography. Required of all majors prior to graduation. Prerequisite: 5 courses in geography or instructor's consent.

**300—Special Problems (1-3).** Independent investigation leading to a paper or project. May be repeated to a maximum of 6 hours. Prerequisite: instructor's consent.

**301—Topics in Geography (1-3).** Organized study of selected topics. Subjects and earnable credit may vary from semester to semester. Prerequisites: junior standing and instructor's consent; departmental consent for repetition.

**303—Meteorology of the Biosphere (3).** (same as Atmospheric Science 303).

**304—Spatial Analysis in Geography (3).** Application of statistical methods to geographic research. Prepares students to utilize advanced methodologies and models in spatial analysis. Includes computer analysis of geographical data. Prerequisite: Mathematics 10.

**305—Selected Themes in Cultural Geography (3).** Case studies in the patterns and processes of human—enviromental interactions. Study of the cultural forces responsible for the continual transformation of the earth's cultural landscapes. Prerequisite: 105 or instructor's consent.

**311—Physical Geography of the United States (3).** Study of natural regions of the United States by integrating topics from landforms, geology, climate, soils, vegetation, resources, and land use. Prerequisites: 111 and junior standing, or instructor's consent.

**317—Historical Geography of North America (3).** Analysis of selected geographical patterns and themes in the continent's past. Focus is explicitly geographical, stressing extensive use of maps and recent scholarly work by historical geographers. Prerequisites: 1 or 116, and junior standing, or instructor's consent.

**320—Seminar in Geography Education (3).** Study and research on fundamental themes in geography. Integration of these themes into regional and systematic approaches to the teaching of geography. Enrollment is restricted to students pursuing or considering careers in teaching. Prerequisites: junior standing and instructor's consent.

**325—Urban Geography (3).** Study of cities: origin, development, distribution; social, economic, and demographic significance. Consideration of theories of structure, urban hierarchies, and land use planning. Prerequisites: 1, 2, and two other Geography courses, or instructor's consent.

**338—Statistical Mapping (3).** Mapping statistical data: problems, techniques, symbolization, and map comparisons. Frequency distributions and statistical measures as related to cartographic decisions and displays. Graphic display and cartographic displays. Prerequisites: upper-level or graduate standing; Statistics 207. 207.

**340—Mexico, Central America, and the Caribbean (3).** Physical environment and culture in the regional development of Mexico, Central America, and the Caribbean. Prerequisite: one course in Geography or instructor's consent.

**341—South America (3).** Physical environment and culture in the regional development of South America. Prerequisite: one course in Geography or instructor's consent.

**344—Computer-Assisted Cartography (3).** Principles of computer-assisted cartography. Automated cartographic display. "Hands on" experience with computer-mapping software and hardware systems. Role of computers in map design. Digital encoding of geographic data. Prerequisite: 247.

**345—Remote Sensing (3).** Introduction to the principles of remote sensing of the environment. Digital imagery from spacecraft, conventional and high-altitude aerial photography, thermal imaging, and microwave remote sensing. Prerequisite: 247.

**346—Geography and Planning (1-3).** Emphasis on geographic techniques for gathering and generating environmental information for planners. Principles of land use planning will be applied to selected regions. Prerequisites: 247 or instructor's consent.

**347—Geographic Information Systems I (3).** Introduces concepts of computer analysis of geographic data and emphasizes the techniques for handling geographic data. Application of computer-based GIS systems in coursework. Prerequisite: 247.

**350—Special Readings (1-3).** Independent readings selected in consultation with supervisory faculty member. May be repeated to a maximum of 6 hours. Prerequisite: instructor's consent.

**352—Geography of Africa (3).** Major concepts of African geography in current and historical perspective. Prerequisite: one course in Geography or instructor's consent.

**366—Climates of the World (3).** (same as Atmospheric Science 366).

**380—Selected Themes in Political Geography (3).** Study of basic writing, dominant geographers, case studies, bibliographies and development of research methods. Prerequisites: 180 and three other geography courses, or instructor's consent.

**400—Special Investigations (1-3).** Advanced studies to meet the needs of the individual student. May be repeated to a maximum of 6 hours. Prerequisite: instructor's consent.

**401—Topics in Geography (1-3).** Organized study of selected topics. Subjects and earnable credit may vary from semester to semester. Prerequisite: instructor's consent; departmental consent for repetition.

**402—Field Geography (3).** Techniques of geographical investigation in the field. Prerequisites: Geography 1,2 and four other courses in geography, or instructor's consent.

**405—Research Methods (3).** Application of scientific methods in geographic research. Critical evaluation of current geographical methodology.

**406—Seminar in World Regional Geography I (1).** Problems in the teaching of world regional geography on college level. f.

**407—Seminar in World Regional Geography II (1).** Continuation of course 406. w.

**408—Geographic Thought (3).** Directions and stages in the development of American geographic thought. Course is built around landmark writings by American geographers. Prerequisite: graduate standing in Geography or instructor's consent.

**410—Seminar (1-3).** May be repeated to a maximum of 6 hours. Prerequisite: departmental consent.

**439—Digital Image Processing for Spatial Analysis (3).** Resource management techniques for processing digital imagery acquired by land resource satellites; emphasis on classification and mapping of agricultural land uses and wildlife habitats. Prerequisite: 345.

**445—Applied Remote Sensing (3).** Analysis of remotely sensed data for resource management application. Acquisition of data, project planning, hands-on image interpretation experience, design of output products and project report preparation. Prerequisite: 345 or instructor's consent.

**447—Geographic Information Systems II (3).** Advanced study and application of Geographic Information Systems technology to natural resources planning. Focus on individual research projects. Prerequisite: 347 or instructor's consent.

**450—Research (1-6).** Research not leading to thesis. May be repeated to a maximum of 6 hours. Prerequisite: instructor's consent.

**475—Seminar in the Geography of the Middle East (3).** Advanced readings and analysis of topics in the geography of the Middle East. Prerequisite: graduate standing.

**490—Research (1-8).** Research leading to a thesis. May be repeated to a maximum of 8 hours. Prerequisite: instructor's consent. Graded on a S/U basis only.

# Geological Sciences

**College of Arts and Science**
**101 Geology Building (573) 882-6785**
**CHAIR** G. Himmelberg
**PROFESSORS** G. Himmelberg, P. Nabelek, K. Shelton, M. Underwood



**ASSOCIATE PROFESSORS** R. Bauer, M. Liu, T. Lyons, C. Wicks
**ASSISTANT PROFESSORS** J. Dorale, C. Kelley, K. MacLeod, E. Sandvol, C. Zhang
**PROFESSORS EMERITI** R. Ethington, T. Freeman, W. Johns, W. Keller, A. Unklesbay,

**DEGREES** AB, BS, MS, PhD in geological sciences

The bachelor of science degree in geological sciences is designed to prepare the student for graduate work and a career as a professional geologist in industry, research or academia. The bachelor of arts degree is designed for those students seeking positions in surficial or environmental geology as a registered geologist.

Minimum requirements for areas of concentration for both undergraduate programs in the department are listed below. The Department of Geological Sciences offers dual degree programs with the departments of Civil and Environmental Engineering and Soil and Atmospheric Sciences. For more information, contact an adviser in the department.

### AB DEGREE IN ENVIRONMENTAL GEOLOGY

**Geological Sciences Courses**

Geol 10: Environmental Geology (4) or 1: Principles of Geology (4)
Geol 124: Historical Geology (3)
Geol 127: Surficial Geology (4)
Geol 220: Geology of MO (3)
Geol 221: Geology of MO Laboratory (1)
Geol 225: Rocks and Minerals (4)
Geol 308: Sedimentology (3)
Geol 325: Hydrogeology (3)
Geol 335: Invest. of Earth Materials (3)
One Geological Sciences course numbered 100 or above (3)
One Geological Sciences course chosen from 342, 344, 346, 351 (3)

**Related Courses**

Chemistry 31: General Chemistry I (2), Chemistry 32: General Chemistry II (3) and Chemistry 33: General Chemistry III (3)
Physics 21: College Physics (4)
Math 108: Calculus for Social and Natural Sciences I (3) **and** Math 208: Calculus for Social and Natural Sciences II (3) or Statistics 185: Statistical Methods in Natural Sciences (3)
A Computer Science course numbered 75 (3) or above
A Biology Course (3-5)

In addition, eight or more hours are planned in consultation with the student's adviser to provide additional skills suited to the student's vocational goals. These credit hours must come from upper-class courses.

### BS DEGREE IN GEOLOGICAL SCIENCES

**Geological Sciences Courses**

Geol 1: Principles of Geology (4)
Geol 10: Environmental Geology (4)

Geol 124: Historical Geology (3)
Geol 127: Surficial Earth Processes (4) or Geol 107: Intro. to Soil Science (5)
Geol 234: Mineralogy (5)
Geol 326: Igneous & Metamorphic Petrology (4)
Geol 307: Structural Geology (4)
Geol 308: Sedimentology (3)
Geol 303: Applied Geophysics (3)
Geol 336: Field Geology (6)
One additional Geol 300-400 level course in the Biological Processes group
One additional Geol 300-400 level course in the Chemical Processes group
One additional Geol 300-400 level course in the Physical Processes group
One additional Geol 100 level or above course

**Related Courses**

Chem 32 (3), and 33 (3) General Chemistry II and III
Physics 175 (5) and 176 (5): University Physics or 21 (4) and 22 (4): College Physics
Math 80: Analytic Geometry and Calculus I (5)
Math 175: Calculus II (5)
A Computer Science course numbered 76 (3) or above as approved.

The bachelor of science curriculum provides flexibility for students who seek to focus on a specific subdiscipline in the geosciences. Students interested in geophysics, for example, should use their electives to expand their background in math and to develop a broad knowledge of geology and geophysics.

**MINOR IN GEOLOGICAL SCIENCES** consists of 15 hours of courses in the Geological Sciences with six or more hours taken at the 100-level or above. All courses must be taken for a letter grade and a grade of C- or better must be earned in each course. The courses should be selected in consultation with an adviser in the department.

## COURSES

**1—Principles of Geology (4).** Three lectures, 2-hours lab, Earth processes and products and their impact on human needs and the environment. One field trips. f,w. cor.

**10—Environmental Geology (4).** The interaction between geologic processes and human society. Topics include mineral, water, and energy resources, volcanic hazards, earthquakes, landslides, floods, coastal erosion, pollution problems and environmental management. f,w.

**54—Geology of Our National Parks (3).** An introduction to geologic principles illustrated by the natural history of our national parks and monuments.

**100—Independent Study (1-3).** Directed Library research in geological topics, under the supervision of faculty sponsor. May be repeated for a maximum of 3 hours credit. Prerequisite: instructor's consent. f,w,s.

**101—Undergraduate Topics in Geological Sciences (1-3).** Organized study of selected topics. Subjects and earnable credit may vary from semester to semester. Departmental consent for repetition.

**102GH—Faults and Earthquakes: Past, Present, and Future (3).** Seminar in science and societal ramifications of earthquakes. Geologic background includes causes, behavior, and distribution of faults. Student-led discussions cover historical disasters, economic, political, psychological, and cultural perspectives. Prerequisite: English 20. Honors eligibility required. f.

**107—Introduction to Soil Science with Lab (5).** (same as Soil Science 107). Introduction to Soil Science with emphasis placed on physical, biological, and chemical properties and applications to land use, plant growth, and environmental problems with laboratory application of these concepts. Prerequisite: 3 hours of Chemistry

**110—The Age of the Dinosaurs (3).** Study of the evolution of dinosaurs during the Mesozoic Era. New information on dinosaur life habits, food resources, dispersal by plate tectonics, and theories of extinction will be covered . Prerequisite: 1 or 10. w.

**112—Oceanography (3).** Topics include: history and methods of marine research, properties of seawater, ocean circulation, biological productivity and zonation, origin and classification of marine sediments, character of major coastal and open-ocean environments, economic resources and environmental hazards. Prerequisite: grade of C or better in Math 10 or equivalent. f.

**114—Planetary Geology (3).** Comparative geology of planets, moons and meteorites. Formulation of the solar system and geologic evolution of planetary bodies. Major geologic processes on plantary bodies. Evidence for life. Prerequisites: Mathematics 10, Chemistry 31. w.

**120—Earth Systems and Glogal Change (3).** Study of the earth as a whole, taking into account the many interwoven components of the geosphere, hydrosphere, atmosphere and biosphere. Prerequisite: 1 introductory course in the physical or biological sciences. w.

**124—Historical Geology (3).** Summary of principles and techniques used in reconstructing Earth's history. Survey of major events that have affected Earth and its inhabitants. Review of geologic history of North America. Prerequisites: 1 or 10, English 20. f.

**127—Surficial Earth Processes and Products (4).** Semiquantitative analysis of geologic processes that shape the earth's surface. Includes topics in sedimentation and geomorphology. Prerequisites: 1 or 10 and at least a unit each of High School Algebra and Trigonometry. w.

**142—Global Water Cycle (3).** Study of environmental geochemical factors controlling the composition of natural waters, and sources of water's constituents (natural or human-produced). Prerequisites: 1 or 10, Math 10.

**220—Geology of Missouri (3).** The physical, historical, and environmental geology of Missouri are describe, discussed and interpreted. Prerequisite: 123 or 124. w,s.

**221—Geology of Missouri - Laboratory (1).** A field based and laboratory based course that uses standard geological techniques to interpret the rock record of Boone County and Missouri. Corequisite: 220. w,s.

**225—Rocks & Rock-Forming Minerals: Identification, Occurence & Origin (4).** Introduction to the classification, occurrence, and origin of rocks and rock forming minerals. Includes identification of minerals and rocks in hand specimen by their physical properties. Prerequisites: 1 or 10, Chemistry 31 or concurrently. f.

**234—Mineralogy (5).** Introduction to crystallography, crystal chemistry and crystal structures. Systematic study of mineral groups. Includes identification of Minerals by physical, chemical and optical properties. Prerequisite: Chemistry 31 or concurrently. f.

**300—Problems (1-5).** Prerequisite: instructor's consent. f,w.

**301—Topics (cr.arr.).** Organized study of selected topics. Subject and earnable credit may vary. Prerequisites: junior standing or higher and instructor's consent, departmental consent for repetition.

**303—Applied Geophysics (3).** Introduction to the fundamentals of geophysical methods and their applications in geology, environmental studies, and exploration. Topics include seismic, gravity, magnetic, and electric methods. Prerequisite: Physics 22, Math 175 and Math 80 or instructor's consent. f.

**304—Plate Tectonics (3).** Formation, evolution, and structure of the earth. Rules, causes, and implications of plate tectonics with emphasis on present-day features. Prerequisites: Geology 234, Physics 21 or 175, Math 80.

**307—Structural Geology (4).** The mechanical behavior of earth materials. Analysis of the geometry and mechanics of faults, fractures, and folds. Laboratory includes problems on stresses and strains associated with deformation, geometric analysis of deformation structures, and interpretation of geologic maps. Prerequisites: 1 or 10, Mathematics 80 or 108 or instructor's consent. w.

**308—Sedimentary Environments and Facies (3).** Mechanics of sediment transport, development of stratification and sedimentary structures, characteristics of non-marine, marginal-marine, and deep-marine depositional environments. Laboratory emphasizes description and classification of hand samples and thin sections. Prerequisite: 234. f.

**310—Thermal Processes in the Solid Earth (3).** Principles of heat transfer in solid earth by conduction, advection and convection. Basic analytic and numerical solutions. Application in Earth's dynamic system, environmental sciences, and geological problems. Prerequisites: Math 175, Physics 22 or 175.

**320—Engineering Geology (3).** Fundamentals of earth materials and geological processes and their applications in engineering works and environmental sciences. Includes properties of minerals and rocks, rock and soil mechanics, surficial geological processes, and practice of engineering. Prerequisite: 1 or 10; Math 80 or instructor's consent.

**324—Karst Hydrology (3).** Study of the mechanisms of groundwater flow in Karst terrains. Emphasizing several scales including that of a conduit, a catchment, and regional framework. Prerequisite: 1 or 10, Math 175, Physics 21 or 175. w.

**325—Hydrogeology (3).** Analysis of geologic factors related to occurrence, distribution, recovery and use of ground water. Prerequisites: Mathematics 80 or 108, Physics 21 or 175, 1 course in Geological Sciences.

**326—Igneous and Metamorphic Petrology (3-4).** Basic understanding of igneous and metamorphic rock associations and rock-forming processes. Emphasis on understanding the evolution of the Earth in view of igneous and metamorphic rock petrogenesis. Prerequisite: 234. w

**331—Introduction to Paleontology (4).** Study of the morphology, paleontology, patterns of evolution, and causes of extinction in geologically important groups of invertebrate and vertebrate fossils. Lab concentrates on identification of biostratigraphically important fossils (mostly invertebrates). Several half-day field trips. Prerequisites: 1 or 10 and upper-level standing or instructor's consent. f.

**335—Investigation of Earth Materials (3).**

**336—Field Course (6).** Field study of sedimentary, igneous and metamorphic rocks. Facies analysis of sedimentary rocks, mapping of folded and faulted sedimentary strata and fabric analysis of an igneous-metamorphic terrane. Excursion to Yellowstone and Grand Teton National Parks. Prerequisites: 124, 307, 308.

**340—Economic Geology (4).** Geochemistry of ore deposits. Introduction to types of mineral deposits, genesis of ore, and current areas of research. Laboratory emphasizes hand-specimen and polished-section studies of a wide variety of ore deposit types. Prerequisites: 326 or instructor's consent.

**342—Introduction to Low-Temperature Geochemistry (3).** Introduction to the chemical alteration of rock-forming minerals in weathering environments and to factors controlling the chemical composition of subsurface water. Prerequisite: Chemistry 33.

**344—Geomicrobiology and Microbial Biogeochemistry (3).** Roles of microbes in a variety of geological settings through time. Microbial roles in degradation of organic pollutants and transformation of toxic metals and radionuclides in contaminated environments. Prerequisite: 234 or instructor's consent.

**346—Groundwater and Subsurface Geomicrobiology (3).** Distribution of microorganisms in subsurface environments and the effects of microbial activity on groundwater chemistry. In situ bioremediation of contaminated aquifers by subsurface microorganisms. Prerequisite: 234 or instructor's consent.

**351—Organic Geochemistry (3).** Topics include chemistry of petroleum-forming reactions and their kinetic parameters; use of organic-chemical criteria in source-rock evaluation; carbon isotope fractionation in organic precursors of biological molecules; early history of earth's atmosphere. Prerequisite: instructor's consent.

**353—Seismic/Sequence Stratigraphy (3).** Concepts and techniques of seismic and sequence stratigraphy and the origin of sequences and sequence boundaries. Includes lectures, workshops, and demonstrations utilizing seismic reflection profiles, borehole and outcrop data. Prerequisite: Sedimentology 308. f.

**355—Theoretical Geochemistry (3).** Introduction to theoretical concepts in low and high temperature geochemistry. Topics include thermodynamics of fluids, gases and solids in geological materials, phase diagrams, equilibrium constants, electrolyte theory, oxidation-reduction reactions. Prerequisites: Geology 234, Chemistry 33, and Mathematics 175. w.

**370—Microcomputer Applications in Geology (1-3).** Introduction to operating systems, programming languages, software and possible hardware configurations on popular microcomputers. Applications in the collection, management and analysis of geological data on such systems. Prerequisites: senior/graduate in Geology. f.

**380—Marine Geology (3).** Comprehensive examination of the geology of the oceans. Topics includes techniques of data collection and interpretation, physical oceanography, origin of marine sediments, marine tectonics, and ocean history. Prerequisites: 308, Chemistry 33, and Physics 22. w, alt. years.

**388—Petroleum Geology (3).** Processes of petroleum generation, migration, and accumulation; characterization of source and reservoir rocks; distribution of petroleum, with emphasis on tectonic setting and basin types. Lab stresses introduction to, and application of exploration techniques. Prerequisites: 124, 234, and 308.

**390—X-ray Mineralogy (3).** Introduction to X-ray crystallography and crystal structure determination. Theory and application in lab of x-ray diffraction in study of minerals. Emphasis on determination of compositional variation in mineral groups. Prerequisite: 234.

**395—Introduction to Seismology (4).** Principles of wave propagation in layered elastic media. Applications of digital signal processing to seismological problems. Emphasis on theoretical basis behind modern analysis techniques. Prerequisites: Physics 176, Mathematics 309, Computer Science 103, and an Introductory Geology course or instructor's consent. w.

**396—Earthquake Seismology (3).** Theory and techniques used in analyzing earthquake seismograms and seismicity data. Ray theory and phase identification for the whole earth. Epicenter determination. Frequency-magnitude relationships. Earthquake source mechanisms and parameters. Prerequisites: 395 or instructor's consent.

**399—Senior Thesis (1-3).** Research conducted in an area of the Geological Sciences under the auspices of a member of the faculty. Under normal circumstances, this research should be completed over two semesters. May be repeated for a maximum of 3 hours credit. Prerequisites: senior standing, geological sciences majors, instructor's consent. f,w,s.

**400—Problems (1-8).** Prerequisites: graduate standing & instructor's consent. f,w,s.

**401—Topics (cr.arr.).** Organized study of selected topics. Subjects and earnable credit may vary. May be repeated with departmental consent. Prerequisite: instructor's consent.

**402—Continental Tectonics (3).** The structural, metamorphic, and igneous evolution of mountain belts and continental rifts with emphasis on convergent margin settings and terrane accretion processes and products. Case studies are considered from the Precambrian to the recent. Prerequisites: 307 and 326.

**404—Advanced Structural Geology (3).** Advanced analysis of deformation structures in rocks. Theory and techniques of stress and strain analysis and their application to the mechanics of formation of faults, folds, shear zones, and rock fabric. Techniques of multideformation structural analysis. Prerequisite: 307. f.

**407—Precambrian Geology (3).** Examination of the petrology, structural geology, and geochemistry of the Precambrian rock record. Emphasis on the tectonic and historical evolution of continental crust. Examples from shield areas of the world. Prerequisites: 307, 326. f.

**409—Marine Chemistry (3).** Survey of biogeochemical processes in shallow and deep marine settings. Topics include sediment diagenesis, geochemical tracers, nutrient patterns and pathways, global biogeochemical cycles, paleoceanographic proxy records, and integrated paleoenvironmental reconstructions of ancient marine sequences. Prerequisite: 342 or instructor's consent. f.

**410—Ancient Greenhouse Climate (3).** Will explore a wide range of data concerning greenhouse climates and different techniques used in paleoclimatology. Graded on A/F basis only. Prerequisites: Geology 308, 331 or 342. f.

**411—Tectonics and Sedimentation (3).** Global survey of modern and ancient convergent plate boundaries with an emphasis on sedimentary facies and structural styles. Prerequisites: 307, 308 and instructor's consent. w. alt. years.

**413—Seminar in Solid-Earth Geophysics (2).** Prerequisites: 303 or equivalent and instructor's consent.

**414—Stable Isotope Geochemistry (3).** Mechanisms and fundamental concepts of fractionation of light stable isotopes in nature. Emphasizes application of hydrogen, carbon, oxygen and sulfur isotopes to igneous, metamorphic and sedimentary rocks, metallic ore deposits, and to natural waters. Prerequisites: Instructor's consent.

**419—Carbonate Petrology (3).** Petrography and petrology of ancient carbonates in the light of recent analogues. Prerequisite: Geology 308. f.

**420—Sandstone Petrology (3).** Texture, composition and petrogenesis of sandstones. Quantitative analysis of petrographic data. Lecture and lab equally stressed. Prerequisites: 308 and 456.

**423—Electron Beam X-ray Microanalysis (2).** Theories and techniques in qualitative and quantitative x-ray microanalysis with electron beam systems. Prerequisite: 456.

**424—Stratigraphy (3).** Principles, methods, and nomenclature. Regional studies of sediments. Prerequisites: 124, upper-level or graduate standing. w.

**426—Metamorphic Petrology (3).** Petrography and petrology of metamorphic rocks. Emphasis on textures, mineral assemblages, and mineral chemistry in order to determine the physico-chemical condition of metamorphism. Prerequisites: 235, 326.

**427—Igneous Petrology (3).** Studies of the origin and evolution of magmas with use of phase equilibria, physical properties, and kinetics. Prerequisites: 235, 326 or instructor's consent. f.

**428—Radiogenic Isotope Geochemistry (3).** Studies of the application of trace element and radiogenic isotope systematics to petrogenesis of rocks. Prerequisites: 326 or instructor's consent. f.

**432—Introduction to Micropaleontology (3).** Introductory work on microfossils. Prerequisite: 331. f.

**433—Advanced Paleontology (3).** Principles of taxonomy, biostratigraphy, functional morphology and paleoecology are illustrated by individual projects that combine field collecting, laboratory examination and literature research. Prerequisite: 331 or instructor's consent.

**443—Advanced Aqueous Geochemistry (3).** Study of mineral-water interface geochemistry. Course will cover dissolution and precipitation kinetics, sorption reactions, and current theories. Prerequisites: 342 or Agronomy 319.

**445—Mineralogy and Petrology of Clays (3).** Structure and chemistry of clay minerals and related silicates. Unique surface properties of colloidal clays. Diagenesis and catagenesis of shales and claystones. Clay mineral catalysis in natural clay systems. Prerequisite: instructor's consent.

**450—Research (1-8).** Does not lead to dissertation.

**451—Advanced Hydrogeology (4).** Quantitative evolution of the flow and transport of contaminants in geologic media. Prerequisites: 325 or instructor's consent.

**456—Scanning Electron Microscopy (2).** Principles and practices of SEM analysis in geological and materials characterization applications. Prerequisite: instructor's consent. f.

**460—Bioremediation Strategies (3).** Discussion of contaminant degradation pathways and current technology available. The interdisciplinary aspects of the field will be emphasized. Prerequisite: instructor's permission.

**490—Research (cr.arr.).** Preparation of dissertation. Graded on a S/U basis only.

# German Area Studies
# German and Russian Studies

# German Area Studies

**(INTERDISCIPLINARY PROGRAM IN THE COLLEGE OF ARTS AND SCIENCE)**
**451 General Classroom Building (573) 882-4328**

This area of concentration offers an interdisciplinary approach to the study of the language, literature, civilization, history and politics of Germany, combined with subjects selected by the student to fit with career plans. It is designed primarily to prepare the student for work with governmental agencies and with companies doing business with or in a German-speaking country. It also can provide preparation for graduate work in German.

To be eligible for the program, a student must have completed the basic skills and general education requirements of the College of Arts and Science, have completed the foreign language requirement in German in the college and have a 2.75 grade point average.

**REQUIREMENTS**

Ger 106: German Conversation and Composition I (3)
Ger 110: German Civilization Beginning to 1850 (3) or 111: German Civilization 1850 to Present (3)
Ger 203: Advanced German Reading (3)
Ger 206: German Conversation and Composition II (3)
Hist 231: Contemporary Europe (3) or 334: Germany in the 20th Century (3)
Elective Hours in German Language and Literature (12)
Elective Hours in German Language and Literature or in a Related Field (6)
Total Requirements (33 hours)

# German and Russian Studies

**College of Arts and Sciences**
**451 General Classroom Building (573) 882-4328**
**CHAIRMAN** G. Barabtarlo
**PROFESSORS** G. Barabtarlo, R. Cook
**ASSISTANT PROFESSORS** T. Langen, N. Monnier, B. Prager, C. Strathausen
**LECTURERS** B. Mueller, C. Muschany, D. Ni
**RESIDENT INSTRUCTION ASSISTANT PROFESSOR** F. McLellan
**PROFESSORS EMERITI** E. Braun, J. Curtis, D. Mueller, N. Ritter, A. Schroeder

**DEGREES** AB in German and Russian; MA in German and Russian.

The Department of German and Russian Studies

offers courses in German and Russian language, literature, film and civilization. It also offers instruction in Chinese, Japanese and Korean. Certain courses, such as German civilization, literature in translation and film courses do not presuppose a knowledge of German or Russian language.

## AREA OF CONCENTRATION

### Courses in the Department

**GERMAN MAJOR** The major in German consists of 27 hours in German beyond the courses needed to fulfill the language requirement of the College of Arts and Science. German 203 (3), Advanced German Reading (3), German 275 (3), German Classics (3) and German 276 (3), German Classics II (3) are prerequisite to most 300-level courses and usually are required. A total of six semester hours in courses with no German language prerequisites may be used for major credit provided that students meet German language requirements stipulated by the instructor. To get major credit in these courses students must have already completed German 106 and must make arrangements with the instructor at the beginning of the semester. Otherwise, specific courses to be taken should be decided on in consultation with the adviser.

**RUSSIAN MAJOR** The Russian major consists of 27 semester hours beyond the language requirement of the College of Arts and Science. At least one 300-level course in Russian literature is required. Specific courses to be taken should be selected in consultation with the adviser.

**GERMAN OR RUSSIAN MINOR** The minor in German or Russian consists of 15 semester hours in German or Russian beyond the courses needed to fulfill the language requirement of the College of Arts and Science. A minimum of six of these 15 semester hours must be in German or Russian courses numbered 200 or above. Three of these semester hours may be in a course with no German or Russian language prerequisites, provided that German or Russian language requirements stipulated by the instructor are met. To get major credit in these courses students must have already completed German or Russian 106 and must make arrangements with the instructor at the beginning of the semester.

**Courses Outside the Department** At least eight semester hours in related humanities, social sciences or other fields, selected in consultation with the adviser.

## COURSES

### CHINESE

**1—Elementary Chinese I (6).** Five hours of classroom instruction, with one hour lab work weekly.

**2—Elementary Chinese II (6).** Five hours of classroom instruction, with one hour lab work weekly. Prerequisite: C or better in Chinese I or equivalent.

**101—Undergraduate Topics in Chinese (1-3).** Organized study of selected topics. Subjects and credits may vary from semester to semester. No knowledge of Chinese required. No language credit.

**106—Chinese Conversation and Composition (3).** Prerequisite: Chinese 2 or equivalent.

**110—Chinese Civilization I (3).** Survey of Chinese culture and arts. No knowledge of Chinese is required. No foreign language credit.

**200—Problems: Chinese (1-3).** Supervised study in Chinese language and/or culture. May be taken for a maximum of 6 credits. Prerequisite: instructor's consent.

**215—Chinese Poetry (3).** Helps students become familiar with the appreciate classical Chinese poems from the Tang and Song Dynasties, and the heydays of classical Chinese poetry. Poems and lectures in English. Prerequisite: sophomore standing or instructor's consent.

**255—Modern and Contemporary Chinese Fiction (in translation) (3).** Studies Chinese fiction from 1920s to 1990s. Preceded by a brief historical survey of Chinese literature. Analyzes works by authors like Lu Xun, Ba Jin, Lao She, Wang Meng and many others of the younger generation. Readings and lectures in English.

### GERMAN

**1—Elementary German I (5).**

**2—Elementary German II (5).** Prerequisite: C- or better in German 1 or equivalent. cor.

**3—Elementary German III (3).** Prerequisite: grade of C- or better in German 2 or equivalent. cor.

**21GH—Honors German I (4).** Accelerated course for students without previous knowledge of German.

**22GH—Honors German II (4).** Prerequisite: 21GH or departmental consent.

**23GH—Honors German III (4).** Prerequisite: 22GH or departmental consent.

**106—German Conversation and Composition I (3).** Prerequisite: German 3 or equivalent.

**110—German Civilization: Beginning to 1850 (3).** Major historical, social, artistic, literary themes from beginnings to end of Revolution of 1848. Films and recordings. May be taken independently of 111. No foreign language credit.

**111—German Civilization: 1850 to Present (3).** Second Empire, Weimar Republic, Nazi era, two Germanies after 1949. Historical, social, artistic, literary themes. Films and recordings. May be taken independently of 110. No foreign language credit.

**119—History of the German Film (3).** Introduction to the development of the German film. Old and recent films are viewed and discussed in terms of techniques, artistry, psychology and social impact. English dubbing or subtitles. No foreign language credit. Prerequisites: sophomore standing or instructor's consent.

**160—Marx & Nietzsche: Labor, Power, & the German Mind of 19th Century (3).** Examines writings of Germany's two most radical nineteenth-century thinkers. Explores key terms of political economy and philosophy developed by Marx and Nietzsche. Journal and three papers. Prerequisite: freshman or sophomore standing, English 20. Undergraduate seminar.

**165—Witches: Myth and Historical Reality (3).** Course is designed for students across the curriculum as a beginning seminar experience into a cultural topic of broad interest. Requires the student to analyze social constellations in history with respect to myth, legend, and the cultural representation of gender stereotypes. Prerequisite: freshman or sophomore stnading, English 20. No foreign language credit. Undergraduate seminar.

**195—Service Learning in German Studies (2).** Service learning offers students a chance to put into practice what they have learned in theory. Students work as teacher-aids or tutors in foreign language/culture classes at area schools. Graded on S/U basis only. Does not meet A&S general education requirements. Prerequisites: German 106, or instructor's consent.

**201—Topics (cr.arr.).** Organized study of selected topics. Subjects and earnable credit may vary from semester to semester. May be repeated to a maximum of 6 hours with departmental consent. Prerequisites: sophomore standing and instructor's consent.

**203—Advanced German Reading (3).** Prerequisite: German 3 or equivalent.

**206—German Conversation and Composition II (3).** Prerequisite: German 106 or equivalent.

**207—Intensive Beginning German (3).** Designed to lead to a reading knowledge of German. Cannot be taken to fulfill undergraduate language requirement. Prerequisites: graduate standing or instructor's consent.

**208—Business German (3).** Conversation, composition, and reading based on terminology used in business situations. Prerequisite: 106, 203, or equivalent.

**255—Readings in German Literature (3).** Readings in English of selected works of German literature from Goethe to the present, with a particular emphasis on writers and texts that have had a strong influence on European thought and culture. Prerequisite: sophomore standing, English 20.

**275—German Classics I (3).** Reading and discussion of selected works by major German writers from 1740 to 1870. Prerequisite: German 203 or equivalent.

**276—German Classics II (3).** Reading and discussion of selected works by major German writers from 1870 to the present. Prerequisite: German 203 or equivalent.

**296—Honors in German (1-3).** Special problems in Germanic literature or linguistics. Prerequisite: consent of departmental Honors director.

**301—Topics in German (cr.arr.).** Organized study of selected topics. Subjects and earnable credit may vary from semester to semester. May be repeated to a maximum of 6 hours with departmental consent. Prerequisites: junior standing and instructor's consent.

**306—German Conversation and Composition III (3).** Prerequisite: German 206 or equivalent.

**308—Enlightenment and Sturm und Drang (3).** Survey of literature and thought of 18th-century Germany, with emphasis on the works of Lessing, Wieland, Herder and the younger Goethe. Prerequisite: German 275 or equivalent.

**313—The German Novelle (3).** Prerequisite: German 275 or equivalent.

**315—Faust (3).** Prerequisite: German 275 or equivalent.

**333—German Drama from 1750 - 1850 (3).** Study of one drama by Lessing, one by Goethe, two by Schiller, two by Kleist. Prerequisite: 275 or equivalent.

**334—German Drama from 1840 - Present (3).** Study of one drama by Buechner, one by Hebbel, one by Brecht, one by Durrenmatt, one by Hauptmann and two of the instructor's choosing. Prerequisite: 275 or equivalent.

**350—Special Readings (1-3).** Independent study through readings, conferences, and reports. Prerequisites: junior standing and chairman's consent.

**351—German Romanticism (3).** Prerequisite: German 275 or equivalent.

**360—Recent German Literature (3).** Prerequisite: German 275 or equivalent.

**375—Medieval German Literature 1170-1210 (3).** Analysis of major narrative and lyric poetry of the Age of Chivalry. Prerequisite: German 275 or equivalent.

**381—Advanced Grammar, Syntax and Stylistics (3).** Considers complicated grammatical and syntactical structures. Prerequisites: senior or graduate standing, or instructor's consent.

**383—German Internship and Methods (3).** Supervised introduction to the methodology of the teaching of elementary German; conducted in a classroom environment. Prerequisites: junior standing, 275, or instructor's consent.

**390—German Capstone Seminar (3).** Required of all senior German majors. Focuses on contemporary Germany and brings together aspects of German literature and culture studies during the degree program. Prerequisites: senior standing, one 300-level literature course or equivalent, and departmental consent.

**400—Problems (cr.arr.).** Prerequisites: graduate standing and chairman's consent.

**401—Topics in German (cr.arr.).** Organized study of selected topics. Subjects and earnable credit may vary from semester to semester. May be repeated to a maximum of 6 hours with departmental consent.

**410—Seminar (3).** Course content varies. Prerequisites: graduate standing or instructor's consent.

**415—Reformation and Renaissance Literature (3).** The course investigates significant works of German literature of the late 15th and 16th Centuries. Prerequisites: graduate standing or instructor's consent.

**425—German Poetry from Sturm und Drang to 1848 (3).**

Reading of selected poetry by German writers of Sturm und Drang, Classicism, Romanticism, and Vomarz.

**450—Research (cr.arr.).** Translations or creative work not leading to thesis. Credit hours arranged. Prerequisites: graduate standing or departmental consent.

**460—History of the German Language (3).** (same as Linguistics 460). Prerequisites: graduate standing or instructor's consent.

## JAPANESE

**1—Elementary Japanese I (6).** Five hours of classroom instruction, with one hour lab work weekly.

**2—Elementary Japanese II (6).** Five hours of classroom instruction, with one hour lab work weekly. Prerequisite: C- or better in Japanese 1, or equivalent.

**101—Topics in Japanese (1-3).** Organized study of selected topics. Subjects and credits may vary from semester to semester. No knowledge of Japanese required. No language credit.

**106—Japanese Conversation and Composition (3-6).** Prerequisite: Japanese 2 or equivalent. Consent of department required to enroll in more than 3 hours credit.

**110—Japanese Civilization I (3).** Survey of Japanese culture and arts. May be taken independently of Japanese 111. No knowledge of Japanese required. No foreign language credit.

**111—Japanese Civilization II (3).** Survey of Japanese culture and arts. May be taken independently of 110. No knowledge of Japanese required. No foreign language credit.

**112—The World of Japanese Business (3).** Designed to assist the student to achieve successful business contacts with Japanese counterparts by understanding the characteristics of Japanese business in cultural, economical, and practical contexts and by learning useful Japanese terms and expressions in business. Prerequisite: sophomore standing.

**200—Problems: Japanese (1-3).** Supervised study in Japanese language and/or culture. May be taken for a maximum of 6 credits. Prerequisite: instructor's consent.

**206—Intermediate Japanese Composition and Conversation (3).** Further develops oral command of Japanese as well as listening comprehension and further essay writing skills. Prerequisite: C- or better in Japanese 106 and 219.

**219—Japan and its Cinema (3).** Survey and analysis of selected Japanese films from the 1940s to present. Films will be viewed and discussed in terms of techniques, artistry, psychology, and social impact. English dubbing or subtitles. No foreign language credit. Prerequisite: sophomore standing or instructor's consent.

**255—Classical Japanese Literature (in translation) (3).** This course studies Classical Japanese Literature preceded by a brief historical survey of Japanese literature. Analyzes such works as "Essays in Idleness" (Tsurezuregusa) by Yoshida Kenko in the 14th century and "Hojoki" by Kamona Chomei in the 13th century. Readings and lectures in English. Prerequisite: sophomore standing.

**256—Modern Japanese Literature (3).** Surveys Japanese literature from 1868 to present. Analyzes works by such authors as Soseki, Tanizaka, Kawabata, Akutagawa, Oe, Murakami, and others. Readings and lectures in English. Prerequisite: sophomore standing.

**275—Intermediate Readings in Japanese (3).** Develops reading skills and acquisition of more Kanji. Prerequisite: C- or better in Japanese 206.

## KOREAN

**1—Elementary Korean I (5).** This is an introductory course on Korean language and culture. Four language skills - reading, writing, comprehension, and speaking - will be developed step-by-step. After mastering of "Hanqual" (the Korean alphabet) and pronunciation in an early part of the semester, the classes will consist of: 1) introduction of a text, 2) vocabulary, 3) grammar, 4) pattern drill, and 5) conversation. Supplementary readings and visual materials concerning Korean culture, customs, and current social issues will be gradually introduced throughout the semester. This course partially satisfies the foreign language requirement.

**2—Elementary Korean II (5).** Prerequisite: C- or better in Korean 1 or equivalent.

**3—Elementary Korean III (3).** Prerequisite: C- or better in Korean II.

**110—Korean Civilization I (3).** Focuses on understanding traditional Korean people and culture through examining social, political, economic, and belief systems. Considers literature, art, folklore, and history up to the late 19th century. May be taken independently of Korean 111.

**111—Korean Civilization II (3).** Considers the situation and culture of Korea at the end of the Chosun Kingdom, and the period of modernization beginning about 1876. Investigates how modernization has changed Korea by looking at attitudes, behaviors, values, philosophies, and trends of Korea in the 20th century. May be taken independently of Korean 110.

**201—Topics (1-3).** Organized study of selected topics. Subjects and earnable credit may vary from semester to semester. Prerequisite: sophomore standing and instructor's consent; departmental consent for repetition.

## RUSSIAN

**1—Elementary Russian I (6).** Five hours of classroom instruction, with one hour lab work weekly. cor.

**2—Elementary Russian II (6).** Five hours of classroom instruction, with one hour lab work weekly. Prerequisite: C- or better in Russian 1 or equivalent.

**100—Russia: Enigma Wrapped in Mystery (3).** Broad introduction to the study of Russia as a discipline; designed to acquaint the student with a wide range of topics connected to the study of Russia. Prerequisite: sophomore standing or instructor's consent.

**101—Undergraduate Topics in Russian (1-3).** Organized study of selected topics. Subjects and credits may vary from semester to semester. May be repeated with consent of department. No language credit.

**103—Russian Reading and Grammar (4).** Students will solidify their command of Russian grammar and begin developing their reading skills. Prerequisite: Russian 2, equivalent, or instructor's consent.

**106—Russian Composition and Conversation (4).** Develops oral and communication skills. Prerequisites: 2 or equivalent.

**110—Between Heaven and Earth: Russian Civilization (3).** Survey of Russian culture from the Christianization of the Slavic peoples to 1917. No foreign language credit. Prerequisite: none. Humanities credit.

**112—The Arts of Survival: Civilization in Soviet Times (3).** Historical, social, and artistic topics. No foreign language credit. Prerequisite: None (Russian 110 recommended). Humanities credit.

**120—Russia and America as Comparative Civilizations (3).** Analyzes similar developments in the arts, architecture, literature, and film of Russia and America. Prerequisite: sophomore standing.

**163—Russian Mythology (3).** Exploring the concept of mythology using examples from Russian culture, the course rests on a very broad conception of myth: an entity (story, painting, historical episode, etc.) that exists in a culture's past but is felt as a continuing presence. This way of framing the issues will allow us to discuss questions of cultural history that will retain their significance long after students leave the course. Prerequisite: English 20; restricted to freshmen and sophomores only. Undergraduate seminar.

**170—The Supreme Measure: Capital Punishment in Russian History & Lit. (3).** Undergraduate Seminar, highlights historical, ethical, and religious aspects of capital punishment across the span of Russian history. Provides an opportunity to explore a difficult topic using material unknown to most students; a serious course in literary history. Develops critical thinking skills. Prerequisites: English 20; limited to freshmen and sophomores.

**195—Service Learning in Russian Studies (2).** Service learning offers students a chance to put into practice what they have learned in theory. Students work as teachers-aids or tutors in foreign language/culture classes at area schools. Graded on S/U basis only. Does not meet A&S general education requirements. Prerequisites: Russian 106, or instructor's consent.

# German and Russian Studies

**196—Honors in Russian (1-3).** Special problems in Slavic literature or linguistics. Prerequisite: consent of departmental Honors director.

**201—Topics in Russian (1-3).** Organized study of selected topics. Subjects and earnable credit may vary from semester to semester. Prerequisite: sophomore standing, departmental consent for repetition.

**203—Intermediate Russian Reading (4).** Prerequisites: 2 or equivalent or instructor's consent.

**206—Intermediate Conversation and Composition (4).** Further develops oral command of Russian as well as listening comprehension and some letter writing skills. Prerequisite: 106 and 203 or instructor's consent.

**219—Russian and Soviet Cinema (3).** Survey and analysis of selected Soviet films. Emphasis on film-making as a form of art. English or subtitled. Second screenings by arr. Some films may run over 2 hrs. No foreign language credit. Prerequisite: junior standing or instructor's consent.

**251—Heroes of Their Times: Individualism in Russian Literature (3).** Examines selected works by the major Russian writers of the first half of the nineteenth century. Reading and lectures in English. Prerequisite: sophomore standing or instructor's consent.

**252—Matters of Life and Death: The Fiction of Tolstoy and Dostoevsky (3).** Analyzes the major works of Tolstoy and Dostoevsky. Readings and lectures in English. Prerequisite: sophomore standing or instructor's consent.

**253—Decline, Fall, and Resurrection in Modern Russian Literature (3).** Analysis of the major trends in Russian literature and related cultural developments from 1890 to 1930. Readings and lectures in English. Prerequisite: sophomore standing or instructor's consent.

**254—The Split Tree of Russian Literature: Contemporary Russian Prose (3).** Analyzes the divided tradition of Russian literature since 1930 in the works of such authors as Nabokov, Pasternak, Bulgakov, and Solzhenitsyn. Readings and lectures in English. Prerequisite: sophomore standing or instructor's consent.

**275—Russian Classics I (3).** Reading and discussion of selected works by major Russian writers of the nineteenth century. Course conducted in Russian. May be taken after Russian 276. Prerequisite: Russian 203.

**276—Russian Classics II (3).** Reading and discussion of selected works by major Russian writers of the twentieth century. Course conducted in Russian. May be taken after Russian 275. Prerequisite: Russian 203.

**301—Topics in Russian (cr.arr.).** Organized study of selected topics. Subjects and earnable credit may vary from semester to semester. Prerequisites: junior standing and instructor's consent, departmental consent for repetition.

**306—Advanced Russian Conversation (3).** Advanced Syntax, idiomatic constructions, and vocabulary building. Prerequisite: Russian 206 or equivalent.

**311—The Russian Novel (3).** Selected readings and seminar discussion of major novelists of the 19th and 20th centuries. Prerequisites: 203 and 275 or 276, equivalent.

**315—Russian Poetry (3).** Survey of readings in Russian poetry from its beginnings to present. Prerequisite: Russian 203 or equivalent.

**316—Russian Drama (3).** Selected readings in and discussions of major Russian plays of the nineteenth and twentieth century. Prerequisite: 203 or equivalent.

**350—Special Readings (1-3).** Prerequisites: junior standing & chairman's consent.

**360—Russian Literary History (3).** A study of the major

works of Russian literature in relation to their representations in literary history. This is a capstone course that draws on knowledge acquired in previous or concurrent courses. Prerequisite: Russian major.

**370—The Art and Life of Pushkin (3).** Gives a conceptual thematic overview of Alexander Puskin's lyrical poetry, as well as some dramatic work and prose. Speical attention paid to the parallel development of his artistic and religious beliefs. Poetry read in Russian; prose and dramatic poems in Russian and English. Prerequisite: Russian major or graduate standing or instructor's consent.

**372—Nikolai Gogal (3).** Study of the life and art of Nikolai Gogal. Includes biographical overview, Ukrainian stories, dynamics of folklore, local dialect, and the process of literary creation. Considers St. Petersburg stories, novels, and plays. Prerequisite: Russian major or graduate standing or instructor's consent.

**374—Dostoevsky (3).** Introduction to the works of Fedor Dostoevsky, including selections from both the shorter works and the major novels. Prerequisite: Russian 251, 252 or 301; or instructor's consent.

**375—Tolstoy's Fiction and Truth (3).** Provides a conceptual overview and analysis of two masterpieces of Tolstoy's art. Acquaints students with the complex and hidden connections between Tolstoy's artistic methods and religious beliefs. Prerequisites: Russian majors or graduate standing or instructor's consent.

**378—Nabokov Russian Fiction (3).** Systematic analysis of Vladimir Nabokov's fiction, both novels and short stories. Emphasis on the artistic properties of prose. Lectures and class disucssion in English. Readings in Russian (English translations for undergraduate students). Prerequisite: graduate standing or instructor's consent.

**383—Internship in Russian (3).** Supervised introduction to the methodology of the teaching of elementary Russian; conducted in a classroom environment. Prerequisite: Russian major or graduate standing or instructor's consent.

**390—Old Russian Literature (3).** Considers the genres, periodization, and development of Russian literature from the beginnings of literacy to the end of the Rurikovich dynasty. Emphasis on literary genres and their evolution. Readings in English or in Russian. Prerequisites: Russian major or graduate standing or instructor's consent

**395—Russian Symbolism (3).** Study of the history, aesthetics, and creative works associated with the Symbolist movement in Russian literature and art. Primary emphasis on poetry drama, and prose fiction. Prerequisites: Russian major or graduate standing or instructor's consent.

**400—Problems in Russian and Slavanic Studies (cr.arr.).** Prerequisite: graduate standing and instructor's consent.

**401—Topics in 19th Century Russian Literature (cr.arr.).** Prerequisites: graduate standing and instructor's consent.

**402—Topics in 20th Century Russian Literature (cr.arr.).** Prerequisites: graduate standing and instructor's consent.

**403—Topics in Slavic Linguistics (cr.arr.).** Prerequisites: graduate standing and instructor's consent.

**404—Topics in Slavic Literatures (cr.arr.).** Prerequisite: graduate standing and instructor's consent.

**410—Seminar (3).** Course content varies. Prerequisites: graduate standing and instructor's consent.

**421—Russian Intellectural History and Critical Theory I (3).** Survey of Russian literary and cultural criticism of the 18th and 19th centuries. Course texts will include representative critical essays as well as selected literary texts. Prereqiuisites: graduate standing or instructor's consent.

**422—Russian Intellectual History and Critical Theory II (3).** Survey of Russian literary and cultural criticism of the 20th century. Course texts will include representative critical essays as well as selected literary texts. Prerequisites: graduate standing or instructor's consent. May be taken after 421.

**450—Research (cr.arr.).** Translations or creative work not leading to thesis. Credit hours arranged. Prerequisites: graduate standing and instructor's consent.

**460—Old Church Slavonic (3).** Designed to familiarize student with the phonological system, inflectional morphology and most important literature of the oldest recorded Slavic language. Camparisons of OSC to modern Slavic languages. Prerequisites: graduate standing or instructor's consent.

**461—History of the Russian Language (3).** Discusses the development of the Russian language from the origins of Old East Slavic to the present day. Considers the study of the historical phonology of Russian, historical grammar, and the history of the standard languages. Prerequisite: graduate standing or instructor's consent.

**490—Thesis (1-6).** Independent research leading to a Master's thesis. Prerequisites: graduate standing and instructor's consent. Graded on S/U basis only.

# Greek

*See Classical Studies*

# Health Professions

**504 Lewis Hall (573) 882-8011**
**(INTERDEPARTMENTAL COURSES IN THE SCHOOL OF HEALTH PROFESSIONS)**

## COURSES

**22—Introduction to the Health Related Professions (1).** Acquaints students with information about program requirements, relationship of individual interests, aptitudes and abilities to various careers; and assists with career planning and selection of appropriate preparation programs. S/U graded only.

**101—Topics (1-3).** Organized study of selected topics in Health Professions. Particular topics and credit may vary each semester. Prerequisite: instructor's consent.

**199—Medical Terminology (2).** Medical terminology based on a word building system. This course is intended for students majoring in health professions, nursing and other helping professions, pre-med and biology.

**201—Topics (cr.arr.).** Organized study of selected topics in health professions. Particular topics and earnable credit may vary from semester to semester. Prerequisite: sophomore standing and instructor's consent.

**205—Essentials of Pathology (2).** Provides basic foundation for understanding etiology of disease with emphasis on systemic pathology for non-medical students. Prerequisites: general biology and one course in either physiology or anatomy.

**225—Special Readings (1-3).** Directed study of literature and research reports in the health-related professions. Prerequisite: instructor's consent.

**300—Problems (cr.arr.).** Prerequisite: instructor's consent.

**301—Topics (1-3).** Organized study of selected topics. Subjects will vary from semester to semester.

**375—Human Kinesiology (3).** (same as Physical Therapy 375PT and Occupational Therapy 375OT). Study of principles of physical laws, biomechanics and anatomic structure relative to human movement. Application through analysis of daily functional performance, exercise and sport. Prerequisite: anatomy.

# Hebrew

*See Religious Studies*

# History

**College of Arts and Science**
**101 Read Hall (573) 882-2068, fax (573) 884-5151**
**CHAIR** S. Watts
**PROFESSORS** N. Barrier, R. Bienvenu, J. Bullion, W. Burggraaff, R. Collins, S. Flader, W. King, K. Miller, A.M. Smith, J. Sperber, J. Thompson, C. Timberlake, S. Watts, R. Weems, R. Zguta
**ASSOCIATE PROFESSORS** A. Ibrahim, T. Koditschek, M. Neth, L. Okamura, L. Whites, J. Wigger, I. Worthington
**ASSISTANT PROFESSORS** C. Anderson, M. Carroll, L. Huneycutt, H. Li, J. Pasley, L. Reeder, C. Rymph,
**PROFESSORS EMERITI** T. Alexander, G. Clarfield, N. Cunningham Jr., C. Kren, J. Lankford, H. Monroe Jr., C. Nauert Jr., A. Strickland

**DEGREES** AB, MA, PhD in history

The history department offers undergraduate work in ancient, medieval and modern European history; the history of the United States; the history of Latin America; the history of Asia; and the history of Africa. In addition, the department participates in interdepartmental programs in Ancient Studies, Black Studies, Medieval and Renaissance Studies, Peace Studies, Women Studies and Latin American, Russian and South Asia Area Studies.

The area of concentration in history requires a total of 33 hours in history courses and eight hours in the related area OR 15 hours in a minor. The history courses should include the following.

- Three three-credit foundation courses (nine hours below 200) selected from three of the following four areas:
  United States to ca. 1865
  United States since ca. 1865
  Europe (from antiquity to the present)
  Third World (Africa, Asia, Latin America)
- At least one additional course numbered above 100 (nine hours) from each of the following areas:
  Europe
  United States
  Third World
- Three electives (nine hours) at the 200- or 300-level from any field of history:
- Seminar/Thesis Block: six hours from History 288-289 (Undergraduate Thesis) OR 297-298 (Honors Thesis) OR two undergraduate seminars in History (285-286-287) OR one undergraduate seminar and one additional history course at the 300-level

**Total History Hours:** 33 hours

With the consent of the departmental director of undergraduate studies, certain history requirements can be waived for transfer students and students pursuing interdisciplinary programs or dual degrees.

**Related Area:** eight hours, including at least six hours of upperclass courses

**History Minor** A minimum of 15 hours is required for a minor in history. At least nine hours of the fifteen must be in courses numbered 100 or above. A minimum of nine hours must be taken in residence, six of which must be in courses numbered 100-level or above. A grade of C- or better is required for all history courses taken for a minor. The selection and mix of courses is left to the discretion of the student. Remember, however, that the specific courses counted toward the minor in history cannot also be used to meet the General Education requirements of the applicant's college or academic unit.

## COURSES

**1—Foundations of Western Civilization (3-4).** Development of characteristic ideas and institutions of Western cultural tradition, from origin of civilization in ancient Near East to beginning of rapid social, political, intellectual trans-

formation of Europe in 18th century. f,w.

**2—History of Modern Europe (3).** Selected major themes in European history from French Revolution to recent times. Breakdown of traditional institutions, ideas; political, social revolution; industrialization, nationalism, imperialism, world wars; democratic, totalitarian ideologies, movements; quest for international order, European unity. cor.

**3—Survey of American History to 1865 (3).** Introduction to U.S. history through the Civil War, surveying political, economic, social and cultural development of the American people. cor.

**4—Survey of American History Since 1865 (3).** Introduction to U.S. history since 1865, surveying political, economic, social, and cultural development of the American people. cor.

**20—American History (5).** Broad survey of political, economic, social, intellectual, diplomatic and constitutional development of American people from first English settlements to present day; emphasizes evolution of American culture and institutions. f,w.

**101—Undergraduate Topics in History (1-3).** Organized study of selected topics. Subjects and credits may vary from semester to semester. Prerequisite: departmental consent for repetition.

**102—The Ancient World (3).** Survey of institutional and cultural development of ancient Near East, Greece, Rome, and Asia.

**103—Arguments About Antiquity (3).** (same as Classical Humanities 103). The course discusses controversial aspects of the ancient world and also considers their reuse in modern drama and film. The instructors offer different viewpoints on various topics, as well as engaging audience participation.

**105—England Before the Glorious Revolution (3).** Survey of English institutions, culture and politics from the Roman invasion to the Revolution of 1688.

**106—Britain 1688 to the Present (3).** Surveys British history from 1688 to present. Emphasizes social and economic change.

**110—Civilization of India (3).** (same as Anthropology 110, South Asia Studies 110).

**111—The World of the Middle Ages (3).** Survey of European development from the fall of Rome to the 16th century.

**116—History of Christianity (3).** Origin, diffusion and development of Christianity, with special attention to its influence on Western civilization. Major emphasis on period up to French Revolution.

**125—Social History of U.S. Women (3).** (same as Women Studies 125). This course, the social History of US Women, offers a general overview of US Women, beginning with the colonial period up to the present day.

**130—African American History (3).** (same as Black Studies 130). Survey of social, political and economic development to the African American people in American life from 1619 to the present.

**135—History of Modern Africa (3).** (same as Black Studies 135). Provides a general survey of Sub-Saharan Africa from 1800 to the present. Topics include: state formation, the slave trade, colonialism, nationalism, national liberation and the problems of independent Africa. Prerequisites: sophomore standing or instructor's consent.

**136—History of South Africa (3).** (same as Black Studies 136). Surveys the social, cultural and economic dynamics of South African society from the 16th century to the present with an emphasis on the last two centuries and the consolidation of the apartheid state. Prerequisites: sophomore standing or instructor's consent.

**138—Foundations of Russian History (3).** A survey of the Kievan and Muscovite period to the end of the 17th century.

**139—Russia in Modern Times (3).** (same as Peace Studies 139). Survey of Russian history from 1801 to present.

**143—Japan in the Age of the Samurai (3).** An exploration of basic patterns of Japanese culture, religion and rule from early times until the beginning of modernization in the 19th century.

**152—Asian Humanities (3).** (same as Religious Studies, Art History & Archeology and South Asian Studies 152). This course in an introduction to the literature and visual arts of Asia through selected master works. It focuses principally on India and China and investigates the distinctive features of their cultures.

**167—Colonial Latin America (3).** Survey of Latin America, 1492-1825; Exploration and conquest; European settlement; colonial government and institutions; economy and society; cultural and intellectual life, independence movements.

**168—Latin America Since Independence (3).** Political, social and economic developments; nationalism; revolutionary movements; U.S. influence.

**181—Asian Civilizations (3).** (same as South Asia Studies 181, Political Science 181).

**182—History of India (3).** Evolution of Indian culture, religion, and political systems from the Vedic period (1500 BC) through Indian independence in 1947. Emphasis on basic patterns, institutions, and values and their change due to internal and external pressures.

**201—Topics (cr.arr.).** Organized study of selected topics. Subjects and earnable credit may vary from semester to semester. Prerequisite: departmental consent for repetition.

**202—America's Environmental Experience (3).** (same as Peace Studies 202). Team-taught analysis of American thought and action on physical environment during 19th-20th centuries. Relation between politics, economics, technological change, environmental quality; roles of science, law, regulatory agencies, grassroots action. Topical satellite courses offered concurrently.

**203—Ireland: Revolution and Nationalism, 1780-1976 (3).** Investigates Ireland as an early example of the kind of colonial revolt later typical of the Third World. Emphasizes growth of nationalism, republicanism and the failure to create one Ireland. Prerequisite: sophomore standing.

**204—Power and Oratory in Ancient Greece (3).** (same as Classical Humanities 206). Concentrates on the rise of oratory in Greece and how oratory was exploited for political ends. Special attention will be paid to the Athenian Democracy in the fifth and fourth centuries BC. Prerequisite: sophomore standing or instructor's consent.

**205—The Ancient Greek World (3).** Political and social institutions, intellectual life of Greek city-states to time of Alexander.

**206—The Roman World (3).** Rise and development of Roman institutions, Rome's imperialism and culture through reign of Marcus Aurelius.

**209—Alexander the Great and the Hellenistic World (3).** Alexander's conquest of the East to 323 B.C.; political, social, economic development of Hellenistic kingdoms from his death to 31 B.C.

**210—History of Missouri (3).** Survey of Missouri's development from the beginning of settlement to present. cor.

**217—History of Religion in America to the Civil War (3).** (Same as Religious Studies 217) Studies major American religious traditions from the Age of Discovery to the Civil War, especially the evolution of religious practices and institutions and their influence upon American social, intellectual and political developments. Prerequisite: sophomore standing. f.

**218—History of Religion in Post-Civil War America (3).** (same as Religious Studies 218). Surveys major American religious traditions from 1865 to the present. Focuses on the evaluation of religious practices and institutions and their interaction with and influence upon American social, intellectual and political developments. Prerequisite: History 217, Religious Studies 217 or instructor's consent.

**221—Europe in the Nineteenth Century (3).** Political, social, economic, and cultural development of Europe from French Revolution to outbreak of World War I.

**225—Early Christianity (3).** (same as Religious Studies 202) History of Christian origins and of the patristic period of the church; study of the beliefs and practices of Christianity, as reflected in its literature, art, music, architecture. Prerequisite: Sophomore standing.

**226—Medieval Christianity (3).** (same as Religious Studies 203). Study of the doctrinal developments, major theologians and schools, institutional formation and dissolution, mysticism, and liturgical expression within the context of cultural and political history. Beginning with Augustine and concluding with the 15th century. Prerequisite: Religious Studies 102 or 202.

**227—History of Christianity, 1500-Present (3).** (same as Religious Studies 204). Protestant and Catholic Christianity in age of European expansion; enlightenment; 19th- and 20th-century challenges and responses. Prerequisites: Religious Studies 102, 202 or 203.

**230—Ukrainian History from Medieval to Modern Times (3).** A successor state of the former Soviet Union, Ukraine occupies a strategic position in Eastern Europe. The course will trace the long, turbulent history of this East Slavic nation, culminating the independence in 1991.

**231—Contemporary Europe (3).** Political, social, and economic development of Europe from 1900 to the present, with emphasis on the period between the two world wars.

**233—European Women in the 19th Century (3).** Examines the history of European women from 1750 to 1900. The course focuses on how industrialization, the French Revolution and nation-formation changed women's roles in the family, workplace and the state. Grading: exams, papers and discussions. Prerequisite: sophomore standing.

**235—Religious Biography: Black Religion (3).** (same as Black Studies 235). Studies black American religion through the biographies of representative and influential figures of the 19th and 20th centuries, including Nat Turner, W.E.B. Du Bois, and Marcus Garvey, M.L. King, Malcolm X.

**237—Women in African History (3).** Focuses on the varied and changing roles of women in sub-Saharan Africa from precolonial times to the present. Prerequisites: sophomore standing or instructor's consent.

**240—Black Freedom Movement, 1955-1973 (3).** Examines the dismantling of American apartheid and its transformation into a new racial control system. It also explores how and why the Civil Rights Movement was converted into a struggle for Black Power. Offered once a year.

**241—Imperial China (3).** (same as Peace Studies 141). A survey of China under the Manchu Ch'ing dynasty. Within framework of the dynastic cycle, examines imperial rule, Chinese society, culture, art, internal rebellion, Western intrusion and modernization.

**242—Twentieth Century China (3).** History of China from Nationalist Revolution of 1911 to present. A problem-oriented course: special emphasis on Mao and Maoist ideology, social, literary and cultural history also receive attention. Prerequisites: upper class or instructor's consent.

**244—Chinese Women's History (3).** Historical analysis of Chinese women in family, community, ideology, and national politics from the Late Imperial period to the present. Prerequisites: sophomore standing or instructor's consent.

**245—Nonviolence in the Modern World (3).** (same as Peace Studies 245 and South Asia Studies 245). Readings on recent world history, emphasis on Gandhi and nonviolent tradition in America Europe and the Third World. Prerequisite: sophomore standing. Writing intensive course.

**246—History of Black Nationalism in the United States (3).** (same as Black Studies 246). Examines the struggle of African- Americans to construct autonomous institutions, to build all- Black communities or to acquire an independent nation-state. We will study the ideology, structure, strategy and tactics. Prerequisite: History 130 or Sociology 139.

**250—Nuclear America (3).** This course will cover the diplomatic and military implications of nuclear energy from the discovery of fission in the 1930's to the end of the Cold War. Grades will be decided on basis of essay exams and papers.

Prerequisite: sophomore standing.

**251—Twentieth Century America (3).** Survey of American development from 1900 to present. For students who have not taken advanced courses in American history, especially 356, 357, or 358.

**252—America in the 1960's (3).** (same as Peace Studies 252). Examines the political and cultural main currents of the 1960s. Emphasizes the challenges mounted by protest groups and the responses of America's political leadership to the ferment of the period. Prerequisite: sophomore standing.

**255—History of the Family in America (3).** The American family from the colonial period to the present, including its background in European and other societies. The focus is on family life and its connections to politics, economics and culture. Prerequisite: sophomore standing.

**266—The Origins of Scientific Thought (3).** This course will trace the evolution of Western science from its Egyptian-Babylonian roots to the "Copernican Revolution" of the mid-sixteenth century. Prerequisites: sophomore standing.

**267—The Scientific Revolution: 1550-1800 (3).** This course covers the history of science, or natural philosophy, from late Renaissance to the beginnings of the "Darwinian Revolution." Prerequisite: Sophomore standing.

**270—The Early Middle Ages (3).** This course will focus on the social, political, economic, and cultural development of Europe from roughly 300 to 1050. Prerequisite: sophomore standing.

**271—The Later Middle Ages (3).** This course will focus on the social, political, economic, and cultural development of Europe from roughly 1050 to 1500. Prerequisite: sophomore standing.

**280—Internship in History (3).** Professional training in history and archive-related fields. Prerequisites: History Department Area of Concentration; junior or senior standing; 18 hours minimum in history; 3.0 GPA minimum history; departmental consent. Graded on S/U basis only.

**282—History of British India (3).** (same as South Asian Studies 282). Introduction to traditional India, the Muslim experience; European rivalry and British hegemony; problems of Crown rule; social and political reforms in the making of modern India.

**283—Gandhi: The Man and His Ideas (3).** (same as Peace Studies 283). Introduces Gandhi as a human being and as a contributor to world civilization. Includes numerous writing assignments. Prerequisite: sophomore standing or above or instructor's consent.

**285—Undergraduate Seminar in Third World History (3).** Readings in selected problems in the history of Africa, Asia or Latin America with reports and discussion. Prerequisite: junior standing, fifteen hours of history or instructor's consent. Departmental consent for repetition.

**286—Undergraduate Seminar in European History (3).** Readings in problems in European history with reports and discussion. Prerequisite: junior standing, fifteen hours of history or instructor's consent. Departmental consent for repetition.

**287—Undergraduate Seminar in American History (3).** Readings in selected problems in American history with reports and discussion on selected topics. Prerequisite: junior standing, fifteen hours of history or consent of instructor. Departmental consent for repetition.

**287A—Undergrad. Seminar in American History: History of Race in the US (3).** (same as Black Studies 287A). Readings on problems in American history with reports and discussion on selected topics. Prerequisite: junior standing, fifteen hours or instructor's consent. Departmental consent for repetition.

**288—Undergraduate Thesis (3).** Individually directed research leading to a senior thesis. Prerequisite: senior standing. f,w.

**289—Undergraduate Thesis (3).** Continuation of 288. Prerequisite: senior standing. f,w.

**297—Honors Thesis (3).** Research and completion of the thesis required for graduation with Honors in History. f.

**298—Honors Thesis (3).** Continuation of 297. w.

**300—Special Problems (cr.arr.).** Independent investigation leading to a paper or project.

**301—Topics (cr.arr.).** Organized study of selected topics. Subjects and earnable credit may vary from semester to semester. Prerequisite: departmental consent for repetition.

**305—Philip II, Alexander the Great, and Macedonian Imperialism (3).** Concentrates on the history and politics of Greece during reigns of these two kings along with Alexander's military conquests and various controversies from the period. Prerequisite: junior standing or instructor's consent.

**306—Crime and Punishment: Law in Classical Athens (3).** Examines the main principles of Athenian law and judical procedures including history of law code and study of actual speeches from a variety of law suits and procedures. Prereq-uisites: junior standing.

**310—The Roman Empire (3).** Roman imperialism; management of, and rebellion in, the Empire; cultural exchange between Rome and its provinces.

**311—The Later Roman Empire (3).** Political, religious and cultural life in Late Antiquity, from the "soldier emperors," to the barbarian kingdoms and early Byzantium.

**315—Age of the Vikings (3).** Scandinavia and Scandinavian expansion in the Central Middle Ages. Covers political, economic, religious, and cultural effects of the Viking movement. Prerequisites: History 1, 105, 138 or 270 recommended; junior standing required or instructor's consent.

**318—The Crusades (3).** Survey of the European crusading movement from its inception in the late eleventh century to its decline during the later Middle Ages. Prerequisites: junior standing or instructor's consent.

**319—Intellectual History of Europe, 17th and 18th Centuries (3).** The Enlightenment's attack on traditional Christian thought and values.

**320—Intellectual History of Europe, 19th and 20th Centuries (3).** Topics include: Romanticism, Darwin, Marx and Freud.

**326—Modern England (3).** Surveys British history in the 18th and 19th centuries. Emphasizes social and economic change.

**327—The Age of the Renaissance (3).** Major changes in European economic, social, political, religious, and intellectual life between 1250-1500. Humanism and Renaissance. The "Renaissance problem."

**328—The Age of the Reformation (3).** State of Europe about 1500. Political, diplomatic, social, and intellectual changes to 1648. Humanistic reform movements. Protestant-Catholic Reformation. Development of the modern state and international relations.

**331—Revolutionary France, 1789-1851 (3).** Revolutionary upheavals of the revolutionary-Napoleonic era, which destroyed traditional French society and laid the basis for modern France.

**332—European Women in the 20th Century (3).** (same as Women Studies 332). Examines the history of European women from World War I to the present. The course focuses on wars, migration, and the changing nature of family, work and community. Prerequisite: junior standing.

**333—Germany in the Nineteenth Century (3).** Cultural, social and political history of Central Europe from 1800 to 1914. A case study in incomplete modernization, focused on industrialization, unification, cultural crisis and imperialism.

**334—Germany in the Twentieth Century (3).** Cultural, social and political history from 1914 to present day. Focus on world wars, national socialism, the holocaust, the cold war and the emergence of East and West Germany.

**335—Modern France 1815 to Present (3).** Principal social, economic, and political developments in modern French history from the restoration to the present day.

**339—Imperial Russia, 1682-1825 (3).** Russia in the 18th and early 19th centuries, with special emphasis on the reigns of Peter I, Catherine II, and Alexander I.

**340—The Russian Revolution (3).** Analyzes the transformation of Russian society that produced the collapse of autocracy, efforts to create a parliamentary government, the Bolshevik seizure of power in 1917, and the civil war that followed. f.

**342—Age of Jefferson (3).** Political, constitutional, cultural, and economic developments in United States during formative period of Republic, 1787-1828. Special attention to Constitutional Convention, formation of national political institutions.

**345—Modern Japan and China—A Comparative Survey (3).** A structured, comparative examination of the histories and cultures of Japan and China, from the mid-19th century to the present. Orientation towards broad social, intellectual and political developments.

**349—Introduction to U.S. Social History (3).** Study of daily life and the ways ordinary Americans experienced historical change. Considers such topics as work, leisure, family and community. Compares how people's experiences varied by region, class, gender, ethnicity, and race.

**350—Special Readings (cr.arr.).** Individual work, with conferences adjusted to needs of student.

**351—American Cultural and Intellectual History to 1865 (3).** Origins and growth of American values and ideas considered in their social context. Topics include: the work ethic, republican politics, revivalism, reform movements, sexual attitudes, literature in the marketplace, Afro-American and slave-holding subcultures.

**352—American Cultural and Intellectual History Since 1865 (3).** Tensions and transformations in American culture to the present. Topics include: spiritual crisis in Christianity; rise of welfare state liberalism; socialist and feminist alternatives; literature and the arts.

**353—American Urban History (3).** Growth, development and implications of the city in American history; historical analysis of urban problems.

**354—History of Work in the United States: 1830 to the Present (3).** Treats the history of American workers and labor organizations from 1820 until the present with special emphasis on the interaction between work and culture. Prerequisite: junior standing or instructor's consent.

**356—Origins of Modern America, 1877-1919 (3).** Political, social, economic, and intellectual evolution of America into a modern society, 1877-1918.

**357—Recent United States History 1918-1945 (3).** Detailed examination of American history from end of World War I to end of World War II.

**358—Our Times: United States Since 1945 (3).** Detailed examination of American history from end of World War II to the present.

**359—History of the Old South (3).** Study of the South to 1860. cor.

**360—History of the New South (3).** Study of the South since 1860.

**361—The Great West in American History (3).** Historical development of major regions, with emphasis on response to environment, public land policy, role of government in economic and resource development, citizen action, and cultural pluralism.

**362—The Ordeal of the Union, 1848-1877 (3).** All major aspects of the period considered; rivalry between nationalizing and sectionalizing forces emphasized.

**363—American Colonial History to 1760 (3).** Study of colonial America; special emphasis on creation of a native American culture prior to 1760.

**364—The Period of the American Revolution, 1760-1789 (3).** Analysis of the Revolution, its causes and consequences, through establishment of the new government in 1789. cor.

**365—History of the American Environment (3).** A reading and discussion course exploring diverse responses to the changing American environment from early man to the present, including ecological, institutional, and philosophical aspects.

**369—History of Caribbean America (3).** Comparative regional study of insular and mainland Caribbean nations. Emphasis on modern period. Independence; abolition of slavery; U.S. hegemony; economic, social, and political upheaval.

**370—American Foreign Policy from Colonial Times to 1898 (3).** (same as Peace Studies 371).

**372—U.S. Foreign Relations, 1898-1945 (3).** A history of American Foreign Policy from the Spanish American War to the end of World War II. Prerequisite: sophomore standing.

**373—The Age of Ascendancy: U.S. Foreign Relations, 1945-Present (3).** Surveys the Cold War in Europe and Asia, the Korean and Vietnam Wars, and Middle East policy. Prerequisite: sophomore standing.

**374—Introduction to Archives and Manuscripts (3).** (same as Information Science and Learning Technology Q320). Introduction to origin and development of archival concepts, principles and methods. Students will develop awareness of unique role of archival agencies and manuscripts as information resources, terminology and techniques. Prerequisite: junior standing or deparmental consent.

**375—Historic Preservation (3).** (same as Art History and Archaeology 375). "State of the art" survey of the historic preservation movement and techniques by UMC faculty and guest speakers active in the field.

**377—History of Mexico (3).** Survey of Mexican history from Cortes to present day.

**378—Social Revolution in Latin America (3).** Twentieth century social revolutions in selected Latin American countries.

**384—Religion and Politics in Modern India, 1857-1947 (3).** (same as South Asia Studies 384). Attention to religious revival and reform as important elements in the development of regional and national political patterns.

**389—Economic Characteristics of the African American Experience (1).** (same as Black Studies 389). Examines how economic considerations have influenced African American history from the trans-Atlantic slave trade to the present. Prerequisite: junior standing or instructor's consent. w,s.

**391—African-Americans in the Twentieth Century (3).** (same as Black Studies 391). Surveys the African-American experience from 1900 to the present. Attention is given to economic, political, social, and cultural trends.

**399—Quantitative Methods in Historical Study (3).** Introduces quantitative approaches to the study of history. Emphasizes opportunities, limitations, and dangers involved in several common forms of quantitative study.

**400—Problems (cr.arr.).** (same as South Asia Studies 400). Individual work not leading to dissertation. Prerequisite: instructor's consent.

**401—Topics (cr.arr.).** Organized study of selected topics. Subjects and earnable credit may vary from semester to semester. Prerequisite: Senior or graduate standing, and department consent. May be repeated to maximum of 6 hours.

**405—Greek Historiography (3).** (same as Greek 406). Study of the major contemporary historians of Classical Greece and their methodology. Differential readings available to both students with a reading knowledge of Greek and also those without Greek.

**406—Seminar in Ancient History (3).** Readings and research on selected problems in ancient history. May be repeated to a maximum of 12 hours.

**407—Readings in Ancient History (3).** Reading of standard works and recent scholarship on selected problems in ancient history. May be repeated a maximum of 12 hours.

**410—Introduction to Historical Research (3).** Introduction to historical methods, source problems, bibliographical aids, source criticism, use of related techniques. Required of graduate students in History.

**411—Readings in Russian History (3).** Reading standard works and current scholarship on selected problems in Russian history. Reading knowledge of Russian, French, or German helpful but required only of students specializing in Russian history. May be repeated to a maximum of 6 hours.

**412—Historiography (3).** Acquaints graduate students with examples of modern historical thought and practice by examining various conceptual approaches to the study of history. Departmental consent required. May be repeated to a maximum of six hours.

**413—Archives Administration (3).** (same as Information Science and Learning Technology Q447). Principles and concepts of archival/manuscript techniques and administration of archival agencies and manuscript repositories. Includes legal and sociological implications of archival theory and practice. f, alt. s.

**414—Readings in U.S. Women's History (3).** Reading, discussion, and analysis of the historiography of the field. May be repeated to a maximum of 6 hours.

**415—Seminar in U.S. Women's History (3).** Directed research and writing in American women's history. May be repeated to a maximum of 6 hours.

**416—Readings in Gender, Race and Class (3).** Readings in recent research material focused on the analysis of the intersections of gender, race and class in particular times and places. May be repeated to a maximum of six hours.

**420—Independent Readings for History Ph.D. Comprehensive Examination (cr.arr.).** Independent readings for Ph.D. Comprehensives. Open only to graduate students formally admitted to candidacy for Ph.D. in history.

**421—Seminar in British History (3).** Investigation of social, intellectual problems of modern Britain. May be repeated to a maximum of 6 hours.

**423—Readings in English History (3).** Readings in historical literature covering period since 1660; particular reference to new interpretations of political, social developments. May be repeated to a maximum of 6 hours.

**425—Seminar in Medieval Culture (3).** Investigates cultural developments in the medieval period. May be repeated to a maximum of 6 hours.

**426—Readings in Medieval History (3).** Readings in medieval history and historiography with emphasis on current scholarship. May be repeated to a maximum of 6 hours.

**427—Seminar in the Renaissance and Reformation (3).** Analyzes problems of the period 1300-1600; emphasizes intellectual history. May be repeated to a maximum of 6 hours.

**428—Readings in Early Modern European History (3).** Readings in historical classics and current scholarship on Renaissance, Reformation, Baroque, and Enlightenment periods. Problem of modernity. May be repeated to a maximum of 6 hours.

**429—Readings in History of Science (3).** Readings in history and historiography of Pre-Darwinian science with emphasis on recent scholarship. May be repeated to a maximum of 6 hours.

**431—Readings in Modern European History (3).** Readings in recent research material on selected topics. May be repeated to a maximum of 6 hours.

**432—Seminar in Modern European History (3).** Investigation of problems of modern Europe. May be repeated to a maximum of 6 hours.

**436—Readings in American Colonial History (3).** Readings in American history from beginning of English settlements to adoption of the Constitution. May be repeated to a maximum of 6 hours.

**437—Seminar in the History of Colonial America (3).** Directed research in the colonial and revolutionary period of American history. May be repeated to a maximum of 6 hours.

**438—Readings in African-American History (3).** (same as Black Studies 438). Readings on selected topics in African-American history from 1619 to the present, with emphasis on conflicting interpretations. May be repeated to a maximum of six hours.

**439—Seminar in African-American History (3).** (same as Black Studies 439). Directed research in selected topics in African-American history. May be repeated to a maximum of six hours.

**440—Readings in American Religious History, 1750-1850 (3).** This class will examine important ideas and trends in the field, with an emphasis on popular religious movements. This is a reading-based seminar, revolving around discussion of influential recent books.

**441—Seminar in the National Period of United States History (3).** Directed research in the period 1787-1861. May be repeated to a maximum of 6 hours.

**442—Readings in the Age of the Federalists and the Jeffersonians (3).** Directed readings in American history from the Constitution to the election of Jackson; class periods devoted to critical evaluation. May be repeated to a maximum of 6 hours.

**443—Readings in the Age of Jackson 1824-1850 (3).** Continuation of 442, from election of Jackson to Civil War. May be repeated to a maximum of 6 hours.

**445—Seminar in United States Immigration History (3).** The course will focus on historiography of American immigration, Mainly European immigrants during 1820-1920. Special attention given to books and articles published in the past 25 years.

**447—Readings in Sectional Controversy, Civil War and Reconstruction (3).** Directed readings and discussions of major issues in the period of national unification of the United States, from 1850 through 1877. May be repeated to a maximum of 6 hours.

**448—Readings in American Social History (3).** Reading, analysis, and critical reviews of pivotal works. Stress on varieties and impact of social history on topics such as family, race, gender, ethnicity, work. May repeat to 6 hours maximum.

**449—Seminar in American Social History (3).** Directed original research and writing in American social history. May be repeated to maximum of 6 hours.

**450—Research (cr.arr.).** Work equal to research done for a dissertation, but not leading to thesis. Prerequisite: instructor's consent.

**451—Seminar in American Cultural and Intellectual History (cr.arr.).** Directed research and writing in American cultural and intellectual history. May be repeated to maximum of 12 hours.

**452—Readings in American Cultural and Intellectual History (3).** Reading and discussion designed to promote critical understanding of theoretical and historiographical problems in American cultural and intellectual history. May be repeated to maximum of 6 hours.

**453—Seminar in United States Sectionalism, Civil War & Reconstruction (cr.arr.).** Directed original research on political and related topics of the period 1848-1877. May repeat to 6 hours maximum.

**454—Readings in American Western and Environmental History (3).** Readings, class discussion, and written analysis on topics in American Western and environmental history from early settlement to the present. May be repeated to a maximum of 6 hours.

**455—Seminar in American Western and Environmental History (3-6).** Directed research in problems in American Western and environmental history. May be repeated to maximum of 6 hours.

**456—Readings in World Environmental History (3).** Readings explore relationship between human agency and environmental change over the courses of world history and on various continents. Prerequisite: graduate standing. f, alt yrs.

**460—Readings in the History of the South (3).** Group readings and appraisal of controversial interpretations in Southern history. May be repeated to a maximum of 6 hours.

**461—Seminar in the History of the South (3).** Directed research in the history of the American South.

**464—Readings in the Origins of Modern America (3).** Selected studies of major issues in American history, 1877-1929. May be repeated to a maximum of 6 hours.

**465—Readings in Recent United States History (3).** Critical evaluation of writing in American history in period 1929-present. May be repeated to a maximum of 6 hours.

**467—Seminar in the Origins of Modern America (3).** Selected topics and studies in American political and social

history since the Civil War. May be repeated to a maximum of 6 hours.

**468—Seminar in Recent United States History (cr.arr.).** Advanced seminar in American history from 1929 to present. May be repeated to a maximum of 6 hours.

**470—Readings in Latin American History (1-6).** Readings in standard and recent historical literature, with critical discussion of reports on special topics. May be repeated to a maximum of 6 hours.

**480—Readings in the History of American Diplomacy (3).** Readings in evolution of American diplomacy from the Revolution to present. May be repeated to a maximum of 6 hours.

**481—Seminar in Recent American Diplomatic Problems (3).** Directed research in problems of 20th-century American diplomacy. May be repeated to a maximum of 6 hours.

**490—Research (cr.arr.).** Graded on a S/U basis only. f,w,s.

**491—Seminar in European Intellectual History (3).** Research on selected problems in the intellectual history of Europe in 18th, 19th and 20th centuries. Reading knowledge of one of following required: French, German, Italian, Russian. May be repeated to a maximum of 6 hours.

# Honors (GENERAL)

**Honors College**
**211 Lowry Hall (573) 882-3893**
*See the University section of the catalog for more information on the Honors College*
**DIRECTOR** S.B. Palonsky

## COURSES

**10GH—Career Explorations (1).** A colloquia in which experts from both the University and the Columbia communities discuss their specialties and answer students' questions on the nature and current status of their disciplines. Open primarily to freshmen. Graded on an S/U basis only.

**35GH—Honors Discussion Groups (1).** Informal discussion between students and faculty on various academic topics.

**50GH—Honors Seminar (1-3).** Freshman-sophomore seminar offering a small group opportunity to write about and discuss basic works chosen by instructor. Prerequisite: Eligibility for Honors. f,w.

**101GH—The Ancient World (3).** The reading list is comprised of the great writers of classical Greece and Rome such as Homer, Sophocles, Plato, Aristotle, Virgil and Apuleius, and of the biblical period, the authors of the Book of Job and the Gospel of Mark.

**102GH—The Middle Ages and the Renaissance (3).** The literature, art and philosophy which reflect the interaction of biblical thought with the classical past, and ultimately an emerging humanism, form the contents of the second semester. Readings include selections from such central figures as Augustine, Aquinas, Chaucer, Dante, and Shakespeare. Special lectures are presented on the art, architecture and music of these eras.

**103GH—The Early Modern World: The 17th-19th Centuries Enlightenment (3).** The third segment of the Sequence treats the cultural developments in the West from the Baroque to the Enlightenment through Romanticism. The works of Cervantes, Descartes, Milton, Voltaire, Kant, Austen, Goethe, and Dickinson are among those studied. The music and visual arts of these periods are also included.

**104GH—The Modern Era (3).** The final semester of the Humanities Sequence deals with the intellectual and cultural developments from the mid-nineteenth to the late twentieth century. Lectures and discussions will be held on the philosophy of Marx, Nietzsche, Freud, Sartre and Hannah Arendt; on the literary works of Dickens, Dostoevsky, James Joyce, Virginia Woolf, T.S. Eliot, and Toni Morrison. Lectures are presented on music down to jazz and rock, and art down to the present.

**110GH—Honors Behavorial Science Colloquium (2-3).**

**115GH—Hnrs Biological, Physical, Math (Computer Sci) Science Colloquium (2-3).**

**120GH—Honors Elective Colloquium (2-3).**

**121—HCCIP Mentor Program (3).** HCCIP Mentor Program offers students the opportunity for service with at-risk youth. Participants serve as tutors, role-models, and friends for 12 to 16 year old youth who are at-risk of dropping out of school or not attending college.

**121GH—HCCIP Mentor Program (3).** HCCIP Mentor Program offers students the opportunity for service with at-risk youth. Participants serve as tutors, role-models, and friends for 12 to 16 year old youth who are at-risk of dropping out of school or not attending college.

**122—HCCIP Head Start (3).** Students provide individualized attention to high-risk, low- income pre-school children 3-5 hours per week directing enrichment activities.

**122GH—HCCIP Head Start (3).** Students provide individualized attention to high-risk, low- income pre-school children 3-5 hours per week directing enrichment activities.

**124—HCCIP Public Health (3).** HCCIP Public Health course enhances and supports the service- learning experience by exploring areas of public health and volunteerism for students considering health-related careers. Students work 3-5 hours per week on service projects.

**124GH—HCCIP Public Health (3).** HCCIP Public Health course enhances and supports the service-learning experience by exploring areas of public health and volunteerism for students considering health-related careers. Students work 3-5 hours per week on service projects.

**125GH—Honors Independent Study (1-3).** Independent study under the supervision of a regular faculty member. Prerequisite: written proposal with professor's approval submitted in advance to Director of the Honors College.

**126GH—Independent Study-Service Learning (1-3).** Students participate in community service activities, attend regular meetings conduct research, submit four journals, a short bibliography and a research paper on their service in the community.

**127—Honors College Community Involvement Program (3).** Course offers students the opportunity to become involved in the community study service ethics, citizenship and leadership, and participation in the FIG program.

**127GH—Honors College Community Involvement Program (3).** Course offers students the opportunity to become involved in the community study service ethics, citizenship and leadership, and participation in the FIG program.

**128—Civic Leaders Internship (3-6).** Students in any major may enroll in 3-6 credit hour internships with state government offices and agencies. Consent and application required.

**128GH—Civic Leaders Internship (3-6).** Students in any major may enroll in 3-6 credit hour internships with state government offices and agencies. Consent and application required.

**130GH—Honors Humanities Colloquim (2-3).** Introduces popular literature, music, film and television in twentieth-century America.

**135GH—Honors Social Science Colloquium (2-3).**

**141GH—Creating a New Nation (3).** This course will use influential social science ideas to illuminate significant issues in U.S. history through the Civil War.

**142GH—Creating the Modern Society (3).** This course will do the same as 141GH for critical issues in the history of the United States since 1865.

**150GH—Honors Preceptorship (2-3).** Active participation in a professor's research for up to six hours a week. Prerequisite: written description of the work with professor's approval submitted in advance to Director of the Honors College.

**161GH—The Honors College Science Sequence: The Warm Little Pond (3).** Inquiry-based exploration of the physical and biological sciences as they relate to 1) life in a particular, assessible ecological system and 2) the existence of life on Earth and its prospects for existence elsewhere in the universe.

**162GH—The Honors College Science Sequence: The Warm Little Planet (3).** The Warm Little Planet is a companion course to Honors 161GH, "The Warm Little Pond." Beginning with observations of the physical universe an astronomical scale, students will construct models for the interaction between the physical and biological worlds and assess the possibility for life on other planets.

**172GH—The Emerging Canons of the Americas (3).** Students will explore the issues of canonicity and the emerging works of Native American, Caribbean, Afro-Latin American, Asian American and Latino writers comparatively on the conceptions of colonialism, power and resistance, cultural and racial identity, hybridity, tradition and change.

**210GH—Honors Behavioral Colloquium (2-3).**

**215GH—Honors Biological, Physical, Math (Computer Sci.) Sci. Colloquium (2-3).**

**220GH—Honors Electives Colloquium (2-3).**

**230GH—Honors Humanities Colloquium (2-3).**

**235GH—Honors Social Science Colloquium (2-3).**

# Honors (INTERDISCIPLINARY)

**Honors College**
**211 Lowry Hall (573) 882-3893**
**DIRECTOR** S.B. Palonsky

**Office of Special Degree Programs**
**19 Parker Hall (573) 882-6060**
**DIRECTOR** M. Porter

A special student-designed area of concentration is available to students who qualify for departmental honors programs. The required grade point average for participation in the program is outlined in the University section of the catalog. This area permits honors-eligible students to pursue subjects or broad programs of study not regularly offered in traditional areas of concentration.

Requirements for this area are identical to those for Interdisciplinary Studies with the exception that students must complete at least 20 hours of general honors and maintain a 3.3 GPA in order to receive the honors designation.

# Hotel and Restaurant Management

**College of Agriculture, Food and Natural Resources**
**122 Eckles Hall**
**(573) 882-4114**
**Fax: (573) 882-0596**
**E-mail: HRMDept@missouri.edu**
**Webpage: http://www.fse.missouri.edu/hrm**
**UNIT LEADER** J. Tan
**PROGRAM LEADER** S. Gaiko
**ASSISTANT PROFESSOR** J. Groves
**INSTRUCTORS** M. Keene, M. Weber

**DEGREE** Agriculture, Food and Natural Resources: BS in Hotel and Restaurant Management.

**PROGRAM REQUIREMENTS** To meet the needs of the industry and provide sound academic education at the undergraduate level, the curriculum emphasizes important areas of learning including general and professional education. General requirements are met through courses in the physical and biological sciences, English, written and verbal communications, humanities, mathematics, statistics, political sciences, and history. The professional area includes courses in accounting, law, economics,

computer science, finance, management, marketing, sociology, and food science. Courses in nutrition, food preparation, hospitality law, management systems, operational maintenance, strategic management, human resources, case studies and research, and a professional internship are also included in the specialized area. The Hotel and Restaurant Management (HRM) program is educating students for management careers in the hospitality field. The program is fully accredited by the Accreditation Commission for Program in Hospitality Administration. The mission of the HRM program is to develop students to be responsible citizens and successful, ethical, hospitality leaders in today's global community. This is achieved through:

- Dissemination of new and existing knowledge
- Balanced curriculum
- Competent faculty/staff/administration
- Relationships with alumni
- Mentoring via student services and activities

The HRM program has a new food-service facility that houses: a demonstration, basic foods and state-of-the-art commercial food kitchen, a multipurpose room (seating 100 for events), 20 seat conference room, 1,000 sq./ft lobby area, two classrooms, and a library equipped with computers for student use.

**MAJOR IN HOTEL AND RESTAURANT MANAGEMENT** The Bachelor of Science (BS) degree in Hotel and Restaurant Management may be earned by completing a minimum of 128 semester hours, with a minimum of 50 credit hours in courses numbered 100 or above of which at least 24 credit hours must be numbered 200 or above, and a minimum of 32 credit hours in CAFNR courses, while maintaining a 2.0 overall GPA (C) average with a 2.2 GPA average in courses required for their major (based on a 4.0 scale).

**MINOR IN HOTEL AND RESTAURANT MANAGEMENT** A minor in Hotel and Restaurant Management may be earned by completing HRM 40 plus a minimum of 12 hours of approved HRM courses numbered 100 or above.

**Biological and Physical Sciences**
General Biology and Laboratory (5)
Chemistry (3)
Biochemistry (3)
**English and Communications** (9)
**Humanities and Fine Arts** (9)
**Math and Statistics**
College Algebra (3)
Statistics (3)
**Social and Behavioral Science**
Micro and Macro Economics (6)
Psychology or Sociology (3)
**State Law History Requirement** (3)
**Food Science 30** (3) or **Nutritional Sciences 34** (3)
HRM 40: Introduction to the Hotel and Restaurant Industry (3)
HRM 111: Principles of Food Preparation (5)
HRM 133: Hospitality Law (3)
HRM 141: Property Management Systems and Operations (3)
HRM 142: Food, Beverage and Labor Cost Management (3)
HRM 150: Food Service and Lodging Industry Operational Maintenance (3)
HRM 199: Seminar in Professional Development (1)
HRM 235: Commercial Food Production Management (5)
HRM 240: Strategic Management for Hotels and Restaurants (3)
HRM 255: Hotel and Restaurant Human Resources Management (3)
HRM 341: Case Studies and Research in Hotel and Restaurant Management (3)
HRM 391: Internship in Hotel and Restaurant Management (1-6)
Electives HRM (9)
**Business Core Courses**
Accounting (3)
Computer Sciences (3)
Finance (3)
Management (3)
Marketing (3)
Business Electives (3)

**Courses**

**38—Introduction to Dietetics (1).** Introduction to concepts of the roles of a dietitian and various settings in which these roles are performed.

**40—Introduction to the Hotel and Restraurant Industry (3).** A basic course in hotel and restaurant management operations. Review development of the industry, current trends and an analysis of the various types of operations in the hospitality industry. f,w.

**102—Private Club Management and Operation (2).** Clubs as a legal entity. Organizational structure, creed, charter, and by-laws; athletic activities, master and club calendars; food and beverage departments, budgets, taxes, and the future of clubs are discussed. Field trips to local area clubs are planned. f.

**111—Principles of Food Preparation (5).** Basic principles of food purchasing and selection, storage, preparation and sanitation and equipment identification. Prerequisites: chemistry, FS30 or NS34. f.

**133—Hospitality Law (3).** Law as it relates to the hotel/restaurant trade; theories of recovery/liability; lawsuits and their prevention; familiarization with legal arguments, lawyers, litigation and threats of litigation. f,w.

**141—Property Management Systems and Operations (3).** An in-depth study of non-food operations in a hotel. Areas covered include: Rooms Division operations (reservations, marketing, guest service management, rooms management, guest accounting, night audit, etc.), Housekeeping Management and Computerized Property Management Systems. Prerequisites: 40, Agriculture 111 or equivalent, or instructor's permission. f,w.

**142—Food, Beverage and Labor Cost Management (3).** In-depth study of management of systems/techniques utilized to control food, beverage and labor costs in hospitality industry with emphasis on computer applications/problems solving. Prerequisites: 40, 111, and Accountancy 36. f.

**150—Food Service and Lodging Industry Operational Maintenance (3).** Basic course in food service and lodging maintenance and operating principles that emphasize maintenance, utilization, rehabilitation, equipment layout and cost considerations. Prerequisite: Mathematics 10. f.

**175—Fast Food Operations (3).** Analysis of management and operational skills in fast food industry. Procedures, approaches, techniques of management and critical thinking are explored as they relate to fast food industry. Prerequisite: 40, 141. f.

**190—Hotel Organization and Structure (2).** Analysis of the operating and functional departments in a modern hotel and the study of the interrelationships among the departments; four day off-campus seminar and one hour weekly lecture/discussion during the semester. Prerequisite: senior or second semester junior standing or instructor's consent.

**199—Seminar in Professional Development (1).** Readings and discussion related to professional development for the industry. Prerequisites: senior or second semester junior. f,w.

**200—Problems (cr.arr.).** Supervised study in a specialized phase of hotel and restaurant management. Prerequisite: instructor's consent.

**224—Meat Selection and Identification (3).** Meat with reference to selection, identification, utilization, wholesale/retail buying. Includes field trip . Prerequisites: Human Nutrition, Foods and Food Systems Management 121 or instructor's consent. f.

**225—Professional Beverage Management (3).** Given the hospitality industry's reliance on beverage revenues, there is a need for a course covering legal aspects/responsibility of serving alcholic/non-alcholic beverages; management control; pairing of food and beverages. Prerequisite: HRM 40 or instructor's consent. ws intersession, ss.

**235—Commercial Food Production Management (5).** Identifies and applies the skills necessary to plan, produce, and serve meals to customers in a commercial setting. Prerequisites: 121, junior standing.

**240—Strategic Management for Hotels & Restaurants (3).** Applies functions and tools of business management to the specialized operation of hotels and restaurants. Prerequisite: 140. Statistics 31 and Accountancy 36 or instructor's consent. f.

**255—Hotel & Restaurant Human Resources Management (3).** Recruitment, training, management of personnel required for operations of hotels and restaurants at all employment levels. Prerequisite: introductory course in Psychology, sociology, hotel and restaurant management, and/or instructor's consent. f,w.

**275—Hotel & Restaurant Sales & Marketing Management (3).** Marketing of hospitality services: human factors, consumer demand, planning, professional considerations. Promotional methods: advertising, direct mail, outside/"in-house" selling, merchandising, pricing, public relations, sales promotion. Prerequisites: Marketing 204, Economics. w.

**300—Problems (cr.arr.).** Advanced problems in a selected field of hotel and restaurant management. Prerequisite: instructor's consent.

**301—Topics in Hotel and Restaurant Management (cr.arr.).** Instruction in specific subject matter areas in the field of hotel and restaurant management.

**341—Case Studies & Research in Hotel & Restaurant Management (3).** Applies business, economic, and social science principles to problem situations found in Hotel and Restaurant Management. Prerequisites: 240, 255 or instructor's consent. f,w.

**391—Internship in Food Science and Nutrition (1-6).** Combines study, observation and employment in an area of food science and nutrition. Written reports, faculty evalution. Prerequisites: 90 hours including 3 courses in department and instructor's consent.

**400—Problems (cr.arr.).** Individual studies include a minor research problems.

**418—Topics (cr.arr.).** Selected current topics in field of interest



# Human Development and Family Studies

**College of Human Environmental Sciences**
**314 Gentry Hall (573) 882-4035**
**CHAIR** M. Fine
**PROFESSORS** M. Coleman, M. Fine, L. Ganong, J. Ispa, K. Thornburg
**ASSOCIATE PROFESSORS** T. Cooney, J. Morrison, L. Pike
**ASSISTANT PROFESSORS** S. Gable,

A. Kowal, P. Raya-Carlton
**LABORATORY INSTRUCTORS** E. Geyer, B. Hammerli, L. Thurman
**PROFESSOR EMERITUS** V. Fisher
**ASSOCIATE PROFESSOR EMERITUS** A. McArthur
**ASSISTANT PROFESSOR EMERITUS** L. Isbell
**ADJUNCT FACULTY** C. Fluharty, D. Gayer, G. Stangler, J. Turner, C. Mertensmeyer

**DEGREES** BS HES; MA and MS in human development and family studies; PhD in human environmental sciences

The Department of Human Development and Family Studies (HDFS) combines basic understanding of human development with preparation for professional service to individuals and families. Career opportunities for human development and family studies specialists are primarily found in human service agencies serving children, parents, and families. The human development and family studies major also prepares the student for graduate study in HDFS and related fields.

**PROFESSIONAL OPTIONS** The student's program is developed from a base of human development and family studies courses. It is essential for the student working with children to understand and be able to maximize the resources offered by the family. It is equally important for the student concerned with the quality of family life to recognize the intricate spiral of changing needs in the growing individual. The human development and family studies area focuses on this synthesis and allows for further specialization, if desired, in one of five major options: children in group settings, family studies, child life, family and consumer sciences education, and a dual degree program in HDFS and Social Work.

Professional competence in any of these options is gained by course work and through experiences that develop skills in interpersonal relationships, problem solving and analysis, leadership, program organization, resource management, and communication with varied clientele.

**MINOR IN HUMAN DEVELOPMENT AND FAMILY STUDIES** A minor in HDFS may be obtained by taking 15 hours in the following courses:
HDFS 150: Principles of Human Development (3)
HDFS 163: Close Relationships in Families (3)
HDFS 175: Introduction to the Study of Families (3)
HDFS 241: Multicultural Study of Children and Families (3)
HDFS 250: Early and Middle Childhood (3) OR HDFS 251: Adolescence and Young Adulthood (3) OR HDFS 252: Adulthood and Aging (3)

Further information on obtaining a minor can be obtained from the HDFS department office.

**Human Development and Family Studies majors are required to take the following courses with a grade of 2.0 or better:**
HDFS 150: Principles of Human Development (3)
HDFS 163: Close Relationships in Families (3)
HDFS 175: Introduction to the Study of Families (3)
HDFS 241: Multicultural Study of Children and Families (3)
HDFS 250: Early and Middle Childhood (3)
HDFS 264: Child Development Laboratory (5) or 265: Family Development Laboratory (5)
HDFS 285: Research Methods (3)

**Child Development Laboratory Courses 262, 264, 265, 298 and 364** have prerequisites and require the consent of the instructor. Because enrollment is limited, students must see their adviser to be placed on the waiting list a minimum of two semesters prior to anticipated enrollment.

**Requirements for Entry into the Major** Students are officially admitted to the major only after they have completed at least 36 hours of general education requirements with a minimum grade point average of 2.40. Transfer students from other universities can be officially admitted to the major after completing their first 12 hours of general education courses, HDFS courses, or courses in related departments at MU with a minimum grade point average of 2.40. Students who attain a grade point average of 2.25 but below 2.40 in a minimum of 36 hours of general education, and transfers who attain a minimum grade point average of 2.25 but below 2.40 in 12 hours of general education or HDFS courses may petition for admittance to the major, but are not guaranteed acceptance. Students who have not yet been admitted into the department are considered pre-HDFS majors and are advised by department faculty.

In addition to the required courses, the degree program is completed with courses selected from within the department, from other areas in the College of Human Environmental Sciences, and from the social sciences and allied professional fields such as education, recreation, business and health. For some students, courses in the arts, business, humanities, or biological sciences may be appropriate.

**CHILDREN IN GROUP SETTINGS** This option is designed to prepare graduates for positions of responsibility and leadership in public and private preschool programs, child-care centers, infant-care programs, after-school programs, and other educational and social service facilities for children. Additional job opportunities include group homes, adolescent drop-in centers, hospital play groups and YMCA/YWCA.

The general goal of the option is to provide instruction and experience to help students gain competence in understanding, guiding, and teaching children. Emphasis is on understanding human development, with primary focus on child development, behavior, and learning and on planning for families. Attention is also devoted to the development of working relationships with children, parents, professional colleagues, and community workers.

All courses in A-C are required. Courses with a * mean that the student must earn a 2.00 or better in that course. It is recommended that HDFS 163 be taken before HDFS 175. HDFS 175 must be taken before HDFS 241 or any 300-level HDFS course.

**A. Preprofessional Requirements** (General Education)
Comm 75: Introduction to Speech Communication (3) or 271: Group Communication (3)
NS 34: Nutrition, Current Concepts and Controversies (3)
CFE 183: Personal and Family Finance (3) or 185: The Consumer in Our Society (3)
HDFS 285: Research Methods (3)
Stat 25: Introductory Statistical Reasoning (3) or Stat 31: Elementary Statistics (3) or Stat 207: Statistical Analysis (3) or A 354: Educational Statistics 1 (3)

**B. Requirements in Human Development and Family Studies** (42 hours)
*HDFS 150: Principles of Human Development (3)
*HDFS 163: Close Relationships in Families (3)
*HDFS 175: Introduction to the Study of Families (3)
*HDFS 241: Multicultural Study of Children and Families (3)
*HDFS 250: Early and Middle Childhood (3)
*HDFS 261: Working With Parents (3)
*HDFS 262: Infant-Toddler Development and Programs (3)
*HDFS 263: Curriculum and Creative Activities for the Early Childhood Setting (3)
*HDFS 264: Child Development Laboratory (5)
*HDFS 356: Child and Family Advocacy (2)
*HDFS 358: Administration of Programs for Children and Families (3)
*HDFS 364: Advanced Child Development Lab (8) (consent required)

**C. Requirements in Related Areas**
C&I T303: Emergent Language in Early Childhood (3)
C&I T306: Assessment in Early Childhood (3)
SpEd L311: Introduction to Special Education (3) or L312: Introduction to Special Education for Regular Educators (3)
C&I T84: First Aid (2) or Red Cross Certification

**D. Supporting Courses from Human Development and Family Studies and Related Areas**
B, C and D must total at least 60 hours from human development and family studies and related areas.

**E. General Electives**

**FAMILY AND CONSUMER SCIENCES EDUCATION** This option prepares graduates for certification to teach family and consumer sciences from birth to grade 12 in public schools–a field with great need for new professionals. The program includes course work that meets new certification requirements that will be in place starting in 2004, as well as current requirements. The program combines courses in the human sciences with courses in teacher preparation in the College of Education. In order to take junior-level course work in the College of Education, students must meet minimum GPA and ACT score requirements. This program is currently under review; students should consult the College of Human Environmental Sciences Student Services Office (117 Gwynn) for up-to-date course requirements for this degree plan.

**A. Preprofessional Requirements** (General Education)
English 20: Exposition and Argumentation (3)
Two courses designated as Writing Intensive
Math 10A or 10B: College Algebra (3)
One Math Reasoning Proficiency Course
One Computer and Information Proficiency Course
Humanities and Fine Arts (9)
Physical and Biological Sciences (9) (One course must include a laboratory.)

**Social and Behavioral Sciences:**
Political Science 1: Intro to Political Science or 11: American Government (3)
American History 3 or 4 (3)
Psychology 1 or Western Civilization (3)
One World/International Course
One Multicultural Course

**B. Professional Education Course Work**
HES 10: Intro to Human Environmental Sciences (1)
ED 200: Inquiry into Learning I (4)
ED 201: Inquiry into Learning II (4)
**ED 304: Inquiry into Schools, Communities and Society I (3)
**ED 306: Inquiry into Schools, Communities and Society II (2)
**HDFS 330: Program and Curriculum Design for Family and Consumer Sciences Education (3)
**HDFS 331: Field Experience (1)
**HDFS 332: Assessment in Family and Consumer Sciences (2)
**HDFS 333: Field Experience (1)
**HDFS 334: Methods of Teaching Family & Consumer Sciences in Middle and Secondary Schools (3)
**EDT 316: Teaching of Reading in the Content Area (2)
**HDFS 339: Student Teaching Family and Consumer Sciences in Middle and Secondary Schools (15)

**C. Content Area**
*Family and Human Development**
HDFS 150: Principles of Human Development (3)
HDFS 175: Intro to the Study of Families (3)
HDFS 241: Multicultural Study of Children and Families (3)
HDFS 250: Early and Middle Childhood (3)
HDFS 264: Child Development Laboratory (5)
*Nutrition and Wellness*
NS 34: Nutrition: Current Concepts & Controversies (3)
NS 111: Principles of Food Preparation (5)
NS 134: Nutrition and Fitness (3)
*Family and Consumer Resource Management*
CFE 183: Personal and Family Finance (3)
CFE 185: The Consumer in Our Society (3)
EDn 161: Fundamentals of Environmental Design (3)
EDn 362: Environmental and Behavior (3)
TAM 180: Textiles (3)
TAM 188: Social Appearance in Time and Space (3)

**Additional Requirement for the HDFS Degree***
HDFS 285: Research Methods (3)

**FAMILY STUDIES** This option is designed to acquaint the student with the concepts and principles basic to the development of a broad understanding of families and how they function in an ever-changing environment. Relationships within families are studied, as are the relationships between families and other social groups (communities, employees, etc.). The family studies option emphasizes diverse and multicultural family structures and processes.

**A. Preprofessional Requirements** (General Education) *(45-46 hours)
NS 34: Nutrition, Current Concepts and Controversies (3)

**B. Family Studies Core Requirements (60 hours)***
All * courses are required. Super-script [a] means you must earn a 2.00 or better in that course. A minimum of 60 hours of course work must be selected from categories I-XII. At least one course must be taken from each category (I-XI), although additional courses can be used to fulfill the 60-hour requirement. It is recommended that HDFS 163 be taken before HDFS 175. HDFS 175 must be taken before HDFS 241 or any 300-level HDFS course. Students must take at least 14 hours of HDFS courses at the 300-level, not including the internship (HDFS 390), from categories I-X. Students completing this program will have met the academic qualifications to become a provisional Certified Family Life Educator (by the National Council on Family Relations).

**I. Families and Society**
[a]* HDFS 175: Introduction to the Study of Families (3)
[a]* HDFS 241: Multicultural Study of Children and Families (3)
HDFS 351: The Black Family (3)
HDFS 375: History of the Family in Russia (3)
Hist 255: History of the Family in America (3)
R. Soc 150: The Amish Community (3)
Soc 214: The Family (3)

**II. Internal Dynamics of Families**
HDFS 352: Stress in Families (3)
HDFS 363: Parent-Child Relations over the Life Course (3)
HDFS 368: Family Interaction (3)
HDFS 373: The Process of Divorce (3)

**III. Human Growth and Development**
[a]* HDFS 150: Principles of Human Development (3)
[a]* HDFS 250: Early and Middle Childhood (3)
HDFS 251: Adolescence and Young Adulthood (3)
HDFS 252: Adulthood and Aging (3)
Soc 322: Sociology of Aging (3)
Wmn St 60: The Female Experience: Body, Identity and Culture (3)

**IV. Human Sexuality**
Psych 120: Human Sexuality (3)
C&I T386: Education in Human Sexuality (3)

**V. Interpersonal Relations**
Comm 271: Group Decision Making Processes
[a]* HDFS 163: Close Relationships in Families (3)

**VI. Family Resource Management**
CFE 183: Personal and Family Finance (3)
CFE 380: Family Ecology (3)
CFE 382: Financial Planning and Risk Management (3)

**VII. Parent Education**
HDFS 261: Working with Parents (3)
HDFS 262: Infant and Toddler Development & Programs (3)
[a]* HDFS 265: Child and Family Development Laboratory (5)

**VIII. The Family, the Law and Public Policy**
HDFS 356: Child and Family Advocacy (2)

**IX. Ethics**
Phil 51: Introduction to Ethics (3)
Phil 135: Ethics and the Professions (3)
Phil 331: Medical Ethics (3)

**X. Family Life Education Methods**
*HDFS 390: Field Training (3-6)
[a]* HDFS 391: Changing American Family (3)

**XI. Research Foundations**
HDFS 285: Research Methods (3) or Psych 215: Research Methods in Psychology (3) or Soc 180: Social Research (3)
* Stat 25: Introductory Statistical Reasoning (3) or Stat 31: Elementary Statistics (3) or Stat 207: Statistical Analysis 3 or A354: Educational Statistics 1 (3) or Soc 375: Social Statistics (3)

**XII. Related Electives to total 60 hours.**

**DUAL DEGREE IN HDFS AND SOCIAL WORK** This option is designed to provide instruction and experiences that will help students develop competence in understanding, guiding, and working with people. Emphasis is placed on understanding human and family development, administrative aspects of community programs, communication skills, and program development and evaluation.

Careers include positions in family and children's services, youth organizations, churches, court and justice systems, mental health centers, and programs for the elderly.

This program leads to dual degrees: a bachelor of Social Work and a bachelor of science degree in Human Development and Family Studies. Students must complete 60 hours and should have a 2.5 GPA before being admitted to Social Work classes. Application for acceptance into the Social Work component of the program should be made before February 1 of the sophomore year before beginning classes the following fall. Check with the Social Work undergraduate adviser in 706 Clark Hall for more information.

All courses in B-C are required. Courses with a * means that the student must earn a 2.00 or better in that course. HDFS 175 must be taken before HDFS 241 or any 300-level HDFS course.

**A. Preprofessional Requirements** (General Education)
Completion of these courses fulfills the general education requirements of both the College of Human Environmental Sciences and the School of Social Work.

**Eight credit hours of science are required, including one lab course; one course must be biology**
Astron 1: Introduction to Astronomy (4)
Bio Sci 1: General Biology (3), 2: General Biology Laboratory (2), 12: General Botany (5)
Chem 31: General Chemistry I (2) or Chem 32: General Chemistry II (3)
Geol 1: Principles of Geology (4)
Physics 21: College Physics (4)

**Additional Courses**
Ag Ec 40: Food & Agriculture in the Macroeconomy (3) or Econ 5: Principles of Macroeconomics (3)
Anthropology (3)
CFE 183: Personal and Family Finance (3), or 180: Personal and Family Management (3)
Comm 75: Introduction to Speech Communication (3)
Eng 20: Exposition and Argumentation (3)
Hist 3: Survey of American History to 1865 (3) or 4: Survey of American History Since 1865 (3) or 20: American History (5)
Humanities and Fine Arts (6)
Math 10: College Algebra (3)
NS 34: Nutrition, Current Concepts and Contro-

versies (3)
Philosophy (3)
Pol Sc 1: American Government (3) or 11: Introduction to Political Science (3)
Psych 1: General Psychology (3)
Psych 302: Theories of Personality (3)
Soc 1: Introduction to Sociology (3)
Soc 260: Social Psychology (3) or Psych 190: Social Psychology (3)
Stat 25: Introductory Statistical Reasoning (3) or Stat 31: Elementary Statistics (3) or A354: Education Statistics I (3) or Soc 375: Social Statistics (3)

**B. Human Development and Family Studies Requirements**
*HDFS 150: Principles of Human Development (3)
*HDFS 175: Introduction to the Study of Families (3)
*HDFS 241: Multicultural Study of Children and Families (3)
*HDFS 250: Early and Middle Childhood (3)
HDFS 251: Adolescence and Adulthood (3)
HDFS 252: Adulthood and Aging (3)
HDFS 265: Child Development Laboratory (5)
HDFS 351: The Black Family: Past, Present and Future (3)
HDFS 352: Stress in Families (3)
HDFS 356: Child and Family Advocacy (3)
HDFS 363: Parent-Child Relations over the Life Course or HDFS 368: Family Interaction (3)

**C. Social Work Requirements** Orientation to Social Work (1) is required for all students who transfer into the School of Social Work as juniors and have no prior course work that meets the criterion.
SW 25: Social Welfare and Social Work (3) (Required only for freshmen and sophomores, but can be elective for juniors and seniors.)
SW 220 Human Behavior and the Environment
SW 310: Social Justice and Social Policy (3)
SW 320: Variations in Human Behavior (3)
SW 330: Introduction to Social Work Practice (3)
SW 331: Strategies of Direct Practice (3)
SW 332: Introduction to Community and Organizational Processes (3)
SW 333: Interaction Skills Workshop (3)
SW 334: Theory and Practice of Social Group Work (3)
SW 340: Research Methods for Social Work (3)
SW 390: Undergraduate Field Practicum (6)
SW 398: Senior Professional Seminar (3)
Social Work elective in a Field of Practice (3)

**General Electives** Up to three hours as required to complete the dual-degree program minimum of 133 hours.

**CHILD LIFE** This option prepares graduates to provide for the developmental and social/emotional needs of children and their families in health-care settings. Child life specialists use therapeutic play and educational activities to help children cope with the anxieties and concerns inherent in illness, disability, hospitalization, and medical procedures. They give parents and other family members reassurance and emotional support, help them understand children's psychosocial needs, and provide suggestions regarding ways to safeguard their own and their children's emotional health.

This option includes instruction and experience to help students develop professional competence in understanding and working with parents and their hospitalized, ill, or handicapped children. Courses focus on understanding normal and exceptional child and family development, methods of working with children, parents, and staff and understanding basic hospital organization and procedures. The student's last semester is spent in a 40-hour-per-week internship in a hospital pediatric setting.

All courses in A-B are required. Courses with a * mean that the student must earn a 2.0 or better in that course. It is recommended that HDFS 163 be taken before HDFS 175. HDFS 175 must be taken before HDFS 241 or any 300-level HDFS course.

**A. Preprofessional Requirements** (General Education)
Bio 42: Introduction to Biological Systems (5)
Bio 108: Genetics and Human Affairs or Pth&AS 201: Elementary Anatomy Lecture (3) (recommended)
CFE 183: Personal and Family Finance or CFE 185: The Consumer in Our Society (3)
HDFS 285: Research Methods (3)
NS 34: Nutrition, Current Concepts and Controversies (3)
Phil 331: Medical Ethics (3)
Stat 25: Introductory Statistical Reasoning (3) or Stat 31: Elementary Statistics (3) or Stat 207: Statistical Analysis (3) or A354: Educational Statistics (3)

**B. Requirements in Human Development and Family Studies (54 credit hours)**
*HDFS 150: Principles of Human Development (3)
*HDFS 163: Close Relationships in Families (3)
*HDFS 175: Introduction to the Study of Families (3)
*HDFS 241: Multicultural Study of Children and Families (3)
*HDFS 250: Early and Middle Childhood (3)
HDFS 251: Adolescence and Young Adulthood (3)
HDFS 261: Working with Parents (3)
*HDFS 262: Infant-Toddler Development and Programs (3)
HDFS 263: Curriculum and Activities for the Early Childhood Setting (3)
*HDFS 264: Child Development Laboratory (5)
HDFS 300: Problems (Child Life Volunteering) (1)
HDFS 372: Infants and Children in Health Care Settings (3)
HDFS 376: Activities for the Hospitalized Child (2)
HDFS 378: Child Life Administration (3)
[a] HDFS 380: Child Life Practicum (3)
[b] HDFS 390: Field Training (15)
[a] *Students will be admitted to HDFS 380 on a competitive and space-available basis. Applications will be considered the semester before the student wishes to take HDFS 380.*
[b] *Students will be admitted to HDFS 390 after satisfactory completion of HDFS 380 (grade of 3.0 or higher).*

**C. Additional Core Requirements** (three hours)
Rural Soc 225: Social Processes of Communication and Diffusion (3) *or* E&C Psy A310: Interviewing and Counseling (3)

**D. Supporting Course Work (choose a minimum of three hours)**
Sp Ed L312: Introduction to Special Education for Regular Educators or L311: Introduction to Special Education (3)
Psych 347: Emotional Disorders in Childhood and Young Adolescence (3)
HDFS 356: Child and Family Advocacy (3)
HDFS 368: Family Interaction (3)
C&I T85: Elements of Health Education (2)

**E. General Electives**

## COURSES

**10—Introduction to Human Environmental Sciences (1).** Lecture-discussion of professional opportunities and their relation to contemporary issues. Required for freshmen. f.

**71—Child Care Program Administration (1).** Child Care Program Administration is a 1-credit course that emphasizes the entry-level administrative skills necessary for operating a quality child program and includes 6, 2-hour sessions (leadership, business, staff relations, working with parents, community resources, and working with children with special needs and their families).

**100—Problems (cr.arr.).**

**101—Topics in Human Development and Family Studies (2).**

**150—Principles of Human Development (3).** Concepts and principles basic to an understanding of human development and learning throughout the life span. f,w,s.

**163—Close Relationships in Families (3).** Psychosocial factors of interpersonal relationships during courtship and early stages of marriage and family life. f,w,s.

**175—Introduction to the Study of Families (3).** Examination of family systems and relationships in contemporary society. Analysis of diversity characterizing American families, especially with regard to family structure, family process, race, ethnicity, social class, gender, and sexual orientation. Graded on A/F basis only. f,w,s.

**200—Problems (cr.arr.).** Independent work on special problems in human development and family studies. Prerequisite: instructor's consent. Graded on S/U basis only. f,w,s.

**241—Multicultural Study of Children and Families (3).** Study of multicultural (e.g., African-American, Hispanic, Native American, Asian) groups within context of their unique cultural heritage. Special attention is focused on the external conditions that affect the internal workings of these families. Prerequisite: 175 or approval of instructor. f,w,s, cor.

**250—Early and Middle Childhood (3).** Emotional, cognitive, and physical development of the child before puberty. Observation is integral part of course. f,w.

**251—Adolescence and Young Adulthood (3).** Physical, intellectual, and psychosocial maturation of adolescents and young adults within the context of lifelong developmental sequelae. Prerequisite: 3 hours Behavioral Science. w.

**252—Adulthood and Aging (3).** Focus is upon those factors in the family environment (nutrition, housing, finances, etc.) that have impact upon the physical, social and psychological well-being during the last half of life span development. Prerequisite: 150 or consent of instructor.

**260—Drop-In Child Care Programs (2).** Examination of appropriate planning for and experience in a drop-in child care program. Prerequisites: 250 or equivalent and instructor's consent. f.

**261—Working With Parents (3).** Understanding of parents and their perspectives, interpersonal communication and relationships; and conference and group meeting techniques. Includes experience with parent groups.

**262—Infant-Toddler Development and Programs (3).** Applied cognitive, language, and social development of infants and toddlers. Emphasizes development in a child care setting and staff relations. Prerequisites: 250 or equivalent, and instructor's consent. f,w,s.

**263—Curriculum and Activities for the Early Childhood Setting (3).** Development of curriculum for children birth through 5 in preschool setting. Also emphasizes the development of program activities for children birth through 5; and 6 through 10 in after-school care settings. Prerequisites: may be concurrent with 250 and 262. f.

**264—Child Development Laboratory (5).** Experience working with young children (ages 2-6 years), and applying developmentally appropriate practice. Focus on general guid-

ance, curriculum planning, family and staff relations. Prerequisites: 250 or equivalent and instructor's consent. f,w,s.

**265—Child and Family Development Laboratory (5).** Experience working with young children (ages 2-6 years) and their families, adult-child relationships, applied child development principles, and planning for parent education. Prerequisites: 250 or equivalent and instructor's consent. f,w,s.

**285—Research Methods (3).** Introduction to research methods in the social sciences. Emphasis on both qualitative and quantitative methods, as well as applied research and program evaluation. Prerequisite: sophomore standing. f,w.

**298—Student Teaching Prekindergarten (4).** Experience working with children (2-5 years), using general guidance principles and methods for fostering creativity. Open only to early childhood education majors with professional standing and family and consumer sciences education majors. Prerequisites: 250 or equivalent and instructor's consent. f,w,s.

**300—Problems (cr.arr.).** Independent work on special problems in human development and family studies. Prerequisites: instructor's consent. Graded on S/U basis only. f,w,s.

**318—Topics (cr.arr.).** Selected current topics in field of interest.

**320—Family Communication (3).** (same as Communications 320).

**330—Progam & Curriculum Design for FACS Education in Mid. & Sec. Sch (3).** "What should a teacher do about planning for student learning in FACS?" Includes objectives, lesson designs, resources, learner diversity, thinking skills, reasoning processes, articulation, legislation. Prerequisites: ED200 and ED201 or equivalent. Admission to Phase II, and instructor's consent.

**331—Field Experience in Family and Consumer Sciences (1).** Students will observe and assist in FACS classroom. To be taken concurrently with HDFS 330, and instructor's consent.

**332—Assessment in Family and Consumer Sciences Education (2).** "What should a teacher do to determine the extent to which program/lesson objectives have been achieved?" Includes the selection, design, and use of a wide variety of assessment tools and techniques, and the impact of assessment on the evaluation of learners and program design. Prerequisites: admission into Phase II, HDFS 330, and instructor's consent.

**333—Field Experience in Family and Consumer Sciences (1).** Students will be involved in real-world experiences in a FACS classroom. To be taken concurrently with HDFS 332, 334; requires instructor's consent.

**334—Methods of Teaching FACS in Middle and Secondary Schools (3).** "What should a teacher do to help students achieve learner objectives?" Includes classroom management strategies, choosing and using instructional methods to stimulate thinking skills and reasoning processes, communication skills, professionalism, and public relations. Prerequisites: admission into Phase II, and instructor's consent.

**339—Student Teaching FACS in Middle and Secondary Schools (15).** "What guided practicum experiences will directly contribute to success as a classroom teacher?" Students will teach for sixteen weeks within the state of Missouri under the supervision of an experienced FACS teacher. Prerequisites: HDFS 330, 332, 334, instructor's consent.

**350—Readings (cr.arr.).** Readings in recent research; critical discussions. f,w.

**351—The Black Family: Past, Present, and Future (3).** Emphasis is on the unique social, economic, religious, educational, and political environments that have affected the structure and function of the black family. Prerequisites: 285 or equivalent, and junior standing. w.

**352—Stress in Families (3).** Introduction to the study of stressor events in families, such as poverty, violence within families, substance abuse, and health problems. Emphasis is on both prevention and coping. w.

**355—Recent Trends (1-2).** Review of current research and/or practice in child and family development. Prerequisite: instructor's consent.

**356—Child and Family Advocacy (2-3).** Study of the processes of social policies, legislation, and regulations affecting children and families at the local, state and federal levels. The course emphasizes current issues and need for citizen involvement. w.

**358—Administration of Programs for Children & Families (2-3).** Includes design, operation and evaluation of programs. Field experience included. Prerequisites: 264 or instructor's consent. f, cor.

**363—Parent-Child Relations Over the Life Course (3).** Examines the development, continuities, transitions, and discontinuities of parent-child relationships over the life course. Considers the influence of parents on children and children on parents. Prerequisite: 285 or equivalent. f.

**364—Advanced Child Development Laboratory (8).** Experience in working with young children (2-5 years), including developing early childhood programs and manipulative, representational, language, and discovery experiences for young children; study of program models. (Consult instructor to schedule lab hours.) Prerequisites: 264 or equivalent, and instructor's consent. f,w.

**368—Family Interaction (3).** Analysis of intrafamilial interaction from a systems perspective; includes comparative study of family paradigms, family subsystems, goals, and resources, boundaries, and patterns of feedback. Prerequisites: 175 and 285 or equivalent; or instructor's consent. w.

**370—The Politics of Reproduction and Fertility Control (3).** (same as Women Studies 370). Examines the social construction of reproduction, including discourses and practices surrounding the body, pregnancy, birth, reproductive technology, and diseases. Stresses the ethical issues and social policies affecting women. Prerequisite: junior standing or instructor's consent.

**372—Children in Health Care Settings (3).** Investigates organization, operation and services of modern health care settings; includes health problems and diseases of children with complex and extended care needs. Prerequisite: 150 or 250 or equivalent. f.

**373—The Process of Divorce (3).** Examination of theory and research related to marital dissolution. The impact of divorce on children and adults, and divorce intervention strategies will be considered. Prerequisites: 163, 175, and 285 or equivalent; or instructor's consent. f.

**375—History of the Family in Russia (3).** Survey of family relations in Russia from the Kievan period. Materials drawn from child development and family studies, education, history, sociology, and literature. Prerequisite: 3 hours in Social/Behavioral Sciences.

**376—Activities for Hospitalized Children (3).** Exposure to the work of child life therapists. The focus will be on strategies that promote normal development and psychosocial health in hospitalized children and their family members. Instructor's consent required. f.

**378—Child Life Admiminstration (3).** Administrative issues in the child life field including: supervising staff, documentation, policy development, program evaluation, cost-effective care, and budgeting. Prerequisite: insturctor's consent. w.

**380—Child Life Practicum (3).** Observation of child life staff at Children's Hospital, and experience helping children cope with hospitalization. Prerequisites: 262, 264, and departmental consent. f,w,s.

**390—Internship (cr.arr.).** Internships or field training experiences under supervision. Prerequisite: Deparmental consent. Graded on S/U basis only. Consent of advisor. f,w,s.

**391—The Changing American Family (3).** Family studies capstone; students are expected to integrate, extend, critique, and apply the knowledge gained in the family studies option within a family life education framework. Prerequisites: 163, 175, 241, 285, and at least 2 of the following: 351, 368, 373; senior standing; or instructor's consent. f,w.

**400—Problems (cr.arr.).** Independent work on special problems in human development and family studies. Prerequisite: instructor's consent. Graded on S/U basis only. f,w,s.

**401—Social and Emotional Development (3).** Seminar on emotional and social development in children, with focus on research and theory on the impact of various family, school, and societal factors. Prerequisite: graduate standing. w.

**410—Seminar (cr.arr.).** Seminar in selected topics in human development and family studies.

**412—Family Dynamics and Intervention (3).** (same as Nursing 412). Theories of family function and dysfunction; techniques of assessment; models of family intervention. Practicum with selected families. Prerequisite: Nursing 310 (Nursing students).

**415—Readings (cr.arr.).** Readings in recent research; critical evaluation. Prerequisites: graduate standing and instuctor's consent.

**418—Topics (cr.arr.).** Selected current topics in field of interest.

**419—Internship (cr.arr.).** Internships and/or field training experiences under supervision. Prerequisites: graduate standing and instructor's consent. Graded on S/U basis only. f,w,s.

**425—Remarriage & Stepfamilies: Development, Dynamics, & Intervention (3).** The processes of remarriage and reconstituted family dynamics; special developmental needs and intervention models will be studied. The impact on children will be considered. Prerequisite : instructor's consent.

**430—Research Methods in Human Development and Family Studies (3).** Examination of the rationale for conducting scientific research; various research methods pertinent to the study of individuals over the life span, close relationships, marriages, and families; hypothesis formulation; selection of appropriate designs, instrumentation, and analyses. Prerequisite: instructor's consent.

**431—Advanced Research Methods in Human Development and Family Studies (3).** Examination of issues related to the study of individuals and their families: measurement, designs, and interpretation of statistical analyses. Statistics are placed in perspective through readings and discussions of the relationships between theory, research design, and data analyses. Prerequisite: 430 or instructor's consent.

**440—Work and Family (3).** Study of the interaction between paid labor, unpaid labor, and the American family. Heavy concentration is placed on the roles gender, race, and history play is the workplace and in the home. Prerequisites: graduate standing and instructor's consent.

**441—Advanced Seminar on Multicultural Families (3).** Advanced study of multicultural (racial, ethnic, social) families within American society. Attention is focused on each group's unique cultural heritage and social environment. Prerequisites: graduate standing and instructor's consent.

**450—Research (cr.arr.).** Independent research not leading to a thesis. Report required.

**451—Seminar on Adolescence and Young Adulthood (3).** Seminar on development in adolescence and young adulthood, with a focus on social development from a cross-cultural perspective. Prerequisite: graduate standing. w.

**456—Children, Families and Public Policy (3).** Seminar on societal issues relating to children and families, with focus on the development of public policies. Prerequisites: graduate standing and instructor's consent. f.

**462—Cognitive Development (3).** Study of the development of reasoning, perception and language. Prerequisite: graduate standing.

**463—Theories of Human Development (3).** Major theories of life span human development. Attention given to structure, content, and major research critiqued for theoretical strengths. Prerequisite: 6 hours of 300-level Behavioral Sciences courses or instructor's consent.

**469—Family Theories (3).** Reviews existing family theories, their assumptions, values, propositions, and applications.

Examines processes of theory testing and construction and linkages between theory and research. Prerequisite: graduate standing or instructor's consent.

**488—Teaching Practicum (2-6).** Supervised experience in teaching various audiences, including college students, professionals, and community residents. Prerequisite: graduate standing and instructor's consent. Graded on S/U basis only.

**489—Research Practicum (2-6).** Independent research activities in conjunction with faculty. Prerequisite: instructor's consent. Graded on S/U basis only.

**490—Research (cr.arr.).** Independent research leading to thesis or dissertation. Graded on S/U basis only.

# Industrial and Manufacturing Systems Engineering

**College of Engineering**
**E3437 Engineering Building East (573) 882-2691**
**http://www.missouri.edu/~inengwww**
**CHAIR** C. Klein
**PROFESSOR** C. Klein
**ASSOCIATE PROFESSORS** C. Chang, T. Crowe, J. Noble, L. Occeña
**ASSISTANT PROFESSOR** W. Jang
**PROFESSORS EMERITI** L. David, O. Miller

**DEGREES** BSIE, MSIE, ME and PhD in industrial engineering

Industrial and Manufacturing Systems Engineering is a blending of natural sciences, engineering science, math, business administration, computers, information science, social sciences and management. This fusion of diverse skills allows industrial engineers to design and implement what are called socio-technical systems — complex combinations of people and technology brought together to solve problems. With its diversity, industrial engineering is used in a variety of areas in both manufacturing and service areas.

Industrial engineers in a manufacturing organization address many issues including: designing workplaces considering not only the capabilities of machines, but also the physiological and psychological capabilities of humans; designing computer-integrated manufacturing systems with robots and computer systems to control production; managing inventory and quality of complex products; determining plant and warehouse locations; developing sales forecasts; evaluating proposals to produce new products; developing integrated information systems; and building new or improved production facilities.

The same skills used as an industrial engineer to design manufacturing systems also are useful in designing better systems to care for patients in hospitals, to facilitate the judicial process, to provide faster and more accurate mail distribution, to improve airline routing and reservation methods, to control large construction projects and to reduce air and water pollution. In effect, the industrial engineer may be involved in the design of a range of systems that provide beneficial services at a cost that society can afford.

Industrial engineering undergraduates take a curriculum similar to all engineering students during the first two years. The objective of this curriculum is to give the student a rigorous foundation in mathematics, natural sciences, basic engineering sciences, applied probability and computer science, as well as a complementary and meaningful exposure to the humanities and social sciences.

In addition to the foundational courses, the students will gain a knowledge of optimization methodologies, static and dynamic modeling, and evaluation techniques for the modeling and evaluation of integrated systems of people, technology and information in the areas of strategic planning, production systems, control systems, quality systems, information systems, product and process design.

These fundamental skills provide the foundation from which students learn to develop systematic and integrated solution approaches to large-scale problems in industrial, service, information, and manufacturing enterprises. In order to be successful as they begin their careers (or graduate study) students learn to communicate effectively in both oral and written forms, and become proficient in working in diverse teams of individuals.

Lastly, the curriculum prepares the students to practice in an ethical and professional manner, to serve as well as benefit from the engineering profession, and to continue the learning of and the contribution to the advancement of industrial and manufacturing systems engineering concepts.

Industrial engineering design experiences are integrated throughout the curriculum, many times in a team-based environment. Industrial engineering design is the process of developing and improving integrated systems that include people, materials, information, equipment and energy. The design sequence starts in the sophomore year in IMSE 258 with assignments and/or projects that require students to select alternative solutions to a stated problem based on economic criteria. During the junior year, students are required to design a workplace in IMSE 261 and to design a manufacturing system to fabricate a product given business and production parameters in IMSE 385. All courses in the senior year require students to design either a system or a component. Students are required to design a computer-based manufacturing information system in IMSE 383 and a facility layout and material handling system in IMSE 351. In IMSE 372, students design a product with multiple features using CAD/CAM and then manufacture the product, and in IMSE 384 a computer-integrated manufacturing system is designed. The capstone design experience (IMSE 380/381) then provides students with a team-based real industrial design experience in local industry where students are required to synthesize and apply the course material they have learned throughout their entire curriculum.

In summary, graduates of the Department of Industrial and Manufacturing Systems Engineering (IMSE) at the University of Missouri-Columbia will possess a strong foundation upon which they can grow professionally and continue to build a focused set of fundamental and engineering knowledge and skills that are integrated and applicable to real-world problems in industrial and manufacturing systems.

Because industrial engineering graduates are capable of solving complex problems requiring an understanding of an entire organization, they become prime candidates for top management or administrative positions.

**First Semester** 14 hours
Math 80: Analytic Geometry and Calculus (5)
Engr 30: Engineering Graphics (3)
Eng 20: Exposition and Argumentation (3)
Chem 31: General Chemistry I (2)
IMSE 10: Undergraduate Seminar (0)

**Second Semester** 16 hours
Math 175: Calculus II (5)
Physics 175: University Physics I (5)
CECS 103: Intro to Algorithm Design and Programming (3)
Constitutional Requirement (3)
IMSE 10: Undergraduate Seminar (0)

**Third Semester** 17 hours
Math 201: Calculus III (3)
Phys 176: University Physics II (5)
Engr 85: Statics and Elementary Strength of Materials (3)
Engr 132: Probabilistic Models (3)
IMSE 10: Undergraduate Seminar (0)
IMSE 207: Operations Research Methods (3)

**Fourth Semester** 18 hours
Math 304: Differential Equations (3)
Engr 195: Intermediate Strength of Materials (3)
MAE 185: Introduction to Dynamics (3)
IMSE 10: Undergraduate Seminar (0)
IMSE 239: Evaluation of Engr Data (3)
IMSE 258: Economic Studies in Engineering (3)
Economics Requirement (3)

**Fifth Semester** (16 hours)
Engr 124: Circuit Theory I (3)
IMSE 10: Undergraduate Seminar (0)
IMSE 261: Performance Measurement and Ergonomics (4)
IMSE 385: Manufacturing Systems Design (3)
IMSE 397: Operations Research Models (3)
Humanities/Social Science Cluster Requirement (3)

**Sixth Semester** 15 hours
Engr 99: Engineering Thermodynamics (3)
IMSE 10: Undergraduate Seminar (0)
IMSE 349: Engineering Quality Control (3)
IMSE 387: Linear Programming (3)
IMSE 388: Industrial Systems Simulation (3)
Humanities/Social Science Cluster Requirement (3)

**Seventh Semester** (17 hours)
IMSE 10: Undergraduate Seminar (0)
IMSE 351: Facility Layout and Materials Flow (3)
IMSE 372: Computer Aided Design and Manufacturing (3)
IMSE 380: Capstone Design I (2)
IMSE 383: Management Information System Design (3)
IMSE 398: Scheduling Systems (3)
Humanities/Social Science Cluster Requirement (3)

**Eighth Semester** 15 hours
IMSE 10: Undergraduate Seminar (0)
IMSE 371: Applied Robotics in Production (3)
IMSE 381: Capstone Design II (2)
IMSE 384: Computer Integrated Manufacturing Control (3)
Technical Electives (4)
Humanities/Social Science Cluster Requirement (3)

## COURSES

**10—Undergraduate Seminar (0).** Seminars are held monthly to provide a forum for departmental communication of upcoming opportunities (jobs, speakers, deadlines, etc.), speakers from industry to provide educational context, and student interaction. Required every semester of enrollment for graduation. Graded on S/U basis only.

**17—Experimental Course (cr.arr.).** For freshman-level students. Content and credit to be listed in the Schedule of Courses.

**117—Experimental Course (cr.arr.).** For sophomore-level students. Content and credit to be listed in the Schedule of

Courses.

**207—Operations Research Methods (3).** Study of quantitative methods necessary for analysis, modeling and design of optimal industrial systems. Prerequisite: CECS 103 and Math 175.

**239—Evaluation of Engineering Data (3).** Use of statistical methods to aid in analysis and interpretation of simple engineering experiments and surveys; sampling procedures, estimation, testing of hypotheses; linear and nonlinear relationships; introduction to multivariate situations. Prerequisites: 207 and Engineering 132.

**258—Economic Studies in Engineering (3).** Engineering economy model for evaluating alternatives in design selection, use of system components.

**261—Performance Measurement and Ergonomics (4).** Design of man-machine systems considering capabilities and limitations of the human component. Method of measuring human performance in man-machine systems; includes lab. Prerequisite: Engineering 132.

**300—Problems (1-4).** Supervised investigation in industrial engineering presented in form of engineering report.

**301—Topics in Industrial Engineering (3).** Current and new technical developments in industrial engineering.

**337—Reliability I (3).** Use of Boolean algebra in design and analysis of complex engineering systems; reliability of system in terms of component reliabilities; poisson process as basic failure model; life testing techniques; maintainability; reliability demonstration procedures. Prerequisite: 239.

**340—Experimental Design (3).** Principles and procedures of design and analysis of engineering experiments and sampling surveys. Prerequisite: 239.

**349—Engineering Quality Control (3).** Analysis of quality in manufacturing; design of quality control systems using statistical and other engineering methods. Prerequisite: 239.

**351—Facility Layout and Material Flow (3).** Modeling and analysis of structural and operational issues associated with material-flow system design from both micro- (plant layout, material handling, storage) and macro- (facility location, supply chain) perspectives. Prerequisites: IMSE 387, 388.

**371—Applied Robotics in Production (3).** (same as MAE 371). Robot structures, arm geometry, drive systems, end effectors, work station design, management aspects, economic factors, applications in various industries. Prerequisites: IMSE 207, 261 and Engr 85.

**372—Computer Aided Design and Manufacturing (3).** CAD/CAM. Product realization process from geometric/topological modeling, process planning, manufacturing. Including concurrent engineering, design for assembly, group technology, and numerical control. Prerequisite: IMSE 349, 385. Co-requisite: 398.

**380—Capstone Design I (2).** Combination of case study and industry based problems, each structured to integrate material presented in several theory or methods courses. Prerequisite: 388. Co-requisite: 351, 372, 398.

**381—Capstone Design II (2).** Industry-based design problem structured to integrate material presented in several theory or methods courses. Must immediately follow IMSE 380. Prerequisite: 380.

**383—Management Information Systems Design (3).** Information flow and management theory, output design, financial information, data structures and process methods, database management systems, information modular design, artificial intelligence, hardware and telecommunications considerations. Prerequisite: CECS 103, IMSE 258. Co-requisite: IMSE 398.

**384—Computer Integrated Manufacturing Control (3).** Implementation of computer integrated manufacturing at the shop floor level. Covers machine sensing and actuation control, information representation and processing, data communications and networking. Prerequisite: Engr 124, IMSE 372, 383. Co-requisite: IMSE 371.

**385—Manufacturing Systems Design (3).** Design project involving development, analysis and comparison of alternate methods of manufacturing a product; extensive survey of a variety of manufacturing methods is included. Prerequisites: Chemistry 31 and Engineering 85.

**387—Linear Programming (3).** Theory and application of linear programming. Prerequisite: 207.

**388—Industrial Systems Simulation (3).** Dynamic modeling of discrete-event stochastic systems using general-purpose and specialized programming languages. Statistical design and analysis of simulation-based experiments including distribution fitting and alternative comparison methodologies. Prerequisites: IMSE 239, 397. Co-requisite: IMSE 261.

**397—Operations Research Models (3).** Formulates probabilistic models and determines optimal control policies for queueing and inventory systems. Introduces Markov chains and dynamic programming. Prerequisites: Engr 132, IMSE 207.

**398—Scheduling Systems (3).** Quantitative methods for forecasting, scheduling, and controlling production in complex manufacturing systems. Prerequisite: 387, 388.

**400—Problems (cr.arr.).** Supervised investigation in industrial engineering to be presented in the form of an engineering report.

**401—Advanced Topics in Industrial Engineering (3).** Current and new technical developments in industrial engineering.

**404—Industrial Engineering Graduate Seminar (1).** Selected topics in industrial engineering; oral presentations and engineering reports.

**405—Research Methods in Industrial Engineering (1).** Development of research approach. Selection of topic area including techniques of literature search with special emphasis on problem definition. Topics pertinent to planning, organizing and carrying out industrial engineering research or design project.

**415—Advanced Economic Studies in Engineering (3).** Theoretical basis for engineering economy methods, problems of parameter estimation, depreciation, and replacement studies. Prerequisite: 258.

**421—Strategic Enterprise Management (3).** Topics including enterprise stategies, process and content models, strategy implementation, value chain analysis, business processes, systems engineering approaches, business process reengineering, and dynamic systems modeling.

**431—Stochastic Service Systems (3).** Development and application of stochastic models in the design of service systems in which either demands for service or services supplies, or both, have a probabilistic nature. Prerequisite: Statistics 320, Statistics 325 or equivalent.

**437—Reliability II (3).** Development and application of quantitative models for planning and evaluation of the performance of engineering systems. Prerequisite: 337.

**439—Quality Control Systems (3).** Advanced process control charts, empirical model-building, fractional factorial designs and Taguchi techniques as tools for process and product improvement, professional ethics in quality management; TQM and ISO 9000. Prerequisite: IMSE 349, 440.

**440—Advanced Evaluation of Engineering Data (3).** Application of advanced statistical methods for the analysis of engineering design and experimental problems. Prerequisite: 239.

**451—Advanced Material Flow Systems (3).** Advanced study and modeling of the design and operation material flow systems, including facilities design, material handling, inventory and warehousing issues; application of optimization and simulation techniques. Prerequisties: 351, 387, 388.

**470—Operations Research-Discrete Models (3).** Applications of discrete operations research methods, including linear programming, fuzzy sets, integer programming, and meta-heuristics. Prerequisite: 387.

**471—Operations Research-Stochastic Models (3).** Theory and applications of stochastic processes; includes continuous time Markov chain, Markov decision process, queueing theory, and stochastic manufacturing systems. Prerequisite: 397.

**472—Nonlinear Optimization (3).** Introduces computational non-linear mathematical programming procedures their use in solving complex industrial systems design problems. Prerequisite: 387.

# Industrial & Manufacturing Systems Engineering Information Science & Learning Technologies

**475—Inventory Control Systems (3).** Design of optimal inventory control systems; includes selection of operating doctrine, development of several deterministic, stochastic, static and dynamic models and methods of collecting appropriate demand and cost data. Prerequisites: 239, 387.

**480—Linear Programming Applications (3).** Theory and computational method of the simplex algorithm; application of linear programming in solution of transportation problems, competitive games, scheduling problems, and product mix problems.

**483—Advanced Management Information Systems Design (3).** Develops requirements for management information, staffing, cost estimating, evaluation, and the design of management communication systems; includes case studies. Prerequisite: 383.

**484—Dynamic Programming (3).** Introduces theory and computational aspects of dynamic programming; its application to sequential decision problems. Prerequisites: 239 and 387.

**485—Advanced CAD/CAM (3).** Covers the state-of-the-art in CAD/CAM and explores the latest developments, residual problems, and new direction in CAD/CAM. Includes sculptured surface modeling, rapid prototyping and manufacturing, integrated process planning, shape analysis, machine intelligence. Prerequisite: IMSE 372.

**486—Advanced Integrated Production Systems (3).** Advanced study of the design and operation of flow shop, job shop, and cell-based production systems, including scheduling, layout and material flow issues. Prerequisites: 351, 372, and 398.

**487—Advanced Linear Programming (3).** Advanced study of linear programming, including revised simplex, duality, primal-dual methods, capacitated transportation problem, decomposition principle and introduction to quadratic programming; interior point methods. Prerequisite: 387.

**488—Integer Programming (3).** Comprehensive appraisal of integer programming problem and current solution procedures. Prerequisite: 387.

**490—Research (cr.arr.).** Independent investigation in field of industrial engineering to be presented as a thesis. Graded on S/U basis only.

# Information Science & Learning Technologies (SCHOOL OF)

**College of Education**
**303 Townsend Hall (573) 882-4546**
**http://www.coe.missouri.edu/~sislt/**

**DIRECTOR** J. Wedman
**PROFESSORS** D. Jonassen, M. Sievert
**ASSOCIATE PROFESSORS** B. Allen, J. Budd, G. Fitzgerald, T. Kochtanek, J. Laffey
**ASSISTANT PROFESSORS** L. Esser, K. Kim, R. Marra, J. Moore, F. Wang
**RESEARCH ASSISTANT PROFESSOR** D. Musser

## COURSES

**Q105—Library Research (1).** Designed to improve student use of the library's facilities and materials in any subject; instruction in use of card catalog, indexes, bibliographies, government publications, microforms, etc. f,w.

**Q300—Problems (cr.arr.).** Independent, directed study on a topic in the field of information science and learning technologies. Prerequisite: departmental consent.

**Q301—Introduction to Information Technology (3).** The nature of information and information transfer in the institutional setting; covers the culture of information in society, standards for information processing and transfer, and networking in communications perspectives of information providing agencies.

**Q302—Organization of Information (3).** An overview of the research that addresses information-seeking behavior and the history, background, and development of catalogs and indexes.

**Q303—Information Services and Society (3).** Exploration of the relationship between libraries and society, libraries' communities, the philosophical and organizational aspects of the profession, and the nature of information and information transfer.

**Q304—Introductory Seminar: The School Library Media Specialist (1).** Discussion and critical study of current developments in library science. Prerequisites: admission to candidacy for master's degree in Library Science or departmental consent. f,w.

**Q310—Seminar (1-3).** Discussion and critical study of current developments in the field of information science and learning technologies.

**Q311—Abstracting and Indexing (3).** Representational components of information systems presented in context; emphasizes creation of abstracts, and characteristics and use of post-coordinate indexing languages. Practical experience in use and evaluation of indexing systems stressed. Prerequisite: departmental consent. f, alt. s.

**Q312—Principles of Cataloging and Classification (3).** Elementary cataloging of library materials using Dewey Decimal Classification and Library of Congress classification with emphasis upon subject headings, also looking at other existing classification schemes presently being used and other bibliographic organization. f,w,s.

**Q313—Managing Collections and Access (3).** Selection of materials for libraries and information agencies, policies for collection management, freedom and diversity of information, access to information and evaluation of collections and access.

**Q314—Reference Sources and Services (3).** General reference sources with emphasis on print sources. principles, developments and trends in reference services and reference service organization.

**Q315—Management of Information Agencies (3).** Concepts of management applied to libraries and information systems; management tools, programming, models and simulation in an environment of an information producing or disseminating agency. f,w, alt. s.

**Q316—The School Library Media Center (3).** (same as Curriculum & Instruction T378). Focuses on the school library media specialist as administrator and information specialist. Emphasis on library media program administration (planning, budgeting, evaluation, policy development) and implementation of effective information services. f,w,s

**Q320—Introduction to Archives and Manuscripts (3).** (same as History 374). Introduction to origin and development of archival concepts, principles and methods. Students will develop awareness of unique role of archival agencies and manuscripts as information resources, terminology and techniques. Prerequisite: junior standing or departmental consent.

**Q334—Library Information Systems (3).** Focuses on the automated library systems marketplace. Covers integrated online library systems from the systems, functional and user perspective. Includes management approaches for procurement and operation of such systems.

**Q350—Special Readings (cr.arr.).** Prerequisites: departmental consent.

**Q351—Library Research in Special Areas (cr.arr.).** Reference sources and bibliographic aids in various disciplines studied on an individual basis by actual use in performance of research under direction of assigned faculty instructors. f,w,s.

**Q360—Introduction to Web Development (3).** Basic web design and HTML. Covers file transfer and UNIX/LINUX servers management. Develops understanding of web graphic formats. Emphasizes user interface, navigation, and instructional design in building web sites. Online. No prerequisite. Graded on A/F basis only. f,w,s.

**Q361—Introduction to Digital Media (3).** Hands-on approach to multimedia production techniques. Develops understanding of image software, video software, and scanners, digital cameras, digital video cameras, graphics tablets. No prerequisite. Graded on A/F basis only. f,w,s

**Q362—Digital Media Planning and Design (3).** Introduces multimedia production, emphasizing instructional design/ learning theories. Overview of developing and evaluating multimedia products. Examines the visual design process including developing a formal design specification of an interactive, multimedia product. No prerequisite. Graded on A/F basis only. f,w.

**Q363—Digital Video Production (2).** Explores communication through digital video. Introduces alpha and beta testing. Course is production-based, covering technical skills required for video editing software. Engage in multimedia processes of designing, producing and evaluating. No prerequisite. Graded on A/F basis only. f,w,s.

**Q364—Digital Media Authoring Systems (3).** Teaches skill required to plan, develop and evaluate a multimedia project using digital authoring software. Emphasizes instructional design and user interface issues. Course is production-based. No prerequisite. Graded on A/F basis only. f,w,s.

**Q365—Digital Media: Computer Graphics (2).** This course covers a variety of advanced graphic techniques and methods. Graphics theory is examined, including principles of visuals as communication and instructional tools in various media. Students engage in projects and comparative analysis of graphic effectiveness in a choosen medium.

**Q366—Technology Leadership in Schools (3).** Develop skills, knowledge, and values needed to provide leadership in schools. Analyzes characteristics of effective leaders, focusing on staff development. Explores technology and school reform, technology integration, and current issues. Online. No prerequisite. Graded on A/F basis only. f,s.

**Q367—Technology Coordination (3).** Helps teachers and school district personnel choose technology to increase student performance; guidelines for student and staff usage; purchasing and district policies; set up a support structure to maintain curriculum and administrative technology. Prerequisite: graduate standing.

**Q370—Intermediate Web Development (3).** Development of design and web authoring skills. Interactivity through use of cgi scripts and javascript. Design capabilities using Style Sheets. Gain expertise required for the production of HTML documents incorporating these advanced techniques. Prerequisite: Q360 or instructor's consent.

**Q377—Foundations of Educational Technology (3).** Study of theories and practices associated with educational technology. Includes the analysis, design, evaluation, implementation, and management of educational technology hardware and processes. Prerequisites: teaching experience or instructor's consent.

**Q380—Practicum in School Library Media Centers (2-3).** Provides practical experience in a school library media center under the direction of a qualified library media specialist. Prerequisite: departmental consent.

**Q381—Practicum in Information Agencies (1-3).** Provides a supervised work experience for master's degree students in a public, academic, or special library. Prerequisite: departmental consent. Graded on S/U basis only. f,w,s.

**Q400—Problems in Information Science and Learning Technologies (cr.arr.).** Independent, directed study on a topic in the areas of information science and learning technologies. Prerequisite: graduate standing; departmental consent. f,w,s.

**Q402—Advanced Cataloging (3).** Descriptive and subject cataloging of print and non-print serials, manuscripts, and archival materials, using the Dewey Decimal and Library of Congress classification systems and the Library of Congress subject Headings. Prerequisite: 312

**Q403—Classification Theory (3).** A seminary course that is an in-depth study of the history and the theories and concepts underlying the development of classification systems as means of subject access to users. Prerequisite: 312 or 311.

**Q405—Multimedia Production (3).** Exploration of the components of multimedia production will be a focal point of this course. The study and research of various authoring programs and multimedia software will be utilized to create multimedia products.

**Q406—The Library Media Program and School Curriculum (3).** Focuses on the library media specialist as teacher and instructional partner. Emphasizes negotiating instructional partnerships, integrating information skills problem-solving models into the curriculum, curriculum-mapping, resource-based learning models. Prerequisite: Q316. w,s.

**Q408—Information Policy (3).** Examination of the roles of private and public sectors in information policy formation. Includes consideration of social, economic, political and technological issues.

**Q410—Seminar in Information Science and Learning Technologies (1-3).** Discussion and critical study of current developments in information science and learning technologies. Prerequisite: departmental consent.

**Q412—Information Storage and Retrieval (3).** Introduces students to concepts and terminology associated with the storage and retrieval of bibliographic information. Emphasizes design of applied database management systems. Prerequisite: departmental consent. w.

**Q414—Internet Reference (3).** Learn to examine and evaluate web sites, about different search engines, and how to use web sites to answer basic reference questions. Prerequisite or corequisite: Q314.

**Q415—Concepts in Information Science (3).** Generalized theories and concepts regarding the flow of information in systems such as libraries and related information agencies. Focus on technical, semantic and behavior characteristics of information transfer.

**Q416—Information Resources in Health Sciences (3).** Emphasizes medical terminology and the transfer of health related information. Students are exposed to traditional and electronic information resources as they actively respond to real and simulated information requests.

**Q420—Information in the Disciplines (3).** Provides an understanding of how and why information is produced, stored and communicated in various intellectual disciplines. Students evaluate examples of these activities in specific disciplines.

**Q422—Information Systems: Design and Evaluation (3).** A study of new and traditional principles of systems design. A variety of evaluation methods will be explored and applied to a newly developed system. Prerequisite: Q334.

**Q425—Government Publications (3).** Survey of publications of municipal, state, United States, and international government units. Special attention given to principles and techniques of administering a public documents collection. f, alt. s.

**Q428—The History of Books and Printing: The Printed Book (2-3).** Prerequisites: departmental consent. w.

**Q430—Computer Applications in Health Services (3).** (same as Health Services Management 430). Examines clinical research and administrative applications of the computer in health services delivery. Provides an introduction to medical informatics. Prerequisite: appropriate class in computer methods or instructor's consent.

**Q431—Library Materials for Children (3).** Examination, evaluation, and selection of library materials for children birth through age eleven. Emphasis on critical analysis of literature, reader response theory, reader's guidance, booktalk techniques. f.

**Q432—Automated Reference Services (3).** General summary of available systems and their characteristics; particular emphasis on those available to the general library community. Machine searching experience with major brokers pro-

vided. Prerequisite: Q301, Q314 and departmental consent.

**Q433—Youth Services in Libraries (3).** Informational and literary needs of youth, birth through high school. Emphasis on collection development, program design, preschool activities, storytelling techniques, outreach services. w, alt s.

**Q434—Library Materials for Adolescents/Young Adults (3).** Examination, evaluation, and selection of library materials for young people 12-18. Emphasis on critical analysis of literature, reader response theory, reader's guidance, booktalking techniques. w.

**Q435—Adult Services in Libraries (3).** Library services to adults, including special populations. Emphasis on information needs of adults, organization and management of adult services.

**Q436—Legal Bibliography and Reference (3).** Teaches the basic sources and methodologies in legal research. The LEXIS and WESTLAW systems are also explored.

**Q442—Law Library Administration (3).** A seminar course covering a variety of topics connected with law librarianship including management (governance, personnel, budget, space), acquisitions (including legal publishers and law book distributions) and technical services (cataloging, computing services).

**Q443—The Academic Library (3).** Development, objectives, organization and structure, nature of the collections and responsibility for their development, philosophy of library services, measurement and standards of library effectiveness. w, alt. s.

**Q444—The Public Library (3).** Objectives, relations with other institutions, scope of library services, public relations, standards. w, alt. s.

**Q445—Special Libraries and Information Centers (3).** Goals of special librarianship including information provision, management styles. Library functions as performed in special libraries. Contributions of special libraries, such as information analysis centers, information brokering, and accountability for and evaluation of services. w, alt s.

**Q447—Archives Administration (3).** (same as History 413). Principles and concepts of archival/manuscript techniques and administration of archival agencies and manuscript repositories. Includes legal and sociological implications of archival theory and practice. f, alt. s.

**Q450—Research in Information Science and Learning Technologies (3).** Examination of research methodologies applicable to library and information phenomena and education technology, including the defining of research problems and their contexts. Prerequisite: departmental consent.

**Q451—The Biomedical Community (3).** Survey of the backgrounds and expertise of different health professionals; organization, costs and payment of health care in the biomedical community. f, alt. s.

**Q452—Library Use Instruction (3).** This course considers learning theory applicable to instruction, methods employed, and appropriate evaluation of library use instruction.

**Q460—Web Design and Development (3).** Project-based learning approach to acquire fundamental concepts and practices in design and development of WWW sites for real clients. Integrates practical WWW experience with technical and conceptual knowledge. Prerequisites: HTML and WWW authoring tools competency.

**Q461—Interface Design (3).** The goal of this course is to engage students in the work and intellectual challenges of interface design. Through the use of readings, examples, exercises, and discussions, the class will learn the basic competencies, processes, and principles of interface design.

**Q462—Information Networks and Telecommunications (3).** Address technical, social, and political issues associated with networks and telecommunications technologies. A special emphasis is placed on the use of these technologies to support learning. Prerequisites: graduate standing; permission of instructor; based on previous experience or technical orientation.

**Q463—Technology and Teacher Education (3).** This annual 3-hour course provides content and skills teacher preparation personnel need at the inservice or preservice level. Includes technology standards, computer-mediated instruction research, distance education models, and productivity tools. Grades based on skills assignments and electronic research presentation.

**Q464—Hypermedia Learning Environments I (3).** This annual 3-hour course provides design and production skills for professional-level authoring of hypermedia learning environments. Examines hypermedia design principles, active learning theories, user needs analysis, and basic production skills. Grades based on design and production of hypermedia product.

**Q465—Hypermedia Learning Environments II (3).** Examines advanced authoring skills utilizing a professional authoring tool. Production topics include scripting, functions, variables, knowledge objects, audit trails, database interfaces, and shockwave. Instructional design topics focus on applying learning theories to the design and production of hypermedia learning environments.

**Q466—Computers as Cognitive Tools (3).** Computer-based cognitive tools provide multiple formalisms for representing student knowledge and engage learners in critical, creative, and complex thinking. Cognitive tools include databases, semantic networks, spreadsheets, expert systems, systems modeling, and microworlds, information interpretation and visualization, knowledge construction, and conversation. Prerequisite: graduate standing.

**Q467—Technology to Enhance Learning (3).** Effects of technology use on learning and performance. Leading research in educational technology. Instructional design models, thier uses, and methods of successfully integrating technology use. Prerequisite: graduate standing.

**Q471—Instructional Systems Design (3).** Development of skills and knowledge related to the systematic design of instruction. Emphasis is placed on content analysis, instructional strategies, and formative evaluation. Prerequisites: course in Curriculum or Instruction or instructor's consent.

**Q472—Inquiry in Information Science and Learning Technologies (3).** Examination of research related to the design, development, use, and evaluation of educational technology software and processes. Prerequisites: Q471 or instructor's consent.

**Q475—Diffusion of Educational Innovations (3).** In-depth analysis of innovation development and adoption processes in educational organizations, including schools, universities, and training centers.

**Q480—Internship in Information Science and Learning Technologies (cr.arr.).** Provides internship experience under supervision in advanced levels of practical experience in Information Science and Learning Technology Research and Teaching. Prerequisite: School director's consent. Graded on S/U basis only.

**Q490—Research in Information Science and Learning Technologies (cr.arr.).** Dissertation research. Prerequisite: Doctoral Committee Chair's consent. Graded on S/U basis only.

# Interdisciplinary Studies

**Office of Special Degree Programs**
**College of Arts and Science**
**210 Switzler Hall (573) 882-6060**

**DIRECTOR** M. J. Porter

**DEGREE** AB degree in Interdisciplinary Studies

The Interdisciplinary Studies AB degree provides students in the College of Arts and Science the opportunity to self-design their areas of concentration. Students with very specific career plans and goals not easily accommodated in any one department may find this program suited for their needs; others, less sure of their future plans, may find that this option permits a broader approach to the AB degree than may be found in a single department. The departments involved in these areas may include some outside the College of Arts and Science. This program is a good choice for students who intend to go on to professional programs (in law, business or medicine, for example), but often does not provide the focused preparation required in most areas of graduate study in the usual Arts and Science disciplines. Generally, students develop their programs in consultation with an adviser for Interdisciplinary Studies or the Director of Special Degree Programs.



## DEGREE REQUIREMENTS

- **Basic skills and general education** Identical to requirements for any other AB degree.
- **Area of Concentration** The Interdisciplinary Studies major is comprised of two or three components to total 36 hours of course work. A component is typically comprised of course work from a single department or area, which may include programs outside the College of Arts and Science (e.g., Journalism, Business, Social Work, etc.; students should be aware of the A&S regulation that students may take no more than two non-A&S courses each semester). The components must be designed in one of the following manners.
  - Three components of 12 hours each
  - Three components, one of 15 hours, one of 12 hours and one of 9 hours
  - Two components of 18 hours each
  - Two components, one of 21 hours, one of 15 hours

  Eighteen of these hours must be taken in courses offered in the College of Arts and Science. Unlike other areas, all courses in the area must be at the upper level; at least 15 hours must be numbered 200 and above. All Interdisciplinary Studies students are required to complete at least one course at MU in each component, with no fewer than 12 hours total in courses on the area taken on this campus.
- **Capstone Requirement** In addition to the 36 hours of course work, each Interdisciplinary Studies student is required, in their final semester, to register for a three-hour capstone "experience." This is typically an independent study project under the supervision of a faculty adviser from one of their areas of study. This is typically taken as three hours of Interdisciplinary Studies 350: Special Readings or 280: Internship.
- **Electives** Any course ordinarily accepted for credit by the College of Arts and Science may be chosen as hours to apply to the 120 required for graduation.
- **Additional Requirements** Interdisciplinary Studies degree candidates must earn no less than a 2.0 grade point average in each of their area concentrations and are expected to attain the same grade point average requirements as other A&S degree candidates. Similarly, Interdisciplinary Studies students are bound by

other rules and practices of the College of Arts and Science that pertain to admission to degree programs, the awarding of credit and the awarding of degrees. Some departments and divisions have special requirements (e.g., a minimum grade point average, specific prerequisites, procedures for securing permission to take specific courses, etc.). Interdisciplinary Studies students who propose taking courses in these programs are responsible for meeting these requirements.

**COURSES**

**1—Proseminar (0-1).** Lecture/discussion survey of time-management, note taking techniques, in the context of the three courses that are part of a Freshman Interest Group. Regular use of library, electronic mail and computing facilities is stressed. Elective credit only; no credit for Interdisciplinary Studies 1 and Curriculum and Instruction T42. Graded on S/U basis only.

**280—Internship (1-6).** Internship limited to students pursuing the AB in Interdisciplany Studies degree. Graded on S/U basis only.

**290—Senior Seminar (3).** A seminar that focuses on interdisciplinary learning and thinking. May be used to fulfill the capstone essay requirement for interdisciplinary studies students. Open only to senior undergraduate interdisciplinary studies majors.

**350—Special Readings (1-6).** Independent readings with supervisory faculty member. Open only to interdisciplinary studies majors. May be repeated up to a maximum of 6 hours.

# International Business

**College of Arts and Science**
**19 Parker Hall (573) 882-6060**
**College of Business**
**137 Middlebush Hall (573) 882-7073**

**DEGREE** BA in international studies with an emphasis in international business and a BSBA with an emphasis in international business

International business is a joint degree program offered on a cooperative basis by the College of Arts and Science and the College of Business. The program incorporates foreign language, geographic region and cultural environment courses with core and international business courses.

Students must be accepted in both the Bachelor of Arts in International Studies program in the College of Arts and Science and the Bachelor of Science in Business Administration program in the College of Business to complete this course of study.

Completion of this degree program requires a minimum of 132 semester hours distributed as follows:

**BASIC SKILLS**
Mgmt 101: Contemporary Business Practices (1)
English 20: Exposition and Argumentation (3)
Math 10: College Algebra (3)
Foreign language (12-13 hours in a single language)

**GLOBAL CORE**
Complete *any three* of the starred (*) courses in the three categories listed below. Complete additional courses so that you have *at least two courses from each category.* These courses also may be counted as general education requirements, where applicable.

**The Global Environment**
*Note:* Biological science and geology courses count for science credit; only Geology 10 carries laboratory credit. Geography courses fulfill social science requirements.
*Bio Sc 6: Basic Environmental Studies (3) **or**
*Geol 10: Environmental Geology (4)
Bio Sc 108: Genetics and Human Affairs (3)
Bio Sc 250: Community Biology (3)
*Geog 2: Regions and Nations of the World II (3)
Geog 103: Environmental Geography (3)
Geog 105: Cultural Geography: Introduction to the Humanized Earth (3)
Geog 180: World Political Geography (3)
Geol 112: Oceanography (3)
Geol 142: Global Water Cycle (3)

**The World Community**
*Note:* Anthro 260 fulfills behavioral science requirements. All other courses fulfill social science requirements. A course chosen from Pol Sc 274, 286, 303, or 385 may be counted in the Business Area requirement.
Anthro 260: The Third World: An Anthropological Perspective (3)
*Econ 4/14: Principles of Microeconomics (3) **or**
*Econ 5: Principles of Macroeconomics (3) **or**
*Econ 51GH: General Economics (5)
Geog 210: Economic Geography (3)
Hist 245: Non-Violence in the Modern World (3)
Pea St 50: Introduction to Peace Studies (3)
*Pol Sc 55: International Relations (3)
Pol Sc 150: Comparative Political Systems (3)
Pol Sc 274: Terrorism-Religious, Ethnic and Ideological Politics (3)
Pol Sc 286: Race, Ethics, and Gender in International Relations (3)
Pol Sc 303: Politics and War (3)
Pol Sc 385: International Organizations (3)

**Cultural Norms, Values and Ideas**
*Note:* Anthropology and sociology courses and women studies 111 fulfill behavioral science requirements. All other courses fulfill humanities requirements. Anthropology 131 fulfills behavioral science or humanities requirements.
Anth 50: Deviance: a Cross-Cultural Perspective (3)
Anth 80: Multiculturalism: an Introduction (3)
Anth 131: Indigenous Religions (3)
Anth 153: Cultural Anthropology (3)
Anth 255: Cultures and Civilizations of the World (3)
English 15: Introduction to World Literatures (3)
*Phil 115: Philosophy: East and West (3)
Phil 137: Philosophies of War and Peace (3)
Phil 213: Political and Social Philosophy (3)
*Rel St 130: Major World Religions (3)
Soc 110: Social Inequalities (3)
Soc 200: Class, Status, and Power (3)
Soc 373: Global Perspectives of Women and Development (3)
Wmn St 110: Women, Race, and Class (3)
Wmn St 111: Social Perspectives on Women, Race, and Class (3)

**GENERAL EDUCATION**
**Biological, Physical and Mathematical Science** (18 hours)
Biological/Physical Science (6) (one course must include a lab)
Math 60: Finite Mathematics (3)
Math 61: Elements of Calculus (3)
Stat 150: Introduction to Probability and Statistics I (3)
Stat 250: Introduction to Probability and Statistics II (3)

**Behavioral Science** (6 hours)
Chosen from anthropology, psychology, sociology, and some Black Studies, Peace Studies, and Women Studies courses.

**Social Science** (8-9 hours)
Econ 4 or 14: Principles of Microeconomics (3)
Econ 5: Principles of Macroeconomics (3) [Econ 51GH may substitute for Econ 4 or 14 and 5]
State Requirement. Choose a minimum of three hours from Hist 3, 4, 20, 210, 251, 358, Pol Sc 1 or 11, 102.

**Humanities and Fine Arts** (12 hours)
A civilization course appropriate to the language studied (3)
A literature course in the language studied (3)
Choose six hours from the following:
English 15: Introduction to World Literature (3)
Phil 115: Philosophy: East & West (3)
Phil 137: Philosophies of War and Peace (3)
Phil 213: Political and Social Philosophy (3)
Rel St 130: Major World Religions (3)
Wm St 110: Women, Race and Class (3)

**WRITING INTENSIVE REQUIREMENT** Two writing intensive courses completed on the MU campus with grades in the C-range or better are required for graduation. One WI course must be a junior/senior course in the emphasis area. English 20 is the prerequisite for all WI courses.

**MATH REASONING PROFICIENCY** One course designated MRP must be completed for graduation.

**COMPUTER AND INFORMATION PROFICIENCY (CIP)** Students must demonstrate computer and information management proficiency by examination or by course work completed.

**ADDITIONAL FOREIGN LANGUAGE** (nine hours)
Nine hours in the same language as basic skills.

**INTERNATIONAL STUDIES AREA SUPPORT** (nine hours)
Courses selected with A&S International Studies adviser.

**BUSINESS CORE** (30 hours)
Acct 36: Accounting I (3) or Acct 136GH: Honors Accounting I (3)
Acct 37: Accounting II (3) or Acct 137GH: Honors Accounting II (3)
Acct 258: Computer-Based Data Systems (3)
Econ 229: Money and Banking (3)
Fin 203: Corporate Finance (3)
Mgmt 202: Fundamentals of Management (3)
Mgmt 254: Introduction to Business Law (3)
Mktg 204: Principles of Marketing (3)
Mgmt 375: Management Policies and Problems (3)

**BUSINESS AREA** (15 hours)
Course work in finance, management, or marketing, as well as additional work in appropriate economics and political science courses (six hours maximum), selected with BSBA adviser.

# International Studies

**Office of Special Degree Programs**
**College of Arts and Science**
**210 Switzler Hall (573) 882-6060**

**DIRECTOR** M. J. Porter

**DEGREE** AB degree in international studies

The bachelor of arts degree in international studies is a multidisciplinary program offered through the College of Arts and Science in cooperation with the College of Agriculture, Food and Natural Resources and the College of Business. The degree offers a broad course of liberal studies with a strong intercultural and international focus. Designed to accommodate pre-professional interests as well as

provide a sound foundation for more advanced study at the graduate level, this degree may be especially attractive for students planning to pursue careers in international business, trade and diplomacy, international law, agribusiness, agricultural development, technical assistance and humanitarian relief and similar fields. International business is offered only as a dual degree program leading to the BSBA with an emphasis in international business. Interested students should see the description of this program elsewhere in this catalog.

### DEGREE REQUIREMENTS

- **Basic skills and general education** Similar to requirements for other AB degrees in the College of Arts and Science, except that international studies students are expected to complete an 18-hour common core of courses as part of these requirements. Students must complete *at least three courses that appear in bold face,* and *two courses in each category:*
- **The Global Environment (six hours)**
  **Biological Sciences 6: Basic Environmental Studies (3)**
  Biological Sciences 108: Genetics and Human Affairs (3)
  Biological Sciences 250: Community Biology (3)
  Geography 2: Regions and Nations of the World II (3)
  Geography 103: Environmental Geography (3)
  Geography 105: Cultural Geography: Introduction to the Humanized Earth (3)
  Geography 180: World Political Geography (3)
  Geology 10: Environmental Geology (4)
  Geology 112: Oceanography (3)
  Geology 142: Global Water Cycle (3)
- **The World Community (six hours)**
  Anthropology 260: The Third World: An Anthropological Perspective (3)
  **Economics 4/14: Principles of Microeconomics (3)** or **5: Principles of Macroeconomics (3)**
  **Economics 51: General Economics (5)**
  Geography 210: Economic Geography (3)
  History 245: Non-Violence in the Modern World (3)
  Peace Studies 50: Introduction to Peace Studies (3)
  **Political Science 55: International Relations (3)**
  Political Science 150: Comparative Political Systems (3)
  Political Science 274: Terrorism: Religious, Ethnic and Ideological Politics (3)
  Political Science 286: Race, Ethics, and Gender in International Relations (3)
  Political Science 303: Politics and War (3)
  Political Science 385: International Organizations (3)
- **Cultural Norms, Values and Ideas (six hours)**
  Anthropology 50: Deviance: a Cross-Cultural Perspective (3)
  Anthropology 80: Multiculturalism, An Introduction (3)
  Anthropology 131: Indigenous Religions (3)
  Anthropology 153: Cultural Anthropology (3)
  Anthropology 255: Cultures and Civilizations of the World (3)
  English 15: Introduction to World Literatures (3)
  **Religious Studies 130: Major World Religions (3)**
  **Philosophy 115: Philosophy: East and West (3)**
  Philosophy 137: Philosophies of War and Peace (3)
  Philosophy 213: Political and Social Philosophy (3)
  Sociology 110: Social Inequalities (3)
  Sociology 200: Class, Status and Power (3)
  Sociology 373: Global Perspectives on Women and Development (3)
  Women Studies 110: Women, Race, and Class (3)
  Women Studies 111: Social Perspectives on Women, Race, and Class (3)
- **Foreign Language** Nine additional hours of foreign language courses beyond the 12- to 13-hour minimum skills proficiency requirement (minimum total: 21-22 hours in a single foreign language).
- **Emphasis Areas** Options include five cultural/regional concentrations — East Asian Area Studies, European Studies, Latin American Area Studies, Russian Area Studies, South Asian Area Studies; and three interdivisional alternatives — Environmental Studies, International Agriculture/Community Development and Peace Studies. Requirements for these areas range from 18 to 30 hours.
- **Area Support** Nine hours of approved course work, selected in consultation with an appropriate academic adviser. For students who choose a cultural/regional area emphasis, these courses should be comparative in methodological approach or international in scope (e.g., cultural anthropology, linguistics, comparative sociology and politics); for students who choose an interdivisional emphasis area these courses generally should focus on the history, politics, geography and culture of the particular language studied.
- **Capstone Requirement** International studies students must complete a capstone essay/project with an appropriate faculty member (International Studies 350) or an approved internship (IS 280), or an appropriate departmental senior seminar.
- **Abroad Experience** Participation in an approved program of academic study, an internship, or work abroad is strongly recommended but not presently required.
- **Electives** Any courses ordinarily accepted for credit by the College of Arts and Science may be chosen as hours to apply to the 120 required for graduation.
- **Additional Requirements** International studies degree candidates must earn no less than a 2.0 grade point average in their upper level foreign language courses, emphasis area and area support components, and are expected to attain the same grade point average requirements as other Arts and Science degree candidates. Similarly, international studies students are bound by other rules and practices of the College of Arts and Science that pertain to admission to degree programs, the awarding of credit and the awarding of degrees.

### COURSES

**280—Internship (1-6).** Internship limited to students pursuing the AB in International Studies Degree. Graded on S/U basis only. May be repeated to a maximum of six hours.

**290—Senior Seminar (3).** Focus on international thinking and learning. Open only to senior undergraduate international studies majors.

**350—Special Readings (1-6).** Independent readings with supervisory faculty member. Open only to international studies majors. May be repeated up to a maximum of 6 hours.

# Japanese

*See German and Russian Studies*

# Journalism (SCHOOL)

**120 Neff Hall (573) 882-4821**

*For additional information, see the School of Journalism section of the catalog.*

**EDITORIAL PROFESSORS** J. Banaszynski, J. Bolch, B. Brooks, G. Kennedy, R. Logan, S. Loory, D. Mills, D. Moen, G. Overholser, D. Ranly, B. Scott, Z. Smith, J. Sterling, S. Weinberg, B. Winfield

**ASSOCIATE PROFESSORS** D. Allen, M. Blakely, B. Brennen, J. Colbert, S. Davidson, B. Houston, W. Pippert, R. Reed, D. Rees

**ASSISTANT PROFESSORS** J. Bell, L. Bruzzese, K. Cannata-Winge, S. Craft, J. Craven, L. Dailey, C. Davis, S. Fosdick, J. Schneller, J. Sowell, F. Vultee, T. Winge, B. Zang

**ADJUNCT INSTRUCTORS** J. Bennett, D. Bethea, G. Mellen

**ADJUNCT LECTURER** J. Moeller

**ADJUNCT ASSISTANT INSTRUCTORS** P. Atwater, C. Wohleber

**ADJUNCT CLINICAL INSTRUCTOR** C. Reinardy

**PROFESSORS (Part-time Retired)** E. Lambeth, K. Sanders

**ADJUNCT ASSISTANT INSTRUCTORS (Part-time)** V. Filak, S. Harl, M. Mulcahy, S. Reinardy,

**ASSOCIATE PROFESSOR(Part-time Retired)** J. Gaddy-Wilson

**ADJUNCT ASSISTANT INSTRUCTOR (Part-time)** C. Stewart

**ADVERTISING PROFESSORS** G. Cameron, W. H. Chang, E. Thorson

**ASSOCIATE PROFESSOR** S. Heiman

**ASSISTANT PROFESSORS** F. Cropp, C. Frisby, H. Hager

**ASSISTANT INSTRUCTORS** J. Smith, J. Swartz

**BROADCAST NEWS PROFESSORS** L. Black, R. Gafke, L. Wilkins

**ASSOCIATE PROFESSORS** P. Brooks, G. Leshner, M. McKean

**ASSISTANT PROFESSORS** J. Brewer, K. Collins, L. Kraxberger, G. Kyle, A. Romero

### COURSES

**10—The News Media's Ethics and Social Responsibilities (3).** This course surveys the major ethical issues that concern journalists and their critics. The course describes the ethical dilemmas that confront broadcast and print journalists. It attempts to link descriptive with normative ethical theory, so course examples can be applied to other disciplines. f.

**104—News and Editing Practicum (3).** Instruction in fundamentals of newswriting and copy editing for students entering the graduate program without an undergraduate degree in journalism. f,w,s.

**105—News (3).** Introduction to fundamentals of newswriting. Lectures, discussions and laboratory work provide training under deadline pressure in writing basic news stories. Stories cover several "live" assignments. f,w,s.

**109—Editing Practicum (3).** Instruction in fundamentals of editing for students entering the graduate program without an undergraduate degree in journalism. f,w,s.

**110—Editing (3).** Introduces the fundamentals of copyediting of stories for newspaper publication; emphasizes style and grammar; introduces headline writing. Prerequisite: 105. f,w,s.

**140—Basic Photography and Photo Editing (3).** A basic survey for non-photojournalism majors and others with no prior experience who desire a working knowledge of photojournalistic theory and practice. Prerequisite: instructor's consent.

**200—Principles of American Journalism (3).** Introductory course designed to acquaint students with concepts and functions of journalism in American society. Stresses the basic issues and problems facing journalists and the mass media. Prerequisites: English 20, sophomore standing.

**300—Problems (1-3).** Independent research arranged with individual faculty member. Contract must be approved by instructor and dean. Not accepted as a substitute for any regularly scheduled course. f,w,s,ss.

**301—Topics in Journalism (1-3).** Selected current topics in journalism. Specific topics to be announced at time of registration.

**302—Cross-Cultural Journalism (3).** Cross-Cultural Journalism provides journalistic tools for the coverage of diverse ethnic, gender, ability and ideological groups inside and outside the United States. The critical role of diverse voices in a democracy will be discussed. Prerequisites: Magazine and News-Editorial students should take 302 concurrently with 306. Photojournalism students should take concurrently with either 306 or 342. Broadcast News students should take concurrently with 351. Advertising students should take 302 in their junior year.

**303—Solving Practical Problems in Journalism (3).** Finding solutions to practical problems journalists face by applying insights from communication theory, using on-line secondary and syndicated research, and conducting original research. Hands-on experience conducting surveys, experiments and qualitative research. Prerequisites: Journalism 105 and 200 and junior standing. Students should take this course in their first or second semesters in the School of Journalism.

**304—Communications Law (3).** Legal concepts, including prior restraint, libel, privacy, obscenity, contempt and access, as they relate to print, broadcast, advertising and other areas. f,w.

**305—Critical Reviewing (3).** A combination of theory and practice that covers the philosophy and craft of reviewing the arts, including books, movies, television, dance, painting, sculpture and architecture. Students must attempt to publish reviews and essays locally, regionally and nationallly. Reviews published in Sunday Magazine. Prerequisites: 104 or 105 and instructor's consent. f.

**306—Reporting (3).** Assignments on a daily city newspaper covering community news, city, county and state affairs, sports and lifestyle issues. Experience in gathering and writing news, writing under deadline conditions. Prerequisites: 104 or 105. f,w,ss.

**307—Advanced Reporting (3).** Assignments to more difficult beat areas, team reporting, and some investigative reporting for community newspaper. Individual conferences and weekly class sessions on contemporary reporting problems. Prerequisite: 306.

**308—Law and the Courts (2).** Lectures, readings, discussions, writing assignments relating to justice system reporting from the view of attorneys, prosecutors, judges, correction and probation officers, with the cooperation of the Missouri Bar. Prerequisites: 104 or 105. f,w.

**309—History of American Journalism (3).** American mass media from colonial days to present in the context of social, economic and political change. f,w.

**310—Newspaper Editing (3).** Laboratory work on the Columbia Missourian plus lectures on ethics, page design and news decision making. Prerequisite: 110. f,w,ss.

**311—Advanced Newspaper Editing and Design (3).** Continuation of desk editing with emphasis on page design, graphics and typography. Prerequisite: 310, 363 or instructor's consent.

**312—Communications Practice (1-3).** Special instruction in the school's media as an extension of existing advanced media courses, or, in advertising, an extension of advertising creative courses. Contract must be approved by instructor and dean. f,w,s,ss.

**313—Internship (2).** Credit for approved employment in journalism. Specifications for this course appear in the Undergraduate Catalog. f,w,s.

**314—Computer-Assisted Reporting (3).** How to negotiate for, transfer and process electronic information; the unique opportunities computers provide for analyzing information. Prerequisite: permission from instructor.

**315—Investigative Reporting (3).** Advanced course designed to acquaint reporters with public issues. Students write two in-depth projects and other shorter assignments. Students meet weekly with instructor for editorial suggestions. Prerequisites: 306 and instructor's consent. f.

**316—Science Writing (3).** Advanced course reporting science, medicine and environment. Write for publication. Prerequisite: 306 and instructor's consent. f.

**317—Women and the Media (2).** (same as Women Studies 317). Focus on portrayal of women in American mass media. Other goals: historical perspective on women as journalists; exposure to issues usually not covered by mass media; research and writing skills. Prerequisite: instructor's consent.

**318—Media Sales (3).** Focus of this course is to familialize students with how to sell a variety of media, including newspaper, radio, television, outdoor, new media, and others. Prerequisites: 321. w.

**319—Principles of Strategic Communication (3).** Foundation course, familiarizing students with an array of strategic communication tools and how they are used in the field. Prerequisite: junior standing. f,w.

**320—Editorial Writing (3).** Emphasizes writing and thinking. Discussion of current problems. Correct and effective use of English language. Mission, obligations and history of editorial pages. Students write editorials for the Columbia Missourian. Prerequisite: 306. f,w,s.

**321—Strategic Writing I (3).** Students learn strategic writing for a variety of media such as print, radio, tv, outdoor, new media, news releases, pitch letters and other persuasive messages. Prerequisites: 319, 333, 336. f,w.

**322—Psychology in Advertising (3).** Application of psychological principles, learning, perception, motivation, attitudes to advertising. Emphasis on the increasing use of psychographics (the "lifestyle "factor) to understand consumer wants and buying behavior. Prerequisite: 319, 333, 336. f,w.

**323—Advanced Media Sales (3).** Professional sales techniques, account service, advertising production, cooperative advertising, offset techniques, market data. Students assigned retail and classified accounts for which they will prepare, service and sell advertising. Prerequisites: 321. f,w.

**324—Strategic Campaigns (3).** This cours is a capstone course, giving students a hands-on opportunity to apply knowledge and skills gained in previous courses. Taken final undergraduate semester. Prerequisite: 321. f,w.

**326—Broadcast Advertising (3).** Broadcast advertising production. Emphasis on equipment, directing, script/storyboard preparation, and commercial analysis. Students become familiar with procedures, techniques and facilities used in basic radio and television production. Prerequisites: 321. f,w.

**327—Direct and Mail Order Advertising (2).** Direct mail advertising and mail order promotion, retail and national; mailing lists, copy, production, postal regulations, strategy. Prerequisite: 321. f,w.

**329—Strategic Writing II (3).** Advanced course in the creation of advertising and public relations materials with an emphasis on strategic planning, developing creative concepts, producing and polishing copy and visuals, execution of finished product and refining. Prerequisite: 321. f,w.

**330—Media Strategy and Planning (3).** Course deals with strategic planning and the selection and evaluation of appropriate media outlets. Students gain a clear understanding of the problems and issues involved in crafting effective media strategies, creative problem solving and selection of appropriate media. Prerequisite: 319, 333, 336. f.

**331—Strategic Communication Management (3).** Course introduces the managerial aspects of strategic communication. Prerequisites: 319, 333, 336. f,w.

**332—Public Relations (3).** Current methods of communicating with constituents as practiced by agencies, corporations and government/not-for- profit organizations. Prerequisite: senior standing. f,w.

**333—Strategic Communication Research I (3).** Introduction to techniques and practice of strategic communication research. Emphasis on research techniques and use of research results, including consumer analysis, attitude Measurement and evaluation of externally supplied research. Prerequisite: junior standing. f,w.

**334—Global Communicataion (3).** Understanding global communication systems with an emphasis on planning and executing strategic communiation campaigns. Particular attention will be paid to cultural, political and economic differences, as they affect marketing and development communication. Prerequisites: 319, 333, 336. f.

**335—Impact of Advertising on American Culture (3).** Philosophical, political, social roots of advertising. Readings in advertising history and literature. Study of such topical issues as materialism, sexism, racism, stereotyping, etc. Prerequisites: 319, 333, 336. f,w.

**336—Strategic Design and Visual I (3).** Course gives students a foundation in visual communication in areas such as typography, balance, eye flow, and layouts. Prerequisite: junior standing. f,w.

**337—Strategic Design and Visuals II (3).** Advanced course in Strategic Design and Visuals. Persuasive visual principles applied to variety of integrated media including print, broadcast and on-line. Prerequisite: 321. f,w.

**338—Business and Economics Reporting (3).** (same as Finance 338). Advanced reporting course concentrating on writing and reporting about business and the economy. Emphasis on sources, records, documents and writing techniques. Prerequisites: 306 and instructor's consent. w.

**339—Strategic Communication Law and Ethics (3).** Laws, regulations and codes of conduct that affect the profession. Prerequisites: 319, 333, 336. f.

**340—Fundamentals of Photojournalism (3).** A rigorous, skills course for advanced students preparing for a career in photojournalism consisting of weekly exercises in black and white and color photographic story telling and lectures that explore the philosophical, historical and ethical roots of the profession. Prerequisite: instructor's consent.

**341—Advanced Techniques in Photojournalism (3).** Advanced techniques and problem solving in photojournalism. Stresses lighting techniques—available, studio, electronic flash and color correction of color film. Strobed documentary, protraiture, fashion, food, architecture, sports. Prerequisite: 140. f,w.

**342—Staff Photojournalism (3).** A laboratory course exploring the photojournalist's role in the news gathering process. As staffers for the Missourian, students cover news, sports, features, food assignments and originate single pictures and stories. Prerequisite: 341. f,w,s.

**343—Electronic Photojournalism (3).** Digital photography as a medium, including legal, ethical, editing and professional aspects. Prerequisite: 140 or 340 and instructor's consent. f,w.

**344—The Picture Story and Photographic Essay (3).** Production of photo stories/essays for newspapers, magazines and news media presentations. Research, photography, design and layout. Final portfolio will show journalistic strength and versatility in black and white, and color. Prerequisite: 342. f,w.

**345—General Semantics in Journalism (3).** The everyday usefulness of the methods of science as applied to language and the practice of Journalism. The course deals with the general effect of language habits on journalists and their readers/listeners.

**346—History of Photojournalism (3).** Examination of the aesthetic and technological development of photography from its invention in 1839 to the present. Primary emphasis on the evolution and impact of the picture press and the documentary tradition in America, although international developments are studied as well. Discussion focuses on the social and political ramifications of photography's use in the news media.

**347—Visual Communications (3).** How to communicate through pictures. Topics: visual perception, vocabulary, the role of words, picture editing, design and layout, engravers and printers, taste and judgment, camera mechanics. For journalism students who are not photographers. w.

**348—Religion Reporting and Writing (3).** (same as Religious Studies 348). Advanced seminar in religion reporting and writing. Examines the role of religion journalism in faith, public life, and culture. Prerequisite: 306 or its equivalent in professional writing experience and instructor's consent.

**350A—The Creative Process (1).** Give students the understanding of and appreciation for the creative process. Teach students techniques for enhancing their own creativity. Encourage students to take intellectual risks, make their own personal explorations and creative journey, and celebrate creativity in others. Prerequisite: junior standing.

**350B—Media and Art Criticism: The Role of the Critic (1).** Give students the understanding of and appreciation for the creative process. Teach students the applied techniques of criticism: art, film and media. Prerequisite: junior standing. f,w.

**350C—Writing Long-Form Stories (1).** Give students the understanding of and appreciation for the creative process. Teach students the applied techniques and structure of long-form writing such as documentaries, short stories, screenplays, and novels. Prerequisite: junior standing. f,w.

**350D—Media Management and Leadership Theory (1).** Dramatic changes in technology and in the media's role in converging technologies requires new management and leadership techniques and paradigms based on new management theories. Students will write case studies examining these changes and applying these new theories. Prerequisite: junior standing. f,w.

**350E—Managing and Leading People (1).** Dramatic changes in technology and in the media's role in covering technologies requires new management and leadership techniques and paradigms based on new management theories. Students will write case studies examining these changes and applying these new theories. Prerequisite: junior standing. f,w.

**350F—Media Strategy (1).** Dramatic changes in technology and in the media's role in converging technologies requires new management and leadership techniques and paradigms based on new management theories. Students will write case studies examining these changes and applying these new theories. Prerequisite: junior standing. f,w.

**350G—New Media Basics (1).** Students will learn how to use the Internet to communicate with others, find human and electronic sources for stories and publish on the World Wide Web. Prerequisite: junior standing. f,w.

**351—Broadcast News I (3).** Beginning reporting and news writing for radio, television and their on-line services. Introduction to use of audio and video recorders and editing systems in production of news stories. Consideration of ethical isuses, economic factors, relationships with news sources and gender and ethnic diversity in the newsroom and in news stories. Prerequisite: 105. f,w,s.

**352—Broadcast News II (3).** Introduction to general assignment reporting skills for the newsroom environment. Instruction in time management, writing, storytelling, and performance. Team skills and ethnic diversity in the newsroom are discussed. Students begin work for broadcast newsrooms. Prerequisite: 351. f,w,s.

**353—Broadcast News III (3).** Intermediate reporting and news writing skills for radio and television. Advanced techniques in the use of video and sound in production of news stories. Prerequisite: 352. f,w,s.

**354—News Producing (3).** Instruction in techniques of television newscast preparation. Emphasis on role of the television news producer. Prerequisite: 353. f,w,s,ss.

**355—Advanced Broadcast Reporting (3).** In-depth reporting and editing for radio or television; advanced production techniques; emphasis on writing, interviewing, effective use of audio or videotape at KOMU-TV or KBIA. Prerequisites: 353. f,w,s.

**356—Advanced Internet Applications for Radio/TV News (3).** Integration of advanced Internet research and publishing skills with production and management of the KOMU-TV/KBIA Radio world wide web news service. Prerequisite: 352. f,w,s.

**358—Advanced News Communication (1).** This course will examine and practice the components of effective interviewing and on-set and live reporting for television news. Students will anchor KOMU-TV's morning newscasts. Prerequisite: 352. f,w,.

**359—Seminar in Radio-TV News (3).** Seminar in network and local news process, in coverage of major issues and social problems, in relationships of radio-TV news and government institutions. Not for students who have taken 470. Prerequisite: instructor's consent.

**360—Intermediate Writing (3).** In-depth research and writing techniques. Students produce articles for the Missourian and school-produced magazines or other publications. Prerequisites: 306 or equivalent and instructor's consent. f,w.

**361—Advanced Writing (3).** For those who wish to emphasize writing as a career. In addition to writing assignments, students discuss writings of well-known magazine and book authors. Prerequisites: 306, 360 and instructor's consent. w.

**363—Magazine Editing (3).** Review of grammar, punctuation, style rules: measuring articles copy fitting: writing captions, titles; editing, proofreading, condensing, rewriting magazine articles. Prerequisites: 110, 306. f,w,s.

**364—Corporate Communication (3).** The role public relations plays in business communications. Press relations, news releases, employee publications and internal communications, shareholder relations, financial public relations, public affairs and corporate social responsibility. Prerequisites: 319, 333, 336. f,w.

**365—Magazine Staff (3).** A laboratory course exploring the role of editorial staff in the magazine editing process. As staff for school-produced magazines, students plan, edit, write display type, proofread and coordinate with writers, photographers and designers. Prerequisites: 360, 363 and instructor's consent.

**366—Advanced Magazine Design (3).** Continuation of 362. Class critiques of spreads, sequences, and magazines are implemented by students who make typographic specifications and lay out individual spreads, and complete magazines for actual printed production. f,w,s.

**367—American Magazine History (2).** Review of American magazines with the major emphasis on contemporary publications. Project papers present analysis of today's magazines. w.

**368—Magazine Publishing (3).** The audience, economics, job opportunities and content of the American magazine. Deals with general audience and specialized magazines, business and institutional magazines, news magazines, etc. Case histories of individual magazines, guest lecturers from various fields. w.

**369—Online Journalism (3).** Examination of the emerging forms of information delivery by computer and related convergence of print and broadcast media. Students gain practical experience in the production of an electronic information delivery product. Prerequisites: 104, 105, 120, 306, 342, 350 or instructor's consent.

**370—International Issues Reporting (3).** An advanced professional seminar on how to recognize, report and write about the domestic influence of international political, economic and cultural problems and trends. Prerequisites: J306 or J349. Letter grading only.

**371—International News Media System (3).** A comparative survey of current news media systems and how they affect the international flow of information. Newspapers, news agencies, broadcasting and satellite networks of the world are analyzed. Prerequisite: junior standing. Letter grading only. f.

**372—International Journalism (3).** An examination of the gathering, editing and dissemination of international news. The impact of social, economic, cultural and political structures on news media performance is evaluated. Prerequisites: junior standing. Letter grading only. w.

**373—The Community Newspaper (3).** The role of the newspaper in the community. Handling of news categories especially applicable to smaller newspaper. Field trips giving students experience in publishing newspapers in the state. Prerequisites: 104 or 105. w.

**374—The Suburban Press (2).** Examines the operation, management, and news practices of America's suburban press. Emphasizes unique qualities, problems and advantages of suburban newspapers and the communities and governments they serve. Prerequisites: 104 or 105.

**375—Newspaper Management (3).** Department-by-department organization, business practices, personnel, rate structures, equipment, production, laws and regulations of concern to newspaper management. Cases examine critical newspaper management issues. f.

**377—Newspaper Photo Desk Management (3).** Survey of management of photographic journalism, art illustration and design in newspapers; includes work on graphics desk of Columbia Missourian. Prerequisites: 341 or 336 or 363 and instructor's consent.

**378—Information Graphics (3).** Work as a news artist for a daily city newspaper graphically covering community news, sports and lifestyle issues. Emphasis on visual thinking and effective presentation. Experience with state-of-the-art software. Prerequisite: J306 or the professional equivalent, or instructor's consent.

**379—Internet Law (3).** This course will focus on 1) how to avoid legal pitfall while doing e-mail or e-commerce or browsing the Web and 2) how to use the law to your benefit.

**381—Creativity and Innovation in Journalism (3).** To provide students an appreciation of creative process, to teach students methods to enhance creativity, to provide historical and philosophical background for creative process. w.

**385—Careers Seminar (1).** Course helps students develop skills for appropriate professional careers, examine media leadership issues, write research paper. w.

**386—Economics and Finance of the Media (3).** Analysis of the economic and financial environment of mass media. Examine mass media as they are financed and as they are affected by advertisers, competition, financial markets, etc. w

**387—Journalism as Communication (2).** (same as Journalism 487). Journalism from a scientific standpoint. Introduction to scientific method, philosophy of science, with applications to the study of journalism and communication. Basis of quantitative research and theorizing about journalism and communication. f,w,s.

**389—Media Management and Leadership (3).** Dramatic changes in technology and the media's role in converging technologies requires new management and leadership tech-

niques and paradiams. Students will write case examining these changes. Prerequisites: instructor's consent.

**390—Journalism and Democracy (3).** This course seeks to cultivate critical-thinking skills by helping students synthesize and apply knowledge gained from a journalism education to the evaluation of news media performance in a democratic society. Prerequisite: 306 and 250 and second-semester senior standing. Undergraduates only.

**392—Intersession Colloquium (1).** Lecture portion of any course the student plans to take later during an intercession, with the exception of courses 112, 323, 400, 490 and 499. Prerequisite: Dean's consent. f,w,s.

**395—Area Seminar (3).** Special lectures, readings, discussions relating to the urban journalism, state government reporting or local public affairs reporting programs. f,w,s.

**400—Problems (1-4).** Individual work on chosen and specified problems not associated with thesis or project. Topic must be arranged with supervising teacher prior to registration. f,w,s,ss.

**401—Mass Media Seminar (3).** Concepts, functions and major problems of print and electronic media in the United States. Two hours lecture and one hour of discussion lab each week. f,w.

**402—Philosophy of Journalism (2).** Seminar deals with wide assortment of philosophical questions in Journalism, but concentrates on epistemology, political press theory and ethics. Such questions as "objectivity" in journalism, press responsibility, professionalism. f.

**403—Principles and Tools in Strategic Communication Planning (3).** Course introduces the latest principles of strategic communication and the importance of strategic planning in many contemporary communication fields. A significant operational component in the course introduces skills such as budgeting, scheduling objective-setting, organizing personal time, and managing people.

**404—History of Mass Media (3).** American mass media from colonial days to present in the context of social, economic and political change. History research. Graduate students only. f,w.

**405—Strategic Communication Research II (3).** Course reviews the latest principles of strategic communication with emphasis upon the crucial role of research to develop informed strategy, monitor communication programs, and evaluate overall campaign effectiveness. The course imparts a management perspective in the use of a wide range of research methods.

**406—Seminar in Communications Law (2).** Discusses contemporary issues in press-bar relationships. Discussions led by law students and journalism graduate students, with occasional guests from each area. Prerequisites: 304 or instructor's consent. f,w.

**407—Information Theory (3).** Concepts and functions; information storage, retrieval, indexing via electronic computer. w.

**408—Research Methods in Journalism (3).** Research methods of utility in journalism and philosophy of science. Emphasis on understanding common quantitative methods and tools. Prerequisite: six hours of journalism or instructor's consent. f,w,s.

**409—Qualitative Research Methods in Journalism I (3).** Course is designed to introduce graduate students to common qualitative approaches applicable to the study of journalism and mass communication. Students will learn a variety of approaches, practical methodolgies and tools that will help them to prepare to conduct research as part of their continuing work in the graduate program.

**412—Photography in Society (3).** Social and political dimensions of still photography with emphasis on critical thinking and analysis in visual communication. f,w.

**415—Doctoral Proseminar I (3).** First semester of a one-year course that covers theory and method in important topic areas. Each topic would be examined from several theoretical and methodological points of view. Required of doctoral students.

**416—Doctoral Proseminar II (3).** Continuation of 415. Required of doctoral students.

**421—Doctoral Seminar (3).** This course is designed to meet the University requirement for a first-year qualifying examination process for doctoral students, involve students in research early in their programs and encourage students to recruit members of their doctoral committees.

**422—Seminar in History and Principles of Journalism (3).** Discussion of journalism history, historical resources and methods, and journalism historians' work. Research projects and papers. f.

**424—Theory of Mass Communication (3).** Major communication theories and theorists. Interpersonal theories are included as they relate to mass communication. f,w.

**425—Environmental Research for Journalists (3).** This class is an introduction for journalists to understand quantitative research about the environment. Applications of advanced parametric and non-parametric statistical methods in environmental research are stressed. Students evaluate diverse environmental research.

**426—Covering the Legal System (3).** (same as Law 395). Law students and journalism students work in teams to report and write case studies accompanied by biographical profiles. The course is taught jointly by a law professor and journalism professor. w.

**428—The Literature of Journalism (2).** Reading of ten basic books about journalism. Several books are assigned to everyone; several are assigned on an individual basis, and several are electives. Oral reports, short papers, and class discussion. f,w.

**430—Seminar on Topics in Journalism (3).** Problems, issues and approaches to research in selected topic areas. Specific content varies by needs of faculty and students and will be announced in advance. Prerequisites: Instructor's consent.

**431—Proseminar: Science, Society and the News Media (3).** Seminar explores the complex interactions among science, biomedicine, the news media and the public. Seminar is more about media sociology than the sociology of science. w.

**432—The Mass Media and the Presidency (3).** This seminar examines that historical triad of the free expression clauses of the First Amendment, the presidency and the American mass media through readings, class assignments and a project. w.

**433—Proseminar in Communications (2).** Seminar on professional and academic issues in journalism and communication. Specific discussion topics selected by faculty and students on a per class basis. f,w.

**436—Issues and Theories in International Communication (3).** This course examines current issues in international communication, including a comparative study of the mass media systems of nations with different cultural, political, social and economic structures. Prerequisite: graduate standing. Letter grading only. w.

**438—Controls of Information (3).** A detail of actions by society and by the communications media calculated to limit or alter the content of information in the United States. f.

**440—Controls of Information (3).** A detail of actions by government, largely the federal government, calculated to limit or alter the content of information in the United States. w,s.

**442—Information Theory (3).** Concepts and functions: information storage, retrieval, indexing via electronic computer. w.

**445—General Semantics in Journalism (3).** The everyday usefulness of the methods of science as applied to language and the practice of journalism. The course deals with the general effect of language habits on journalists and their readers/listeners.

**446—Media Ethics (3).** An introduction to and application of ethical theory to their contemporary mass media. Prerequisite: Senior standing/ graduate status.

**447—Critical Analysis of the Mass Media (3).** An overview of both the content and method of contemporary media criticism. Graduate Standing.

**448—Readings in Journalism (1-5).** Directed readings for doctoral candidates. Designed to supplement work in other courses, and to broaden student's knowledge of trends, interpretations, and developments in the media. f,w,s.

**451—Doctoral Research Seminar (1).** Weekly discussion session for doctoral students. Required of all doctoral students. Graded on S/U basis only.

**452—Advanced Seminar, Theory of Communication (2).** In-depth investigation of communication theory, with emphasis on problems of theory building in communication. Prerequisites: 424 or 436 or instructor's consent. f,w.

**453—Media and Politics (3).** With a general premise that the mass media play a central role in American politics, this seminar seeks to answer how the class will examine various theoretical bases for that role and the ensuing political communications, the issues raised in covering American politics, and the types of effects both from politicians and from the mass media coverage on the American society.

**454—Advanced Qualitative Methods in Journalism (3).** Designed to familiarize doctoral students with qualitative approaches applicable to the study of journalism and mass communication. Students will be introduced to a variety of philosophical and conceptual approaches as well as to practical tools-oriented methodologies in four major areas of qualitative research.

**455—Risk Communication (3).** Designed to acquaint students from a variety of disciplines and with a variety of career goals with the scholarship of risk communication.

**456—Cyberspace Policy and Regulation (3).** Introduces graduate students to the legal and policy frameworks governing regulation of Internet-based media.

**457—Mass Communication and Cultural Theory (3).** Explores the relationship between mass communication and the idea of culture as it emerges during the second half of the twentieth century in the United States.

**458—Advanced Research Methods (3).** Experimental design, factor analysis, semantic differential and Q methodology as tools for the researcher in journalism, communication. f,w.

**470—Seminar in Radio/TV News (3).** Seminar in network and local news process, in coverage of major issues and social problems, in relationships of radio-TV news and government institutions. Prerequisite: instructor's consent.

**472—MA Project Seminar (1).** Choosing and designing an appropriate profession project; preparation to carry out work successfully; discussion of trends and future directions in various areas of journalism. Must be completed before starting the professional project.

**474—MA Thesis Seminar (1).** Choosing and developing an appropriate research topic for a thesis; designing a research strategy and learning appropriate investigative techniques. Must be completed before starting thesis. f,w

**476—Area Seminar (3).** Seminar designed to accompany 499, Area Problem. Through readings and discussions the Plan B student examines the special area related to the project. f,w,s.

**478—Area Problem (4-9).** Work project enabling Plan B student to demonstrate professional competence; may be one offered in a graduate reporting program or a creative project designed to meet a particular interest of student. Offered on S/U basis only. f,w,s,ss.

**485—Careers Seminar (1).** Course helps students develop skills for appropriate professional careers examine media leadership issues, write research paper. w.

**486—Economics and Finance of the Media (3).** Analysis of the economic and financial environment of mass media. Examine mass media as they are financed and as they are affected by advertisers, competition, financial markets, etc. w.

**489—Media Management and Leadership (3).** Dramatic changes in technology and the media's role in converging technologies requires new management and leadership techniques and paradisms. Students will write case examining these changes. Prerequisites: instructor's consent.

**490—Research (1-9).** Guidance for graduate students engaged in plan A for the M.A. degree and for all doctoral candidates engaged in investigations looking toward production of thesis. f,w,s,ss. Graded on a S/U basis only.

# Korean

*See German and Russian Studies*

# Latin

*See Classical Studies*

# Latin American Area Studies

**INTERDEPARTMENTAL PROGRAM IN THE COLLEGE OF ARTS AND SCIENCE**
**143 Arts and Science Building (573) 882-4874**

**DEGREE** AB degree in international studies

Latin American Area Studies is offered as an emphasis area in the AB degree in international studies. The Latin American Area Studies option is designed to offer, in addition to linguistic competency in Spanish or Portuguese, a broad base of knowledge about Latin American politics, literature, economics and culture. This field of inquiry, alone or in combination with another discipline, is in high demand throughout the world and can provide students with an indisputable competitive edge in the contemporary professional arena. Students who graduate with an emphasis area in Latin American studies will be fully prepared to pursue graduate study in prestigious and demanding MA and PhD Latin American study programs offered around the country.

Students are encouraged to study abroad in one of our many program opportunities in Spain, Mexico, Central and South America, Brazil, or the Caribbean. It is important to begin planning an emphasis area with a member of the Latin American Studies Committee as early as feasible, the freshman year if possible. An adviser can tailor a program to fit your interests.

A **minor in Latin American studies** is also available. Students who have completed the language requirement in Spanish or Portuguese (or equivalent) may select, in conjunction with an adviser, 15 additional units of approved course work.

Additional information on these programs may be obtained from the Department of Political Science or Romance Languages, the Dean's Office in Lowry Hall or the Office of Special Degree Programs, 19 Parker Hall. Students interested in the AB degree in international studies should see the Director of Special Degree Programs; the minor in Latin American Studies must be approved by a faculty member in the Department of Romance Languages.

# Linguistics

**INTERDEPARTMENTAL PROGRAM IN THE COLLEGE OF ARTS AND SCIENCE**
**107 Swallow Hall (573) 882-4731**
**CHAIR** L. Furbee
**PROFESSORS** P. Benoit, M. Camargo, P. Dale, J. Foley, L. Furbee, J. Kvanvig, P. Weirich, C. G. Youmans
**ASSOCIATE PROFESSORS** M. Garcia-Pinto, J. Goodman, L. Lilja, P. Placier, J. Zemke, F. Zephir,
**ASSISTANT PROFESSORS** V. Carstens, L. Day, M. Gordon, C. Horisk
**INSTRUCTOR** E. Smith
**ASSOCIATE PROFESSOR EMERITUS** B. Honeycutt
**PROFESSORS EMERITI** D. Gulstad, D. Lance, E. Lane, D. Watson

**DEGREE** AB in linguistics

Linguistics is the study of human language. It seeks to understand and explain the social, psychological and structural properties of human language in a clear and formal manner. Although specialists in this field commonly know one or more foreign languages, such knowledge is complementary rather than essential.

The area of concentration in linguistics offers students a liberal education and prepares them for graduate study in linguistics or related fields; it also develops the verbal and analytical skills that are valuable in a wide variety of professional careers.

**The area of concentration consists of at least 27 semester hours, including the following linguistics courses**:
Ling 20: Human Language (3)
Ling 154: Anthropological Linguistics (3)
Ling 340: Structure of American English (3); or
Ling 378: Structure of Modern French (3); or
Ling 379: Structure of Modern Spanish (3)
Ling 372: Techniques in Linguistic Analysis (3)
Ling 383: Studies in Linguistics (3)
**And one or more of the following courses in linguistic theory and method:**
Ling 306: Sociolinguistics
Ling 308: Historical Linguistics
Ling 341: History of the English Language
Ling 346: Language and Culture
Ling 393: Field Methods in Linguistics
The remaining course work typically would include additional courses in linguistics; however, up to nine hours of this course work may include related courses chosen from a number of allied fields, such as anthropology, classical studies, English, foreign languages, communication, philosophy, psychology and sociology, among others. No more than six hours of Ling 350 (Special Readings) may be included in the area of concentration.
A program leading to an AB with honors is also available.
**The minor in linguistics consists of at least 15 semester hours, including:**
Ling 20: Human Language (3); or Ling 154: Anthropological Linguistics (3)
Ling 340: Structure of American English (3)

## COURSES

**20—Human Language (3).** (same as Anthropology and Communication & Science Disorders 20) General introduction to various aspects of linguistic study. Elementary analysis of language data, with some attention to application of linguistic study to other disciplines.
**101—Topics (cr.arr.).** Organized study of selected topics. Subjects and earnable credit may vary from semester to semester. Prerequisites: sophomore standing, consent of chairperson for repetition.
**153—Mathematical Logic (3).** (same as Philosophy 153).
**154—Introduction to Anthropological Linguistics (3).** (same as Anthropology 154).
**201—Topics (cr.arr.).** Organized study of selected topics. Subjects and earnable credit may vary from semester to semester. Prerequisite: departmental consent for repetition.
**202—American Phonetics (3).** (same as Communicative Science and Disorders 201). Analysis of Sounds of Midwestern American dialect. Standards of pronunciation, feature analysis, transcription, articulation mechancis, coarticulation.
**212—Anatomy and Physiology Speech Mechanism (3).** (same as Communication Science and Disorders 210). Introduction to anatomical and functional aspects of the speech mechanism.
**235—Philosophy and Language (3).** (same as Philosophy 235)
**252—Survey of Minority & Creole Languages of the U.S. & the Caribbean (3).** (same as Spanish 252 and French 252). Analysis of the state of the minority languages of the U.S. and the Creole languages of the Caribbean with particular attention to the social status of these languages and speakers' attitudes toward them in context of ethnic, cultural, and national identity (taught in English). Prerequisite: sophomore standing.
**260—Phonetics (3).** (same as Spanish 260). (Spanish Language).
**270—Culture as Communication (3).** (same as Anthropology 270, and Communication 270.)
**290—Honors Thesis (3).** Based on an original research project in theoretical or applied linguistics. Topic, director, and second reader approved by Linguistics Committee, College of Arts & Science. Prerequisite: qualification for Honors degree.
**301—Topics (cr.arr.).** Organized study of selected topics. Subjects and earnable credit may vary from semester to semester. Prerequisite: consent of chairperson for repetition.
**308—Historical Linguistics (3).** (same as Anthropology 308).
**311—History of the French Language (3).** (same as French 311).
**312—Gender, Language and Communication (3).** (same as Communications and Anthropology 312). Relationships among gender, language, nonverbal communication, and culture. Prerequisite: junior standing or departmental consent.
**313—History of the Greek and Latin Languages (3).** (same as Classical Studies 311).
**314—Formal Logic (3).** (same as Philosophy 314). Presents the method of truth trees for sentence and predicate logic. Examines proofs concerning the decidability, soundness, and completeness of formal systems. Emphasizes the theory of formal systems. Prerequisite: 153 or graduate status.
**315—Language and Discourse (3).** (same as Communication 315)
**316—Introduction to Old English (3).** (same as English 315).
**321—Renaissance and 17th-Century English Literature (3).** Topics (e.g., The Metaphysical Poets, Themes in Shakespeare) announced at time of registration. May repeat to six hours with department's consent. Prerequisite: junior standing.
**340—Structure of American English (3).** (same as English 340).
**341—History of the English Language (3).** (same as English 341).
**342—Regional and Social Dialects of American English (3).** (same as English 342).
**343—Principles of Teaching English as a Second Language (3).** (same as English 343).
**344—Topics in Linguistics (3-6).** (same as English 344).
**346—Language and Culture (3).** (same as Anthropology 346).
**350—Special Readings (1-3).** Independent study through readings, conferences, reports. Prerequisites: one Linguistics course & instructor's consent.
**361—History of the Spanish Language (3).** (same as Spanish 361).
**370—Practical Phonetics for Fieldwork (3).** (same as Anthropology 370). Self-paced course using computer and tape recorded lessons from world's languages. Teaches practical

articulatory and trancription phonetics. Weekly meeting with instructor to monitor progress, resolve questions. Prerequisites: junior standing or instructor's consent. f,w.

**372—Techniques in Linguistic Analysis (3).** (same as Anthropology 372, Romance Languages 372).

**373—Linguistic Phonetics (3).** (same as Anthropology 373, Romance Languages 373).

**374—Issues in Linguistic Analysis (3).** (same as Anthropology 374 & Linguistics 374). Key issues in analysis of languages such as accounting for variation, nature and abstractness of underlying representations, and typological characteristics treated comparatively. Prerequisite: 372. w.

**378—Structure of Modern French (3).** (same as French 378).

**379—Structure of Modern Spanish (3).** (same as Spanish 379).

**380—Linguistic Theory and Language Acquistion (3).** (same as Spanish 380). The goal of this class is to study the implications of current linguistic theory for contemporary research on second language acquisition. In particular, the hypothesis that second language acquisition follows some of the same principles as first language acquisition is explored. Course is taught in English. Prerequisites: Spanish 379, French 378, English 340 or Linguistics 372

**381—Psycholinguistics (3).** (same and Communicative Science and Disorders 381). Examines the knowledge and processes that underlie the human ability to produce and understand language. Prerequisite: senior or graduate standing.

**382—Speech Perception (3).** (same as Communicative Science and Disorders 382). Selected topics in the perceptual processing of spoken language. Prerequisite: senior or graduate standing.

**383—Studies in Linguistics (3).** Topic varies according to instructor. Prerequisite: instructor's consent, instructor's consent for repetition.

**393—Field Methods in Linguistics (4).** (same as Anthropology 393).

**400—Problems (cr.arr.).** Independent study through readings, analysis of special linguistic problems, reports. Prerequisites: one Advanced Linguistics course & instructor's consent.

**411—Speech Physiology (3).** (same as Communication Science and Disorders Program 411)

**428—Studies in Psycholinguistics (3).** (same as Psychology 428).

**440—Studies in the English Language (3).** (same as English 440).

**460—History of the German Language (3).** (same as German 460).

**461—Middle High German (3).** (same as German 461).

**483—Seminar (3).** Topic varies according to instructor. Prerequisites: instructor's consent, instructor's consent for repetition.

**490—Research in Linguistics (cr.arr.).** Graded on a S/U basis only.

**494—Syntax (3).** (same as Anthropology 494).

# Management

**College of Business**
**215 Middlebush Hall (573) 882-7374**
**CHAIR** T. Dougherty
**PROFESSORS** A. Bluedorn, T. Dougherty, L. Franz, A. Jago, A. Stam, D. Turban, J. Wall Jr.
**ASSOCIATE PROFESSORS** C. Franz, D. Greening, R. Johnson
**ASSISTANT PROFESSORS** T. Chiles, D. Moesel, C. Robert, Y. Zhuang
**ADJUNCT ASSISTANT PROFESSORS** C. Burns, B. Downey, J. Swenson
**PROFESSORS EMERITI** E. Adam Jr., E. Cecil, R. Cook, R. Ebert, E. Lundgren, R. Penfield

**DEGREE** BSBA

Management is the directing and guiding of activities to produce a desired result, product or service. Managers are repeatedly required to make decisions that will have far-reaching effects. The basic functions all managers perform are planning, organizing, staffing, motivating and directing. Professional education in management can lead to a variety of career opportunities in the private and public sectors.

**Required Core Courses to be Completed on Campus in the Junior Year:** 18 hours
Acct 258: Computer-Based Data Systems (3) or CECS 103: Algorithm Design and Programming I (3)
Econ 229: Money and Banking (3) or Econ 251: Theory of the Firm (3)
Fin 203: Corporate Finance (3)
Mgmt 202: Fundamentals of Management (3)
Mgmt 254: Introduction to Business Law (3)
Mktg 204: Principles of Marketing (3)

**Required Courses** (nine hours)
Mgmt 308: Operations Management (3)
Mgmt 315: Human Resource Management (3)
Mgmt 329: Organizational Behavior (3)

**Management Elective Courses** (nine hours)
Choose three courses from the following:
Mgmt 311: Collective Bargaining (3)
Mgmt 312: Total Quality Management (3)
Mgmt 315: Introduction to Electronic Commerce (3)
Mgmt 318: Management Science (3)
Mgmt 319: Production Systems Analysis (3)
Mgmt 320: Human Resource Management Administration Law (3)
Mgmt 330: Organizational Theory (3)
Mgmt 335: Topics in Management (3)
Mgmt 344: Entrepreneurship: Theory and Practice (3)
Mgmt 345: Management of Service Operations (3)
Mgmt 347: Compensation Theory and Practice (3)
Mgmt 353: Selected Problems in Human Resource Management (3)
Mgmt 255: Legal Aspects of Business Organization and Operation (3)
Mgmt 356: The Law of Commercial Credit Transactions (3)
Mgmt 383: Advanced Organizational Behavior (3)

**Professional Electives** (12 hours)
Courses approved by the student's management adviser selected from:
- Business courses numbered 200 or higher
- Non-business courses (usually numbered 200 or higher but with some exceptions)

**Senior Core Course** (3 hours)
Mgmt 375: Management Policies and Problems (3)

A student in management may count a maximum of 30 semester hours of management courses (excluding Mgmt 254 and 375) to meet the 120-hour requirement for the undergraduate degree.

## COURSES

**101—Contemporary Business Practices (1-3).** Course coverage includes an overview of the accountancy, finance, management and marketing majors and careers in each of these fields as well as the integrated nature of business. Prerequisite: freshmen and sophomores only. Graded on A/F basis only.

**202—Fundamentals of Management (3).** Introduction to the basic concepts of management and organization; their application to operations and personnel management. Prerequisite: Completion of 45 semester hours. f, w.

**254—Introduction to Business Law (3).** The legal aspects of business related to society—introduction to the legal system; constitutional, criminal, tort law; contracts and sales law cases and problems; administrative regulation of business and consumer issues. Prerequisite: completed 30 hours. f,w. cor.

**255—Legal Aspects of Business Organization and Operation (3).** Includes agency and employment relationships, sole proprietorships, partnerships, and corporations, also operational aspects of business associations such as administrative regulation, taxation, bankruptcy, and trade regulation. Prerequisite: 254. Restricted to COB students. f,w.

**300—Problems (cr.arr.).**

**305—Elements of the Law of Business (3).** Role of law in societies; body of law applicable to commerce and industry. Open only to graduate students. No credit given to those having prior courses in business law.

**308—Operations Management (3).** Managerial analysis of operating problems, with emphasis on planning and control systems. Prerequisites: 202. f,w.

**310—Human Resource Management (3).** Manpower policies, procedures of business enterprise. Prerequisites: 202. f,w. cor.

**311—Collective Bargaining (3).** Content, negotiation, administration of collective labor agreements and settlement of disputes. Prerequisites: 202 and junior standing.

**312—Total Quality Management (3).** Introductory, comprehensive approach to quality planning, analysis, and control. Applications orientation. Integrates customer needs, product and service design and delivery, and continuous improvement into all organizational activities. Examines full range of behavioral, technical, and organizational aspects relating to quality. Prerequisite: Management 202.

**315—Introduction to Electronic Commerce (3).** An introduction to electronic commerce. Topics covered include definition and scope of e-commerce, tools and technologies used, strategies, and understanding of this dynamic field. Prerequisite: Accountancy 258.

**318—Management Science (3).** Further development of models and quantitative analysis as applied to production management problems. Management research design and experimentation; computer applications; quantitative case analyses; individual industrial field studies. Corequisite: Statistics 250 and Accounting 258 or Computer Science 103, junior standing.

**319—Production Systems Analysis (3).** Constructive and quantitative analysis of models of inventory and production systems; uncertainty, risk, and policy considerations; systems design/simulation; analysis of networks; management problems in application. Prerequisite: 308.

**320—Human Resource Management Administration Law (3).** Analysis and evaluation of legal and administrative regulations of terms of employment; Fair Labor Standards, discriminatory practices, safety and health regulations, other regulations. Prerequisites: 310 and senior standing. w.

**329—Organizational Behavior (3).** Examines theoretical constructs and research findings on human behavior in work organizations such as businesses, especially individual differences, dyadic relations and small group behavior. Prerequisites: 202. f,w.

**330—Organizational Theory (3).** Elements of the managerial process; emphasis on theory of organization structure and design and the impact of technology and culture on organization systems. Prerequisite: 202. f,w. cor.

**335—Topics in Management (3).** Selected current topics in management. Offered on an experimental, one-semester basis only. Prerequisite: to be determined each time course is offered.

**344—Entrepreneurship: Theory and Practice (3).** Analysis of the major functional areas of the start-up firm including accounting, finance, human resources, information systems,

logistics, management, marketing, production/operations, purchasing and sales. Focus is also placed on generating ideas, scanning for environmental trends, and critically evaluating opportunities. Prerequisite: 202.

**345—Management of Service Operations (3).** Managing services, especially the operation's activity in service firms. Includes determining the service package, forecasting service demand, managing demand, capacity analysis and management, scheduling, cost control, service quality, and human resource management. Standardization, franchising, and service automation addressed. Prerequisite: 202.

**347—Compensation Theory and Practice (3).** Examines the empirical research and theory relating to the effect of compensation administration systems upon employee satisfaction and performance. Analysis of financial compensation systems and benefit programs in use in modern organizations. Prerequisite: 310.

**353—Selected Problems in Human Resource Management (3).** Advanced studies in selected administrative and technical policies, practices in employee relations, with individual and group project work, research. Focuses on policy issues, research findings, advanced techniques. Prerequisites: 310.

**356—The Law of Commercial Credit Transactions (3).** Purchase and sale of goods, services and real property—discussion includes drafts, notes, security agreements under the Uniform Commercial Code, and credit financing of real Prerequisite: 254. f.

**375—Management Policies and Problems (3).** Enterprise-level case studies, simulations, similar exercises to integrate business functional decisions; assessment of environmental influences on business. Development, implementation of company strategies. Prerequisites: 202, Marketing 204, Finance 203 and senior standing in COB. f,w.

**383—Advanced Organizational Behavior (3).** Based upon behavioral science concepts and research findings directed toward understanding and explaining human behavior within organizations. Case studies, individual or team projects. Prerequisites: 329. f,w.

**390—Professional Management Internship (3).** Provides experience with management activities in business organizations (or, occasionally, in a govenmental or not-for- profit setting). Students are required to prepare and execute a plan of study approved by the instructor and to complete written assignments detailed in the plan. Course only satisfies a professional elective requirement of the program. Prerequisite: COB student with a management concentration, 202, and Internship Coordinator's consent. Graded on S/U basis only. s.

**400—Problems (cr.arr.).** Graduate students may select topics for study and investigation. Graded on a S/U basis only.

**405—Seminar in Management (cr.arr.).** Intensive studies of current research and issues. Readings, independent investigations, reports. Prerequisites: open to Ph.D. students, or instructor's consent.

**415—Topics in Electronic Commerce (3).** This course focuses on current developments in electronic commerce. Includes an overview of foundational concepts in e-commerce, infrastructure, strategies, and current issues. A combination of lecture, discussion, presentation, and student projects are used. Prerequisite: 441.

**418—Business and Economic Research (3).** (same as Finance 418.)

**435—Topics in Management (3).** Selected current topics in management. Prerequisite: graduate standing.

**436—Advanced Human Resource Mangagement (3).** Analysis of research and practice in planning for attracting, selecting, developing, and disciplining of employees at work. Prerequisites: graduate standing.

**437—Management of Labor Relations (3).** Managerial approaches to collective bargaining. Negotiation, grievances, agreement administration; emphasis on recent developments. Prerequisite: graduate standing.

**438—Organizational Behavior and Management (3).** An examination of factors influencing behavior in organizations. An analysis of research, theory, and current practices dealing with managing people in work organizations. Prerequisite: graduate standing.

**439—Organizational Theory and Design (3).** Organizational design; relationships to technical, cultural, and environmental factors; problems of effecting change. Prerequisites: graduate standing. w.

**441—Management Information Systems (3).** A managerially-oriented, case-based introduction to information systems. Emphasizes how information systems technology can aid managers in improving organizational performance, group work, and personal productivity, thus providing competitive advantage. Prerequisite: graduate standing.

**442—Decision Support Systems (3).** The theory, methodology and implementation of Decision Support Systems (DSS). Topics include the DSS concept, applications, organizational issues, hardware and software technology, developmental methodology, data-model-user relationships, user interfaces, implementation strategies, and evaluation procedures. Includes hands-on building of a DSS. Prerequisite: graduate standing.

**443—Information Systems Implementation (3).** Theory and methods to manage information systems development. Management of project phases and activities, behavioral models for system design, and application of organizational behavior and theory concepts. Prerequisites: Accountancy 258 and graduate standing.

**444—Entrepreneurial Ventures: Creation & Mngmnt. of High Growth Firms (3).** Analysis of management challenges facing entrepreneurial startups and alternative strategic responses to those challenges. Views issues from multiple functional perspectives to design cross-functional solutions to entrepreneurial problems. Prerequisites: graduate standing.

**445—Management of Information Resources (3).** Corporate level management of information systems technology in organizations. Concepts of information systems planning models, applications portfolio strategies, office information systems and corporate-level MIS effectiveness. Prerequisites: Business Administration 320 and two MIS courses beyond programming.

**450—Current Issues in Human Resource Management (3).** Exploration of current trends, issues, and controversies involving the managing of human resources in organizations, with an emphasis on how human resources can provide competitive advantage. Considers multiple perspectives, including that of employers, employees, and other stakeholders. Prerequisite: 436 or 438.

**465—Organizational Analysis and Change in the Public Sector (3).** (same as Public Administration 465). Investigates the social and psychological dynamics of organizational diagnosis, feedback and learning, intervention, planned change. Students study organizational life from the viewpoint of experienced organizational analysts and consultants. The predominant theoretical approach offered in this course is clinical and psychodynamic.

**480—Topics Seminar (1-3).** Reading and critical evaluation of selected current management literature and research. Prerequisites: Ph.D. students only. May be repeated.

**490—Research (cr.arr.).** Thesis research for Ph.D. degree. Graded on a S/U basis only.

# Marketing

**College of Business**
**216 Middlebush Hall (573) 882-3282**
**CHAIR** L. Scheer
**PROFESSORS** P. Bloch, K. Evans, M. Richins, B. Walker
**ASSOCIATE PROFESSORS** S. Gopalakrishna, L. Scheer
**ASSISTANT PROFESSOR** S. Zou
**ADJUNCT ASSOCIATE PROFESSOR** J. Kuehn

# Management Marketing

**PROFESSORS EMERITI** N. Edwards, W. Wagner, D. Webb, A. Wildt

**DEGREE** BSBA

**MARKETING** addresses the activities involved in the creation of goods and services and in the flow of those products to the ultimate user. By selecting different sets of marketing and professional electives, a student can emphasize marketing management, retailing management or sales management.

**Required Core Courses to be Completed on Campus in the Junior Year:** 18 hours
Mktg 204: Principles of Marketing (3)
Acct 258: Computer-Based Data Systems (3) or CECS 103: Algorithm Design and Programming 1 (3)
Econ 229: Money and Banking (3) or Econ 251: Theory of the Firm (3)
Fin 203: Corporate Finance (3)
Mgmt 202: Fundamentals of Management (3)
Mgmt 254: Introduction to Business Law (3)
**Required Marketing Courses:** six hours
Mktg 309: Marketing Management (3)
Mktg 313: Marketing Research (3)
**Required WI Course:** 1 upper-division College of Business Writing Intensive course
**Marketing Electives:** 12 hours
Mktg 301: Marketing Topics (3)
Mktg 314: Consumer Behavior (3)
Mktg 315: E-marketing (3)
Mktg 335: Management of Promotions (3)
Mktg 336: Sales Management (3)
Mktg 337: Retail Marketing (3)
Mktg 347: Channel Management (3)
Mktg 350: Marketing, Society, and Government (3)
Mktg 355: Contemporary Issues in Marketing (3)
Mktg 358: Purchasing (3)
Mktg 371: World Marketing (3)
Mktg 373: Distribution Management (3)
Mktg 390: Marketing Practicum (3)
**Professional Electives** 12 hours
Courses taken as professional electives cannot concurrently fulfill marketing requirements or electives, business core requirements, or the general education distribution requirements in sciences or humanities/fine arts. A list of suggested professional electives for marketing majors is available at the College of Business undergraduate advising office. Pre-approved professional electives include:

1. Courses numbered 200+ in:
   - Agricultural Economics
   - Anthropology
   - Communication
   - Computer Engineering and Computer Science
   - Economics
   - Journalism
   - Mathematics
   - Psychology
   - Rural Sociology
   - Sociology
   - Statistics

2. Courses numbered 300+ in:
   - Accountancy
   - Finance
   - Management
   - Marketing
3. Courses numbered 200+ taken to fulfill requirements for an official minor or a dual major.
4. The following additional courses:
   - Anth 153: Cultural Anthropology
   - Comm 75: Introduction to Speech Communication
   - CECS 103: Algorithm Design and Programming 1
   - Engl 162: Professional Writing
   - EnvDes 161: Fundamentals of Environmental Design
   - EnvDes 162: Environmental Analysis
   - Fren 206: Advanced Composition and Conversation
   - Fren 208: Commercial French
   - Geog 117: Geography of Europe
   - Geog 171: Geography of Asia
   - Geog 210: Economic Geography
   - Geog 325: Urban Geography
   - Geog 340: Mexico, Central America and the Caribbean
   - Geog 341: South America
   - Geog 352: Geography of Africa South of the Sahara
   - Geog 372: Geography of South Asia
   - Geog 396: Geography of Russia and Newly Independent States
   - Ger 203: Advanced German Reading
   - Ger 206: Conversation and Composition 2
   - Ger 208: Business German
   - Ger 306: Conversation and Composition 3
   - HRM 255: Hotel and Restaurant Human Resources Management
   - Ital 206: Advanced Italian Composition
   - Japan 112: World of Japanese Business
   - Japan 206: Intermediate Composition and Conversation
   - Jour 120: Advertising Principles and Practice
   - Mgmt 255: Legal Aspects of Business Organization
   - Phil 152: Rational Decisions
   - Phil 153: Mathematical Logic
   - Phil 214: Ethical Issues in Business
   - Phil 314: Formal Logic
   - Phil 317: Aesthetics
   - PolSc 304: Politics of International Economic Relations
   - PolSc 311: Politics of Regulatory Policy
   - PolSc 351: Latin American Governments
   - PolSc 354: Western European Political Systems
   - PolSc 371: Third World Politics
   - PolSc 374: Politics in India and South Asia
   - PolSc 376: Contemporary Chinese Politics
   - Psych 190: Social Psychology
   - PubAd 371: Business, Society, and Government
   - Russ 203: Intermediate Russian Reading
   - Russ 206: Intermediate Conversation and Composition
   - Russ 306: Advanced Conversation
   - SAsian 203: Advanced Hindi Reading 1
   - SAsian 206: Advanced Hindi Reading 2
   - Span 205: Advanced Conversation
   - Span 206: Advanced Composition
   - Span 208: Commercial Spanish
   - TAM 286: Retail Finance and Merchandise Control
   - TAM 386: Retail Marketing and Merchandising

**Required Core Course to be Completed on Campus in the Senior Year:** three hours

Mgmt 375: Management Policies and Problems (3)

**Total** 51 credit hours

A student in marketing may count a maximum of 30 hours of marketing courses to meet the 120-hour requirement for the undergraduate degree.

### COURSES

**204—Principles of Marketing (3).** Institutions, processes, and problems involved in producing and transferring goods and services from producer to consumers; emphasis on economics, social aspects. Prerequisites: completed 45 semester hours; Economics 4 or 14 or 51.

**300—Problems (cr.arr.).**

**301—Marketing Topics (cr.arr.).** The study of selected topics in Marketing. Subjects may vary from semester to semester. Prerequisites: 204 or instructor's consent; departmental consent for repetition.

**309—Marketing Management (3).** Analysis of the broad range of managerial marketing issues relevant to modern business firms. Prerequisites: 204 and junior standing.

**313—Marketing Research (3).** Examines procedures for defining problems; specifying information requirements; collecting, analyzing, interpreting, and presenting data for use in marketing decision making. Utilizes student projects and research-related computer assignments. Prerequisites: 204, Statistics 250 and junior standing.

**314—Consumer Behavior (3).** Dimensions of the consumer market and decision-making process of consumers by analyzing economic, psychological and socio-psychological influences on consumer market and buying behavior. Prerequisites: 204 and junior standing.

**335—Management of Promotion (3).** The promotion function; special problems associated with the sales force from the managerial point of view. Prerequisites: 204 and junior standing.

**336—Sales Management (3).** Analyzes effective methods and tools employed by salespeople and field sales managers; emphasis on underlying behavioral and quantitative theory. Prerequisites: 204 and junior standing.

**337—Retail Marketing (3).** The study of the policies, strategies, methods and procedures for marketing in a retail environment. Prerequisite: 204 and junior standing.

**347—Channel Management (3).** Determination of marketing channels for distribution of consumer and industrial goods. Particular emphasis on elements of the product mix as they relate to channel decisions. Prerequisites: 204 and junior standing.

**350—Marketing, Society, and Government (3).** Critical examination of relationships and conflicts between marketing, society and government. Emphasis on issues pertaining to competition, monopoly, regulation by government. Prerequisites: 204 and junior standing.

**355—Contemporary Issues in Marketing (3).** Intensive study of selected issues in marketing. Prerequisites: 204 and junior standing.

**358—Purchasing (3).** Organization and functions of purchasing departments; particular emphasis on industrial purchasing. Prerequisites: 204 and Management 202.

**371—World Marketing (3).** Examination of the rationale of international trade and the operational aspects of international marketing. Prerequisites: 204 and junior standing.

**373—Distribution Management (3).** Analysis of transportation and logistics policy and administration, emphasizing use of quantitative aids to decision making. Prerequisites: 204 and junior standing.

**390—Marketing Practicum (3).** Provides students experience in marketing activities within actual business environments. Students are required to prepare a plan of study which will need to be approved and to perform a variety of writing assignments. Prerequisites: College of Business students with marketing concentration or international business concentration with a marketing emphasis. Instructor's consent required. Graded on S/U basis only.

**400—Problems (cr.arr.).** Graduate students may select topics for study and investigation from fields suggested by undergraduate courses listed above.

**401—Seminar in Marketing (1-3).** Readings, independent investigations and reports. May be repeated. Prerequisite: Ph.D. students only.

**405—Topics in Marketing (1-3).** Selected topics in Marketing. May be repeated. Prerequisite: BA 346 or equivalent.

**413—Advanced Marketing Research (3).** Evaluates the contribution of research to marketing management. Special emphasis on the research used in development of new products and new markets. Prerequisite: BA 346 or equivalent.

**415—Marketing in the Electronic Age (1-3).** Examination of how businesses use the Internet and other electronic channels as marketing tools. Emphasis on cases and analysis. Prerequisite: BA 346 or equivalent.

**444—Advanced Consumer Behavior (3).** Factors influencing consumer decision making. Attention given to psychological, sociological, and economic variables; motivation, attitude, learning, personality, small group, social class, demographic factors; culture. Prerequisite: BA 346 or equivalent.

**445—Business-to-Business Marketing (1-3).** Examination of the issues and complexities involved in marketing goods and services to business customers. Topics are examined from the perspective of customer relationship management and a functionally integrated approach to solving business problems. Prerequisite: BA 346 or equivalent.

**465—Marketing Strategy (3).** Theory of determining marketing strategy by business firms and organizations. Prerequisite: BA 346 or equivalent.

**466—Quantitative Methods for Marketing (3).** Examines and appraises use of quantitative tools of analysis in solving marketing problems. Prerequisite: BA 346 or equivalent.

**470—International Marketing (3).** Examination of competition and market structure abroad including common market and trade bloc arrangements. Prerequisite: 346 or equivalent.

**471—Markets in Transition (3).** Analysis of selected industries with emphasis on marketing activities and environments. Particular emphasis given to forecasting major trends or changes anticipated in markets over the next decade. Prerequisite: BA 346 or equivalent.

**480—Current Topics Seminar in Marketing (1-3).** Reading and critical evaluation of selected current marketing literature and research. Prerequisites: Ph.D. students only. May be repeated. Graded on S/U basis only.

**490—Research (cr.arr.).** Thesis research for Ph.D. degree. Graded on a S/U basis only.

# Mathematics

**College of Arts and Science**
**202 Math Sciences Building (573) 882-6221**

**CHAIR** E. Saab

**PROFESSORS** C. Ahlbrandt, M. Ashbaugh, N. Asmar, J. Beem, P. Casazza, C. Chicone, S. D. Cutkosky, F. Gesztesy, S. Hofmann, N. Kalton, A. Koldobsky, Y. Latushkin, S. Montgomery-Smith, I. Papick, D. Pettey, P. Saab, D. Sentilles, H. Srinivasan, I. Verbitsky

**ASSOCIATE PROFESSORS** I. Aberbach, T. Christiansen, S. Dostoglou, D. Edidin, L. Grafakos, A. Helfer, D. Lieman, K. Makarov, M. Mitrea, M. Pang, Z. Qin, J. Segert, S. Wang, D. Weston, Q. Zhang

**ASSISTANT PROFESSORS** W. Banks, A. Harcharras, A. Iosevich, C. Li, D. Mitrea, C. Morpurgo, M. Rudelson, A. Tsoi

**PROFESSORS EMERITI** M. George, J. Huckaba, L. J. Lange, C. Petty, K. Schrader, W. R. Utz, Z. Zhao

**ASSOCIATE PROFESSORS EMERITI** R. Crownover, J. Reader

# Mathematics

**DEGREES** AB, BS, MA, MST and PhD in mathematics; MS in applied mathematics

**REQUIREMENTS FOR THE AB DEGREE** The AB degree program is intended for students seeking a traditional liberal arts education with a math concentration. The BS degree program is designed to prepare students for professional opportunities or graduate work in mathematics. It has more course requirements in the mathematical and physical sciences than the AB program. Students in either degree program will be required to take assessment tests.

**Core Courses**

Math 80: Analytic Geometry and Calculus I (5)
Math 175: Calculus II (5)
Math 201: Calculus III (3)
CECS 103: Algorithm Design and Programming I (3) and CECS 203: Algorithm Design Programming II

**A minimum of eight courses 300-level or above are required in math, statistics or computer science including Math 390: Senior Seminar (3) and at least one course from:**

Math 308: Numerical Linear Algebra (3)
Math 331: Matrix Theory (3)
Math 341: Introduction to Abstract Algebra II (3)

**At least one course from:**

Math 302: Advanced Calculus with Applications (3)
Math 310: Advanced Calculus I (3)

**The required courses also must include at least two of the following sequences:**

- Math 302: Advanced Calculus with Applications (3) and 305: Introduction to Complex Variables (3)
- Math 304: Differential Equations (3) and 309: Applied Analysis (3)
- Math 307: Numerical Analysis (3) and 308: Numerical Linear Algebra (3)
- Math 310: Advanced Calculus I (3) and 311: Advanced Calculus II (3)
- Math 325: Introduction to Probability Theory (3) and 326: Statistical Inference I (3)
- Math 340: Introduction to Abstract Algebra I (3) and 341: Introduction to Abstract Algebra II (3)
- Math 372: Introduction to Topology (3) and either 362: Projective Geometry (3), 366: Foundations of Geometry (3) or 367: Introduction to Non-Euclidean Geometry (3)

**REQUIREMENTS FOR THE BS DEGREE**

Math 80: Analytic Geometry and Calculus (3)
Math 175: Calculus II (3)
Math 201: Calculus III (3)
Math 304: Differential Equations (3)
Math 310: Advanced Calculus (3)
Math 331: Matrix Theory (3)
Math 340: Introduction to Abstract Algebra (3)
Math 390: Senior Seminar (3)
CECS 103: Algorithm Design and Programming I (3) and CECS 203: Algorithm Design Programming II

In addition to the courses listed above, a student must take at least three more math courses at the 300 level or above and will be required to take assessment tests.

**The student must also complete a minimum of 13 hours from the following two groups; both groups must be represented**:

**Group I** Physics 175: University Physics I (5); 176: University Physics II (5); Chem 31: General Chemistry I (3); Chem 32: General Chemistry II (3); Chem 33: General Chemistry III (2); Bio 10: General Biology (5).

**Group II** Any 300-level course in statistics or computer science.

Students may elect to fulfill a special emphasis area instead of taking a foreign language. This area consists of at least 12 hours of courses numbered 100 or above, not from the parent department, not normally required of all departmental majors and not appearing elsewhere in the area of concentration. This program is planned by the student's adviser and must be approved by the director of undergraduate studies.

**REQUIREMENTS TO FILE AN AREA OF CONCENTRATION** The Department of Mathematics will not approve an area of concentration in mathematics (AB or BS) for a student unless that student has completed Math 201 (or equivalent) and has a grade point average of at least 2.50 overall and at least 2.50 in math courses numbered 80 or above, excluding Math 108, 155, 205 and 208. A transfer student's grades for courses taken at other institutions may (at the discretion of the director of undergraduate studies) be used to determine whether the grade point average requirement is met, but in some cases completion of at least one math course in residence will be required.

**REQUIREMENTS FOR A MINOR IN MATHEMATICS** To minor in mathematics, a student must satisfactorily complete the following course work requirements.

- The equivalent of Math 80, Math 175 and Math 201 are required.
- Nine additional hours of course work in math. Students not taking 226 will need all of these nine hours to be on the 300 level. Students taking 226 will only need an additional six units on the 300 level beyond 226.
- Courses passed with grades in the D range may not be included in a minor.
- In accordance with the rules of the College of Arts and Science, at least nine of the hours used to satisfy the minor requirements must be taken in residence.

Exceptions to these requirements must be approved by the director of undergraduate studies and must be an equivalent variation of these requirements.

If you are considering graduate studies in mathematics, it is to your advantage to take as many of the following courses as your schedule permits:

For graduate studies in pure mathematics: 305, 309, 311, 341, 372, 458
For graduate studies in applied mathematics: 307, 308, 309, 332

**EXAMPLES OF PROGRAMS** Two sample program are listed below. Many alternative programs are available.

**AB Degree in Mathematics**

Math 80: Analytic Geometry and Calculus (5)
Math 175: Calculus II (5)
Math 201: Calculus III (3)
Math 304: Differential Equations (3)
Math 305: Introduction to Complex Variables (3)
Math 307: Numerical Analysis (3)
Math 310: Advanced Calculus I (3)
Math 311: Advanced Calculus II (3)
Math 340: Introduction to Abstract Algebra I (3)
Math 341: Introduction to Abstract Algebra II (3)
Math 390: Senior Seminar (3)
CECS 103: Algorithm Design and Programming I (3)
CECS 203: Algorithm Design and Programming II (3)

**BS DEGREE IN MATHEMATICS with a special emphasis in statistics**

Math 80: Analytic Geometry and Calculus I (5)
Math 175: Calculus II (5)
Math 201: Calculus III (3)
Math 304: Differential Equations (3)
Math 307: Numerical Analysis (3)
Math 310: Advanced Calculus I (3)
Math 311: Advanced Calculus II (3)
Math 331: Matrix Theory (3)
Math 340: Introduction to Abstract Algebra I (3)
Math 341: Introduction to Abstract Algebra II (3)
Math 390: Senior Seminar (3)
CECS 103: Algorithm Design and Programming I (3)
CECS 203: Algorithm Design and Programming II (3)
CECS 310: Computer Graphics I (3)
Physics 175: University Physics (5)
Physics 176: University Physics (5)
Stat 207: Statistical Analysis (3)
Stat 325: Introduction to Probability Theory (3)
Stat 326: Statistical Inference I (3)
Stat 385: Regression and Correlation Analysis (3)

**DOUBLE MAJORS AND DUAL DEGREES** For a double major, students must satisfy all requirements of both degree programs.

**Among the more common examples of double and dual majors are:**

- AB in math and economics
- AB in math and statistics
- BS in math and chemistry
- BS in math and computer science
- BS in math and physics
- BS in math and electrical engineering
- BS in math and math education

Sample programs for these and other combinations are available from the director of undergraduate studies in math.

Samples of dual-degree programs between the math department and various departments in the colleges of Education, Engineering and Business also are available from the director of undergraduate studies.

**CREDIT BY EXAMINATION IN MATH** It is possible to receive credit in the following math courses by passing the appropriate examination: Math 9: Trigonometry (2), 10: College Algebra (3), 14: Precalculus (5), 68: Geometric Concepts for Teachers (3), 80: Analytic Geometry and Calculus (5), 175: Calculus II (5). To inquire about these examinations, contact either the Group Testing Program, 220 Parker Hall, (573) 882-4801, or the departmental representative on testing for advanced placement.

Credit for a course by examination is not available to students who have essentially covered the material of the course in college or university courses.

## COURSES

**5—Intermediate Algebra (3).** Preparatory material for College Algebra. Covers graphs, functions, linear equations, inequalities, polynomials, systems, exponents and quadratic equations. Emphasizes problem solving. Open to students by placement exam. No credit toward any baccalaureate degree.

**9—Trigonometry (2).** Prerequisite: any of the following (a) 1.5 units algebra and 1 unit geometry; (b) 1 unit geometry and Mathematics 10 concurrently. A student may receive at most 5 units of credit from among the mathematics courses 9, 10, 14, and 15.

**10A—College Algebra (3).** 5 day college algebra course. It covers the same content as the traditional 3-day course. The additional two hours will be used to introduce the students to the use of the TI-85 graphing calculator, engage the students in doing mathematics in small groups, do more problem solving activities and various applications, and use the graphing calculator to enhance their understanding and their learning of the subject matter. Math 10A is designed for the students who are calculus bound. The course is approached from an abstract point, with applications following theory. Math 10A requires that the student pass the math department's Math 10 pretest.

**10B—College Algebra (3).** 5-day college algebra course. It is designed for those students who are not calculus bound, but still would need to take an MRP course whose prerequisite is college algebra. Math 10B is the ideal college algebra course for students majoring in the liberal arts, such as journalism, history, English foreign languages, etc. Prerequisite: C or above in Math 5, and pass the math pretest. Math 10B is NOT a substitute for Math 5. Students should posses the basic algebra skills learned in Math 5 BEFORE enrolling in Math 10B. The students will be building on the math skills learned in Math 5. MATH 10B IS NOT a watered down college algebra course either. It is not intended for students who do not have the proper math background. In Math 10B applications are emphasized and applications motivate theory. Assessment is also done differently that in the traditional 3-day Math 10 and 5-day Math 10A. Students will have to exhibit good reasoning skills, be able to support their statements, do mathematics apply the mathematics learned, and explore and write about connections that exist between mathematics & their major field. Moreover, students will use extensively the TI-85 graphing calculator to enhance their learning. Technology is an essential component of Math 10B.

**14—Precalculus Mathematics (5).** Review of elementary algebra. Background material for Mathematics 80, including algebraic, trigonometric, logarithmic, exponential functions. Prerequisites: 1 1/2 High School units, Algebra, 1 unit Geometry. A student may receive at most 5 units of credit from among the mathematics courses 9, 10, 14, and 15.

**15—Elementary Functions (3).** Review of elementary algebra. Background material for Mathematics 80 including, algebraic, trigonometric, lograrithms,exponential functions. Prerequisites: 2 units high school algebra, 1 unit geometry. A student may receive at most 5 units of credit from among the mathematics courses 9, 10, 14, and 15.

**60—Finite Mathematics (3).** Introduces matrices and linear programming and probability. Prerequisite: C in 10 or equivalent. cor.

**61—Elements of Calculus (3).** Introductory analytic geometry, derivatives, definite integrals. Primarily for Computer Science AB candidates, Economics majors, and students preparing to enter the College of B&PA. No credit for students who have completed a calculus course. Prerequisite: C in 10 or equivalent. cor.

**67—Algebra and Number Systems for Teachers (3).** This course covers the tools of problem solving, problem posing, modeling, the real number system, other number systems, functions, logic, sets, probability and statistics, with a focus on number sense. Prerequisite: 10 or equivalent.

**68—Geometric Concepts (3).** This course includes the study of points, lines, polygons, similarity, congruence, construction and proof in Euclidean plane geometry. It also covers polyhedra, spheres, cones, and other solids. Transfomational geometry and trigonometry are introduced. Prerequisite: 10 or equivalent. cor.

**80—Analytic Geometry and Calculus I (5).** Elementary analytic geometry, functions, limits, continuity, derivatives, antiderivatives, definite integrals. Prerequisite: C in 14 or equivalent.

**101—Selected Topics in Mathematics (1-3).** The special topics covered may vary from term to term. This course may be repeated. Prerequisite: departmental consent.

**108—Calculus for Social and Natural Sciences I (3).** The real number system, functions, analytic geometry, derivatives, integrals, maximum-minimum problems. No credit for students who have completed a calculus course. Prerequisite: C in 10 or equivalent.

**155—The Mathematics of Finance (3).** Compound interest, annuities with variety of applications; introduction to mathematics of life insurance. Prerequisite: C in 10 or equivalent. w.

**175—Calculus II (5).** Definite integrals, applications and techniques of integration, elementary transcendental functions, infinite series. Prerequisite: a grade of C or better in 80 or equivalent.

**201—Calculus III (3).** Vectors, solid analytic geometry, calculus of several variables. Prerequisite: grade of C or better in 175 or equivalent training.

**205—Calculus for Business & Economics (3).** Introduction to elementary analytic geometry, functions, differential calculus and integral calculus with particular emphasis on topics of interest to students in business and economics. No credit for students who have completed a calculus course. Prerequisites: C in 10 or equivalent and graduate standing.

**208—Calculus for Social and Natural Sciences II (3).** Riemann integral, transcendental functions, techniques of integration, improper integrals and functions of several variables. No credit for students who have completed two calculus courses. Prerequisites: 61 or 108 or 205.

**226—Discrete Mathematical Structures (3).** Basic set theory, groups, semigroups, Boolean algebra, graph theory and combinatorics. Applications oriented toward computer science. Prerequisites: one of 175 or 260 or 233.

**231—Elementary Matrix Algebra with Applications (3).** Systems of linear equations, matrices, determinants, and properties of n-dimensional Euclidean space. Various applications will be considered. Prerequisite: one of 60, 61, 67, or 80.

**233—Algebraic Stuctures (3).** Introduction to axiomatic mathematics with emphasis on rings and groups. Applications to elementary number theory. Prerequisite: 67 and one of 61 or 231.

**250—Elementary Logic and Set Theory (3).** Introduction to logic, set theory, denumerable and nondenumerable sets, and cardinal arithmetic. Prerequisites: one of 201, 231 or 233.

**260—Geometric Axioms and Structures (3).** Euclidean Geometry, Axiom systems, spherical geometry, finite geometries, and explorations with technology. Prerequisite: 67 or 68.

**298—Honors (2).** Special work for senior A.B. Honors and B.S. Honors candidates.

**299—Honors (2).** Special work for senior A.B. Honors and B.S. Honors candidates.

**301—Topics (cr.arr.).** Organized study of selected topics. Subjects and earnable credit may vary from semester to semester. Prerequisites: 201 and instructor's consent, departmental consent for repetition.

**302—Advanced Calculus With Applications (3).** Linear mappings, Jacobi matrices and determinants, change of variables, vector fields, line and surface integrals, theorems of Green, Gauss and Stokes, sequences and series of functions, uniform convergence, special functions. Prerequisite: 201.

**304—Differential Equations (3).** Traditional introductory course in ordinary differential equations. Includes 1st and 2nd order linear differential equations with numerous applications; Laplace transforms; power series solutions; numerical methods, linear systems. Prerequisite: 201.

**305—Introduction to Complex Variables (3).** Complex functions, contour integration, power series, residues and poles, conformal mapping. Prerequisites: 302 or 310.

**307—Numerical Analysis (3).** (same as Computer Engineering and Computer Science 307). Machine arithmetic, approximation and interpolation, numerical differentiation and integration, nonlinear equations, linear systems, differential equations, error analysis. Selected algorithms will be programmed for solution on computers. Prerequisites: 201 and the ability to program in high-level, language such as Fortran Pascal, or C.

**308—Numerical Linear Algebra (3).** (same as Computer Engineering and Computer Science 308). Solution of linear systems of equations by direct and iterative methods. Calculation of eigenvalues and eigenvectors of matrices. .Selected algorithms programmed for solution on computers. Prerequisites: 201, and the ability to program in a higher level language such as Fortran, Pascal, or C. Recommended: 331

**309—Applied Analysis (3).** Solution of the standard partial differential equations (wave, heat, Laplace's eq.) by separation of variables and transform methods; including eigenfunction expansions, Fourier and Laplace transform. Boundary value problems, Sturm-Liouville theory, orthoganlity, Fourier, Bessel, and Legendre series, spherical harmonics. Prerequisite: 304

**310—Advanced Calculus I (3).** Basic topology of the real line, numerical sequences and series, properties of continuous functions, differentiation, Riemann-Stieltjes integration, uniform convergence. Prerequisite: 201. Recommended: 331 and one other mathematics course numbered above 201.

**311—Advanced Calculus II (3).** Power series, elementary topology of Euclidean spaces, functions of several variables, implicit functions, partial differentiation, integration theory. Prerequisite: 310 or equivalent.

**314—Mathematical Modeling I (3).** Solution of problems from industry, physical, social and life sciences, economics, and engineering using mathematical models. Prerequisites: Math 80, 175, 201, 304, 331. Grading: By exam and/or project. f.

**315—Mathematical Modeling II (3).** Solution of problems from industry, physical, social and life sciences, economics, and engineering using mathematical models. More general classes of problems than in Math 314 will be considered. Prerequisites: Math 80, 175, 201, 304, 331. Math 314 is not a prerequisite. Grading: By exam and/or projects. w.

**316—Fractals and Chaos (3).** Self-similar fractals, iterated function systems, chaotic behavior of simple dynamical systems, fractal dimension, random fractals. Prerequisite: 304, 331, and the ability to program in a language such as Fortran, Pascal, or C.

**320—Introduction to Mathematical Statistics (3).** (same as Statistics 320). Introduction to theory of probability and statistics using concepts and methods of calculus. Prerequisites: Mathematics 201 or instructor's consent. f,w.

**325—Introduction to Probability Theory (3).** (same as Statistics 325). Probability spaces; random variables and their distributions; repeated trials; probability limit theorems. Prerequisites: Mathematics 201 or instructor's consent. f,w.

**326—Statistical Inference I (3).** (same as Statistics 326). Sampling; point estimation; sampling distribution; tests of hypotheses; regression and linear hypotheses. Prerequisite: 325. w,s.

**327—Combinatorics (3).** Study of a variety of topics from combinatorial mathematics, especially graph theory and enumerative combinatorics. Topics include graph coloring, matchings and coverings, generating functions, recurrence relations, Polya's Enumeration Theorem, introduction to Ramsey theory. Prerequisites: 226 or instructor's consent. w.

**330—Theory of Equations (3).** Study of polynomials and their zeros and elementary determinant and matrix theory. Prerequisites: 201 or 226.

**331—Matrix Theory (3).** Basic properties of matrices, determinants, vector spaces, linear transformations, eigenvalues, eigenvectors, and Jordan normal forms. Introduction to writing proofs. Prerequisite: one of 201, 226, 231, or 233.

**332—Linear Programming (3).** Linear dependence and rank in vector spaces in Rn, Farkas' Lemma, Polyhedral

Decomposition. Strong duality and complementary theorems. The simplex method, revised simplex, and sensitivity analysis. Primal Dual simplex method and network simplex methods. Computational Complexity and Karmarkar's Algorithm. Prerequisites: 324 or 331 or instructor's consent.

**333—Higher Algebra (3).** Introduction to rings, integral domains, fields, groups. Prerequisites: 201 or 226.

**335—Theory of Numbers (3).** Factorization, Euler phi-function, congruences, primitive roots. Prerequisites: 201 or 226.

**340—Introduction to Abstract Algebra I (3).** Introduction to groups, rings, linear algebra, and fields; special emphasis on groups and elementary properties of rings. Prerequisite: 201. Recommended: 331 and one other mathematics course numbered above 201.

**341—Introduction to Abstract Algebra II (3).** Continuation of 340. Special emphasis on rings, vector spaces, and fields. Prerequisite: 340.

**349—Applied Modern Algebra (3).** (same as Computer Engineering and Computer Science 349). Introduction to modern algebra; emphasis on applications to computer science, engineering, related subjects. Basic concepts of modern algebra applied to computer design. Prerequisites: 201 or 226 and the ability to program in a higher level language such as Fortran, Pascal, or C.

**350—Special Readings (1-3).** Prerequisites: 201 and instructor's consent.

**355—History of Mathematics (3).** Includes Greek mathematics and the invention of the calculus with emphasis on the mathematical aspects of topics studied. Prerequisite or corequisite: one of 201 or 233.

**358—Mathematical Logic (3).** Introduction to classical modern logics as deductive systems; applications to foundations of mathematics. Prerequisites: junior or senior standing and interest and background in Mathematics or Philosophy.

**360—College Geometry (3).** Euclidean geometry from an advanced viewpoint. Synthetic and coordinate methods will be used. The Euclidean group of transformations will be studied. Prerequisite: 201.

**362—Projective Geometry (3).** Basic ideas and methods of projective geometry built around the concept of geometry as the study of invariants of a group. Extensive treatment of collineations. Prerequisite: 201.

**366—Foundations of Geometry (3).** Coordination of affine, projective planes by means of various kinds of algebraic structures: planar ternary rings, Veblen-Wedderburn systems, divisions rings, skew fields, and fields. Prerequisite: 201.

**367—Introduction to Non-Euclidean Geometry (3).** Account of rise, development of non-Euclidean geometries. Intensive study of plane hyperbolic geometry. Prerequisite: 201.

**372—Introduction to Topology (3).** Topics from topology of Euclidean spaces, generalizations to metric spaces and topological spaces. Fundamentals of point set topology. Prerequisite: 201.

**390—Senior Seminar (3).** Seminar with student presentations, written projects, and problem solving. May be used for the capstone requirement. Prerequisite: 12 hours of mathematics courses numbered 300 or above.

**395—Mathematics Problem Solving (3).** Creative advanced problem solving bringing together methods such as integration, probability and Euclidean geometry. Prerequisite: 331 and another 300 level Mathematics course, or instructor's consent.

**400—Problems (1-3).**

**404—Theory of Functions of Real Variables I (3).** Properties of functions of one real variable. Lebesgue measure and integration on the line. Prerequisites: 310 and 311, or equivalent.

**405—Theory of Functions of Real Variables II (3).** Continuation of 404. Lp spaces, general measure and integration theory. Prerequisite: 404.

**407—Partial Differential Equations I (3).** Fourier and integral transforms, first and second order partial differential equations, methods of characteristics, Laplace's equation, Direchlet and Neumann problems, Green's functions and maximum principles. Prerequisite: 309 or instructor's consent.

**408—Partial Differential Equations II (3).** The Cauchy-Kovalevski theorem, the Lewy example, the heat operator, the wave operator, Sobolev spaces, local regularity of elliptic boundary value problems. Prerequsitie: 407, and 404 recommended.

**409—Functional Analysis I (3).** Linear topological spaces, Banach spaces, Hilbert spaces. Operator theory, including the Hahn-Banach, uniform boundedness and closed graph theorems. Prerequisite: 404.

**410—Functional Analysis II (3).** Topological vector spaces, duality theory, Banach algebras.

**412—Calculus of Variations I (3).** Development of necessary conditions and of sufficient conditions for nonparametric and parametric problems. Hamilton's principle, related topics. Prerequisite: instructor's consent.

**413—Complex Analysis I (3).** Rigorous introduction to the theory of functions of a complex variable. Prerequisite: 311 or equivalent.

**414—Complex Analysis II (3).** Analytic continuation, Riemann surfaces, entire and meromorphic functions, selected topics. Prerequisites: 413.

**415—Harmonic Analysis I (3).** An introduction to Fourier Analysis in one and higher Dimensions. Topics include Fourier Series, conjugate functions, Fourier transforms, distributions, interpolation, and maximal functions. Prerequisite: 404

**416—Harmonic Analysis II (3).** Singular integrals, Littlewood-Paley theory, Hardy spaces, bounded mean oscillation, weighted norm inequalities, boundary value problems, and analysis on groups. Prerequisite: 415.

**418—Nonlinear Differential Equations (3).** Existence theorems; criteria for periodic solutions; boundedness of solutions; perturbation theory. Emphasizes second order equations. Prerequisites: 304 and 302 or 310.

**420—Topological Dynamics (3).** Periodicity and its generalizations in dynamical systems. Prerequisite: 404.

**422—Numerical Solution of Partial Differential Equations (3).** Study of finite difference and finite element methods for solving partial differential equations. Prerequisites: 331, 302, or 310; or instructor's consent.

**423—Advanced Numerical Analysis (3).** Analysis and implementation of numerical algorithms selected from approximation theory, splines, quadrature, nonlinear systems, ordinary differential equations, and optimization. Prerequisites; 310, 323 or equivalent, 331.

**424—Advanced Numerical Linear Algebra (3).** Advanced techniques for solving systems of linear equations, least squares problems, and eigenvalue problems. Analysis of stability of algorithms. Discussion of both full and sparce matrices. Prerequisites: 310, 323, or 324, 331 or instructor's consent.

**426—Advanced Ordinary Differential Equations I (3).** Topics from existence and uniqueness theorems, plane autonomous systems, periodicity and boundedness of solutions of second order nonlinear equations, perturbation theory, Sturm-Liouville systems, behavior of solutions at singularities. Prerequisite: 310 or equivalent.

**427—Advanced Ordinary Differential Equations II (3).** Continuation of 426.

**430—Topics From Algebra (cr.arr.).** Prerequisite: instructor's consent.

**432—Algebra I (3).** Theory of algebraic structures—groups, rings, fields, algebraic and transcendental extensions of fields. Prerequi- sites: 340 and 341, or equivalent.

**433—Algebra II (3).** Theory of modules, Galois theory and additional topics to be selected by the instructor. Prerequisite: 432 or equivalent.

**434—Topics in Algebra (3).** Advanced topics in algebra. Prerequisite: 432.

**435—Algebraic Geometry I (3).** Affine and projective varieties and schemes; nullstellensatz; Zariski topology, morphisms and rational maps; divisors and linear systems; topics from curves, surfaces, Grassmann varieties; commutative algebra and homological algebra as needed. Prerequisite: 432.

**436—Algebraic Geometry II (3).** Continuation of 435. Prerequisite: 435.

# Mathematics

**440—Advanced Probability (3).** (same as Statistics 440). Measure theoretic probability theory. Characteristic functions; conditional probability and expectation; sums of independent random variables including strong law of large numbers and central limit problem. Prerequisites: 325 or 401, and 406; or instructor's consent.

**441—Stochastic Processes (3).** (same as Statistics 441). Markov processes, martingales, orthogonal sequences, processes with independent and orthogona increments, stationarity, linear prediction. Prerequisite: 440.

**445—Advanced Mathematics for the Physical Sciences (3).** Study of selected topics in quantum and statistical mechanics. Schrodinger operators and their self-adjointness. Semi-classical methods and their application to estimation of eignevalues. Partition functions in many body problems and methods ofestimation. Prerequisites: instructor's consent, Mathematics 302, 310 or Physics 446 recommended.

**448—Topics in Numerical Mathematics (cr.arr.).** Prerequisite: instructor's consent.

**449—Topics in Applied Mathematics (cr.arr.).** Selected topics in applied mathematics drawn from variety of areas: partial differential equations, tensor analysis, calculus of variations, asymptotic methods, integral equations, advanced theory of transforms and distributions, numerical analysis.

**456—Differentiable Manifolds and Riemannian Geometry (3).** Tensor product spaces and tensor fields on manifolds. Differentiation and integration of differential forms. Riemannian geometry and applications. Prerequisites: 310 or 372.

**457—Differential Geometry for Scientists and Engineers (3).** Tensors and multilinear forms. Connections, covariant differentiation, geodesics and curvature on Riemannian and pseudo Riemannian manifolds. Applications to special relativity and general relativity. Prerequisites: 302 and some knowledge of Matrix Theory.

**458—Differential Geometry I (3).** Metric properties of restricted portions of curves and surfaces in three-dimensional Euclidean space. Prerequisite: 201.

**460—Topics of Geometry (cr.arr.).** Prerequisite: instructor's consent.

**468—General Topology I (3).** Introduction to axiomatic theory of general topology. Continuous functions and homeomorphisms. Convergence in abstract topological spaces. Compact and locally compact spaces. Connectedness. Metrizable spaces. Prerequisites: 311 or 372 or instructor's consent.

**469—General Topology II (3).** Continuation of 468. Product spaces and Tychonoff's theorem. Introduction to homotopy theory. Fixed point theorems. Prerequisite: 468.

**470—Introduction to Algebraic Topology (3).** Development of singular homology theory; reference to other homology and cohomology theories. Introduction to homological algebra. Prerequisite: 468.

**479—Topics in Topology (cr.arr.).** Advanced topics in topology or topological algebra.

**480—Analysis Seminar (cr.arr.).**

**482—Algebra Seminar (cr.arr.).**

**484—Geometry Seminar (cr.arr.).**

**486—Topology Seminar (cr.arr.).**

**487—Numerical Mathematics Seminar (cr.arr.).**

**488—Applied Mathematics Seminar (cr.arr.).**

**489—Masters Project (3).** Students will be required to complete an independent thesis. Topics are chosen in consultation with a faculty advisor and are subject to departmental consent.

**490—Research (cr.arr.).** Graded on a S/U basis only.

# Mechanical and Aerospace Engineering

**College of Engineering**
**E2412 Engineering Building East (573) 882-2785**
**CHAIR** R. Tzou
**PROFESSORS** A.S. El-Gizawy, A. Krawitz, S. Nair, R. Tzou
**ASSOCIATE PROFESSORS** U. Cho, F. Feng, S. Khanna, Y. Lin, S. Neal, P. Pai, R. Winholtz
**ASSISTANT PROFESSORS** V. Chellaboina, C. Kluever, B. Ma, N. Manring, K. Morsi, O. Vasilyev
**ADJUNCT ASSISTANT PROFESSOR** C. Weisbrook
**PROFESSORS EMERITI** P. Braisted, G. Bunch, W. Carson, D. Creighton, R. Duffield, J. Miles, O. Pringle, D. Smith, C. Sneed, G. Stickney, R. Warder Jr., D. Wollersheim
**INSTRUCTOR** R. Whelove

**DEGREES** BS ME, MS and PhD in mechanical and aerospace engineering

The MU mechanical engineering program is structured to provide a comprehensive baccalaureate degree program that prepares students for practice of the profession in industry or government, or for further study toward other degrees such as the JD, MD, MS and PhD. Considerable effort is directed toward breadth of topics covered as well as depth in areas of thermal and mechanical systems in order to provide a program of the highest possible quality. Education in a comprehensive university environment, rather than a narrowly focused training program, is a fundamental premise of our curriculum. The department instructs students in four major emphasis areas: Design and Manufacturing, Dynamics and Controls, Energy Systems and Materials; and offers excellence in collaboration with other departments through a variety of co-listed courses and projects.

To prepare students for practice in industry and government, the goal of the program is to ensure that our graduates have:

a) an ability to apply knowledge of mathematics, science and engineering;

b) an ability to design and conduct experiments, as well as to analyze and interpret data;

c) an ability to design a system, component, or process to meet desired needs;

d) an ability to function on multidisciplinary teams;

e) an ability to identify, formulate and solve engineering problems;

f) an understanding of professional and ethical responsibility;

g) an ability to communicate effectively;

h) the broad education necessary to understand the impact of engineering solutions in a global and societal context;

i) a recognition of the need for, and an ability to engage in, life-long learning;

j) a knowledge of contemporary issues; and

k) an ability to use the techniques, skills and modern engineering tools necessary for engineering practice.

The MU mechanical engineering program trains students in the two distinct stems of mechanical engineering: thermal systems and mechanical systems.

Experience in design is integrated throughout the required courses in the curriculum and culminates in the capstone design sequence, MAE 295 and MAE 296: Design Synthesis I and II. Students receive significant experience with open-ended problems where factors such as economic and social judgments are important. Group and individual projects are chosen to develop student expertise in attacking problems with more than one right answer, to communicate, to work in teams and to understand the nontechnical contributions to engineering decisions.

The capstone design experience is a small-group, project-oriented endeavor that is structured to draw upon the student's entire academic repertoire. This capstone course integrates earlier technical work with economic, safety and environmental considerations. The projects are primarily obtained from industrial or private business clients. The presentations of project results are made to a review panel consisting of members of the faculty, the MAE Industrial Advisory Council and representatives of the client firms.

We endeavor to present a strong experimental program through laboratory experiences to expose undergraduate students to modern instrumentation and measurement methodologies. Students work in well-equipped laboratories in design optimization, microprocessor control, materials, biomechanics, measurement and instrumentation, heat transfer and fluid dynamics, aerosol systems and nondestructive evaluation. These laboratories are available for instructional and research purposes at both the undergraduate and graduate level.

In addition, students have the opportunity to become involved in individual research or design projects, and those eligible for the honors program have further opportunities for more individualized study.

The MAE curriculum offers convenient transferability among all departments during the first two years. Students concentrate on departmental requirements during the junior year. The senior year includes three technical electives, which allow the students to develop an individual study program. This enables students to complete a traditional program or create their own program with special emphasis on bioengineering, system design, materials manufacturing, energy systems or controls.

Graduation requirements include a 2.0 grade point average in required engineering courses.

**Typical Curriculum:**
**First Semester** 14 hours
Math 80: Analytic Geometry and Calculus I (5)
Chem 32: General Chemistry II (3)
Engr 30: Engineering Graphics (3)
Political Science 1 or 11; or History 3 or 4 American History (3)
**Second Semester** 16 hours
Math 175: Calculus II (5)
Physics 175: University Physics I (5)
Engl 20: Exposition and Argumentation (3)
CECS 103: Algorithm Design and Programming I (3)
**Third Semester** 17 hours
Math 201: Calculus III (3)
Physics 176: University Physics II (5)
Engr 85: Statics (3)
Engr 99: Thermodynamics I (3)
Econ 4 or 14: Economics (3)
**Fourth Semester** 15 hours
Math 304: Differential Equations (3)
Engr 124: Circuit Theory I (3)
Engr 195: Intermediate Strength of Materials (3)
MAE 185: Introduction to Dynamics (3)
Humanities/Fine Arts elective (3)
**Fifth Semester** 16 hours
MAE 206: Introduction to Computer-Aided Design (3)
MAE 251: Fluid Mechanics (3)
MAE 224: Engineering Materials (4)
Math 320: Statistics or Engr 132: Probabilistic Models (3)
Humanities/Fine Arts elective (3)
**Sixth Semester** 16 hours
MAE 256: Design of Machine Elements (4)
MAE 280: Manufacturing Methods (3)
MAE 285: Systems Dynamics (3)
MAE Elective (3)
Humanities/Fine Arts elective (3)
**Seventh Semester** 17 hours
*MAE 252: Instrumentation and Measurements Lab I (3)
MAE 257: Automatic Control (3)
MAE 295: Design Synthesis I (3) (WI)
MAE 299: Heat Transfer (3)
MAE elective (3)
Free elective (2)
**Eighth Semester** 15 hours
** MAE 262: Instrumentation and Measurements Lab II (3)
MAE 296: Design Synthesis II (3)
MAE elective (3)
***Technical elective (3)
Soc/Beh Science elective (3)

* Course offered only in the fall semester
** Course offered only in the winter semester
*** Acceptable 200+ elective in area of engineering, physics, chemistry, biology or math
Two Writing Intensive (WI) courses must be taken prior to graduation.
MAE elective must be numbered 200 or above.

One approved cluster in either the social and behavioral sciences or humanistic studies and fine arts must be taken. Another nine hours must be taken in the other area not used for the cluster. Refer to the MAE handbook for more information.

## COURSES

**17—Experimental Course (cr.arr.).** Experimental course. For freshmen-level students. Content and credit hours to be listed in Schedule of Courses.

**117—Experimental Course (cr.arr.).** Experimental course. For sophomore-level students. Content and credit hours to be listed in Schedule of Courses.

**185—Dynamics (3).** Basic fundamentals of particle and rigid body dynamics; energy and momentum methods. Prerequisite: C in Engineering 85.

**206—Introduction to Computer-Aided Design (3).** Principles of computer aided design. Analysis and application of numerical methods in computer-aided design of mechanical systems. Computer implementation. Prerequisites: CECS 103, Mathematics 304 concurrent.

**224—Engineering Materials (4).** The nature of the structure of engineering materials. The relationship of material structure to the physical properties. Mechanical behavior of engineering materials. Prerequisite: grade of C or better in Engineering 195; Chemistry 31.

**251—Fluid Mechanics (3).** Statics and dynamics of fluids, principles of continuity, momentum and energy. Boundary layers, dimensional analysis and drag are covered briefly. Thorough treatment of pipe flow. Prerequisite: 185; Engineering 99 concurrent.

**252—Instrumentation and Measurements Laboratory I (3).** Design and reporting of experimental investigations.

Instrument design equations, sources of error, selection, and calibration. Survey of instruments to measure: volt, ohm, amp, time, frequency, displacement, velocity, acceleration, strain, force and torque. Prerequisites: Engineering 195, 185, Math 304. Engineering 124 concurrent.

**256—Design of Machine Elements (4).** Methodology of engineering design. Design and selection of mechanical elements to meet functional and environmental requirements. Prerequisites: MAE 185, and 224.

**257—Automatic Control (3).** Basic study of controller characteristics, feedback elements, compensation techniques, state space methods, analysis and synthesis of complete linear systems. Prerequisites: 285 and Mathematics 304.

**262—Instrumentation and Measurements Laboratory II (3).** Continuation of 252 with emphasis on: instruments to measure temperature, pressure fluid flow, fluid velocity, sound, and computer data acquisition. Prerequisite: 252; 299 concurrent.

**280—Manufacturing Methods (3).** Introduction to manufacturing processes with emphasis on those aspects most relevant to methods, problems in force analysis, and practicum and experimentation in machine tool applications. Prerequisite: 224, Engineering 30.

**285—System Dynamics (3).** Modeling, Analysis and Design of Dynamic Systems. Prerequisites: 185, 206; Mathematics 304; Engineering 124 concurrent.

**295—Design Synthesis I (3).** Conceptual Design, Development of Design Methodologies, Design Project Reporting. Prerequisite: 256, 285, Statistics 320 or Engineering 132, 280 concurrent.

**296—Design Synthesis II (3).** Mechanical design including reliability, safety, manufacturing, economic and environmental constraints; design case studies; industrial design projects. Prerequisite: 295.

**299—Heat Transfer (3).** Fundamentals of conduction, convection and radiation. Use of nondimensional parameters. Theory and design of simple heat exchangers. Prerequisites: 251, C in Engineering 99.

**300—Problems (cr.arr.).** Special design, experimental and analytical problems in mechanical and aerospace engineering. Prerequisite: senior standing in Mechanical & Aerospace Engineering.

**301—Topics in Mechanical and Aerospace Engineering (3).** Current and new technical developments in mechanical and aerospace engineering. Prerequisite: instructor's consent.

**303—Manufacturing Process Analysis (3).** Methods and techniques used in process analysis, optimization and control. These include deterministic modeling (slab, upper bound and FEM), physical modeling techniques and statistical process control. Prerequisite: 280 or equivalent.

**314—Material Science for Advanced Applications (3).** Study of the physical and mechanical metallurgy of alloy systems of interest in engineering applications. Prerequisite: 224.

**315—Energy Systems & Resources (3).** (same as Electrical Engineering 315, Nuclear Engineering 315).

**318—Intermediate Dynamics (3).** Introduction to advanced concepts in particle and rigid body dynamics. Topics include particle and rigid body kinematics in three-dimensions, moving coordinate systems and gyroscopic motion. Prerequisites: MAE/CE 185.

**324—Non-Metallic Engineering Materials (3).** Structures, properties and applications of ceramics, glasses, polymers and composite materials. Prerequisite: 224.

**331—Experimental Methods in Fluid Flow and Heat Transfer (3).** Laboratory experiments involving fundamental mechanisms and phenomena associated with fluid flow and heat transfer. Current experimental methods and techniques employed. Prerequisites: 262 & 299.

**334—Diffraction Methods in Materials Science (3).** Introduction to crystal structure and the use of x-rays and neutrons to study materials aspects including phase analysis, structure determination, residual stress and texture. Prerequisite: instructor's consent.

**336—Interactive Computer Graphics in Engineering (3).** Application of two and three dimensional interactive computer graphics techniques to visualize, analyze and solve engineering design problems. Prerequisite: 206.

**337—Design of Thermal Systems (3).** Thermal systems are simulated by mathematical models (often on a digital computer), followed by optimization. Supporting topics include: economics, heat transfer, thermodynamics, and optimization. Prerequisite: 299 w.

**340—Heating and Air Conditioning (3).** General principles of thermal science applied to the design of environmental control systems. Topics covered include heating and cooling load calculations, annual operating and life cycle cost estimating, duct and pipe sizing, and equipment selection. Prerequisites: 299 and Engineering 99.

**341—Intermediate Fluid Mechanics (3).** Topics in potential and viscous flow theory, and computational fluid dynamics. Prerequisite: MAE/CvE 251.

**342—Introduction to Computational Fluid Dynamics and Heat Transfer (3).** Introduction to the principles and development of the finite- difference approximations to the governing differential equations of viscous and inviscid fluid flow, as well as heat transfer. Introduction to discretization methods and the calculation of flow fields, convection, diffusion and conduction. Prerequisites: MAE 251, 299 and 341.

**344—Composite Materials (3).** A survey of composite materials used in engineering emphasizing fiber-reinforced composites but including laminate and particulate composites. Prerequisite: 224 or equivalent.

**346—Introduction to Nuclear Reactor Engineering I (3).** (same as Nuclear Engineering 346). slowing down; steady-state and time dependent theory; reactor control; energy removal. Prerequisites: Mathematics 304 or instructor's consent.

**350—Honors Research (cr.arr.).** Independent investigation to be presented as an undergraduate honors thesis. Prerequisite: Honors student in Mechanical & Aerospace Engineering.

**351—Power Plant System Design (3).** Preliminary component and system design. Optimum design of boilers, steam turbines, condensers and cooling towers and their integration into a system to minimize production costs and impact on the environment. Prerequisites: 299 and Engineering 99.

**352—Advanced Mechanics of Materials (3).** (same as Civil Engineering 352).

**354—Nondestructive Evaluation of Materials (3).** The role of nondestructive evaluation (NDE) in engineering is explored. Ultrasonic NDE is studied in detail. Labs are used to support the study of ultrasonic NDE. Other NDE techniques are surveyed. Prerequisite: 224 or equivalent.

**357—Mechatronic System Design (3).** Synergistic combination of control, sensors, actuators, electronics, computers, and real-time programming. Actuator and computer fundamentals; logic devices; electronic components including transistors, operational amplifiers and power amplifiers; interface design and control programming. Prerequisites: MAE 257 or instructor's consent.

**360—Internal Combustion Engines (3).** Gas and oil engines. Thermodynamics of ideal and actual cycles, fuels and combustion, carburetor and injection systems, performance, construction. Prerequisite: 251.

**361—Gas Dynamics (3).** One dimensional compressible flow with and without friction and heat transfer. Isentropic flow and shock phenomenon in nozzles and diffusers. Prerequisites: 251.

**366—Applied Mechanical Optimization (3).** Introduction to mathematical programming techniques and applications to the design of mechanical systems and components. Prerequisite: 206.

**371—Applied Robotics in Production (3).** (same as Industrial and Manufacturing Systems Engineering 371).

**372—Integrated Production Systems (3).** (same as Industrial and Manufacturing Systems Engineering 372).

**375—Introduction to Plasmas (3).** (same as Nuclear Engineering 375, Electrical Engineering 375).

**376—Machine Tool Design (3).** Methodology of machine tool design. Dynamic modeling, analysis, and simulation of machine tools to meet functional requirements and design constraints. Prerequisites: 185 and 206.

**379—Particulate Systems Engineering (3).** An introduction to natural and engineered particulate systems. Prerequisite: Chemical Engineering 234.

**381—Aerodynamics (3).** Presents fundamentals of wing and airfoil theory for incompressible flow, including fluid kinematics and dynamics, potential flow, flow about a body, thin-airfoil theory, and finite wing. Prerequisites: 206 and 251 or CvE 251.

**382—Lasers and Their Applications (3).** (same as Electrical & Computer Engineering 382, Nuclear Engineering 382). Principles of laser operation, characteristics of gas, doped insulator, semiconductor and dye lasers, areas of application and laboratory demonstrations and experiments.

**385—Vibration Analysis (3).** (same as Civil Engineering 385). Vibration theory and its application to Mechanical systems. Topics include free and forced vibration analysis of single and multi-degree of freedom systems. Prerequisite: MAE/CE 185 and Math 304.

**386—Introduction to Finite Element Methods (3).** The application of matrix operations, energy concepts and structural mechanics to the development of the finite element method. Application of finite element method to beams, frames and trusses. Prerequisites: Engineering 195 and MAE 206.

**389—Intermediate Thermodynamics (3).** Topics from classical and statistical thermodynamics. Prerequisite: Engineering 99.

**391—Combustion Fundamentals (3).** Introduction to combustion principles. Prerequisites: 299 and Engineering 99.

**399—Intermediate Heat Transfer (3).** Advanced topics in conduction, convection, and radiation. Heat exchanges and their applications will also be analyzed. Prerequisite: 299.

**400—Problems (cr.arr.).** Supervised investigation in mechanical and aerospace engineering to be presented in the form of a report.

**401—Advanced Topics in Mechanical and Aerospace Engineering (3).**

**403—Manufacturing Design (3).** Design for manufacture methods, their capabilities and applications. Design of intelligent manufacturing systems using sensory systems and artificial intelligence techniques. Prerequisites: 206, 280 or instructor's consent.

**404—Physical Metallurgy (3).** Treatment of fundamentals of physical metallurgy, including metallurgical thermodynamics, macroscopic and atomic diffusion, interfaces, nucleation, solidification theory, and solid state transformations. Prerequisite: 224 or equivalent.

**407—Adaptive Control (3).** Adaptive systems, stability theory, identification and control problems, model reference adaptive systems, self tuning regulators, adaptive observers, persistent excitations robust adaptive control, case studies. Prerequisites: 257 or equivalent; 408 or instructor's consent.

**408—State Variable Methods in Automatic Control (3).** (same as Chemical Engineering 408, Electrical & Computer Engineering 408, Nuclear Engineering 408).

**410—Seminar (1).** Reviews recent investigations, projects of major importance in mechanical and aerospace engineering. Graded on S/U basis only.

**411—Continuum Mechanics (3).** (same as Civil Engineering 411).

**412—Theory of Elasticity (3).** (same as Civil Engineering 412).

**413—Theory of Plates and Shells (3).** (same as Civil Engineering 413).

**414—Theory of Elastic Stability (3).** (same as Civil Engi-

neering 414).

**416—Theory of Plasticity (3).** (same as Civil Engineering 416).

**417—Intelligent Control (3).** Nonlinear control design including stability and convergence, need for knowledge based techniques. Neural networks for identification and control of dynamic systems, static and dynamic back propagation. Fuzzy logic controller design, self tuning. Case studies. Prerequisites: 257 and 408.

**418—Advanced Dynamics (3).** (same as Civil Engineering 418).

**427—Robust Control (3).** Definition of the robust performance problem with the goal of achieving specified signal levels in the face of plant uncertainity; uncertainty and robustness, stabilization, design constraints, loopshaping, model matching and design for robust performance. Prerequisites: 257, and 408 or instructor's consent.

**430—Boundary Layer Theory (3).** Fluid motion at high Reynolds Number. Derivation of Navier-Stokes equations and boundary layer equations. Methods of solution. Transition to turbulent flow. Completely developed turbulent flow. Prerequisite: 341.

**434—Fracture Mechanics I (3).** Mechanics of flawed structure. Concepts include Griffith theory, Barenblatt's theory, Irwin analysis, energy analysis of cracked bodies, fracture toughness testing, plane strain, plane stress, transition temperature concepts, subcritical flaw growth. Prerequisites: 224 or instructor's consent.

**435—Heat Transfer-Conduction (3).** Distribution of temperature and temperature history within solids by the four essential methods of evaluation of these temperature fields. Prerequisite: 299.

**436—Heat Transfer-Convection (3).** Principles of heat transfer by convection, review of boundary layer theory, laminar and turbulent heat transfer, temperature-dependent fluid properties, high velocity heat transfer and an introduction to mass transfer. Prerequisites: 299 & 430.

**437—Heat Transfer-Radiation (3).** Advanced study of engineering radiation heat transfer. Concepts of electromagnetic theory. Development of thermal radiation laws from thermodynamic laws. Analysis of grey and non-grey systems with intervening gases. Study of recent literature. Prerequisites: 299, 304.

**438—Introduction to Turbulence (3).** An introduction to the physical phenomena of turbulence, supported by mathematical and statistical descriptions. Especially appropriate for engineers involved in research of momentum, heat, and mass transport. Prerequisites: 341.

**439—Introduction to Two Phase Flow (3).** An introduction to the analysis of the mechanics and transport processes in two phase flows. Prerequisites: 251 and Civil Engineering 251 or equivalent.

**444—Fracture and Fatigue Prevention in Engineering Practice (3).** Practical design problems. Introduction to retrofit design, maintenance, product improvement and new design from a fatigue and fracture prevention philosophy. Fail safe and safe life designs are presented. Prerequisite: 434.

**447—Nonlinear Control (3).** Nonlinear systems analysis techniques including phase plane analysis, Lyapunov theory. Control design including feedback linearization, sliding control, and adaptive control. Prerequisites: 257 and 408 or instructor's consent.

**450—Superconductivity and Its Applications (3).** (same as Electrical Enineering 450 and Nuclear Engineering 450). Phenomenology and theory of superconductivity; practice; metallurgy of superconducting elements, alloys and compounds. Applications, present and prospective.

**451—Applications of Computational Fluid Dynamics (3).** Applications of DFD, including grid generation, solving the governing equations, and plotting and evaluating the results, to a wide range of basic and complex flow problems. The solutions are obtained and the results plotted using commerical or government CFD codes. Prerequisites: MAE 342 or instructor's consent.

**457—Computer Integrated Manufacturing (3).** Modeling and simulation of manufacturing processes and advanced computer applications in manufacturing systems and machining processes, NC-programming. Prerequisites: 257 and 280.

**459—Dynamics of Structures (3).** (same as Civil Engineering 459).

**460—Combustion (3).** Numerical modeling of combustion systems and advanced diagnostic techniques. Prerequisites: 341, 391.

**485—Advanced Vibration Analysis (3).** Advanced topics in vibration theory and its application to Mechanical Systems. Topics include vibration analysis of multi-degree of freedom, distributed and nonlinear systems, random vibration analysis, and vibration control. Prerequisites: MAE/CE 385 or instructor's consent.

**486—Finite Element Methods (3).** (same as Civil Engineering 486). The concepts and fundamentals of the finite element method with applications to problems in solid and fluid mechanics. Prerequisites: 386 or Civil Engineering 375.

**490—Research (cr.arr.).** Independent investigation in field of mechanical and aerospace engineering to be presented as a thesis. Graded on a S/U basis only.

**499—Microscale Heat Transfer (3).** Review of existing models. Concept of thermal lagging and the second-law admissibility. Applications to low temperatures, thermal processing of thin-film devices; amorphous materials; advanced composites. Prerequisite: MAE 299 or instructor's consent.

# Military Science

**College of Arts and Science**
**Army Reserve Officers' Training Corps**
**202 Crowder Hall (573) 882-7721**
**CHAIR** R. Avalle
**PROFESSOR** R. Avalle
**ASSISTANT PROFESSORS** J. Dohe, A. Sampson, T. Scherrer, D. Voelker,

**PURPOSE** The Army ROTC program can be completed through a two- to four-year program designed to develop young men and women into junior commissioned officers for challenging, responsible positions in the Active Army, Army Reserve or Army National Guard. In addition to traditional combat roles, Army officers serve in such professional fields as aviation, medical service, finance, personnel management, communications and engineering.

**BENEFITS** Army ROTC offers scholarships that pay tuition, fees, books and a monthly stipend for a period of two to four years. Both in- and out-of-state students may apply. Scholarship winners may also receive an ROTC Leadership Grant that covers the cost of room and board. Scholarship winners should expect to incur an obligation to serve in the Active Army.

Regardless of scholarship status, all ROTC cadets in their last two years of college receive a monthly stipend. Additionally, cadets receive $750 for six weeks of required summer training.

Students who complete the ROTC program and their degree earn commissions as second lieutenants and will receive a starting salary of more than $25,000 a year plus benefits. After four years of service, with normal promotions and professional growth, they should attain the rank of captain and will receive a salary of more than $42,000 a year plus benefits.

A significant benefit of taking Army ROTC is the leadership development training and improved confidence that sets the ROTC graduate apart from his or her peers in the civilian sector. Employers actively seek employees with the skills ROTC teaches a graduate.

**RESERVE AND NATIONAL GUARD** ROTC students belonging to Army Reserve or Army National Guard units are eligible for additional benefits including the G.I. Bill, drill pay and full tuition. These students can generally opt to stay with their unit after graduation or request an Active Army assignment. Reserve and National Guard officers attend one weekend drill per month and an annual two-week training period. In addition to the pay and benefits awarded, Reserve and National Guard officers are free to pursue a full-time civilian career.

**QUALIFICATIONS** All students who desire to enter the Army Reserve Officers' Training Corps must be United States citizens, be in good physical condition and have high moral character. Students must be at least 17 years old to enroll and not more than 30 when they receive their commission. To be admitted into the advanced course, students must maintain an academic average of 2.0 and pass an Army medical examination.

**ACADEMICS** The University of Missouri-Columbia Army Reserve Officers' Training Corps academic program consists of:

- A degree in the student's chosen academic subject
- 12 to 22 credit hours in the military science curriculum

The curriculum consist of classroom instruction and a weekly laboratory in which students receive leadership experience. The courses in military science are both academic and hands-on. Most receive academic credit on campus and count toward the student's degree requirements. **With departmental approval, students in the College of Arts and Science may earn a minor in military science by successfully completing:**

Mil Sc 230: Intermediate Techniques of Military Science and Leadership (3)
Mil Sc 231: Command Operations (3)
Mil Sc 250: Leadership, Management and Ethics (3)
Mil Sc 251: Transition to Lieutenant (3)

**MILITARY HISTORY ACTIVITIES** In addition to their academic and military training, Army ROTC students may participate in a variety of extracurricular activities including sports, adventure training, social events, and community service.

## COURSES

**10—Introduction to Military Science (1).** Introductory Military Science class. Topics include physical fitness, communications theory, rappeling, officership, army organization and ethics. Military Science Lab 11 optional but highly encouraged. f.

**11—Introductory Military Science Laboratory I (1).** Field application of skills taught in Military Science 10, to include leadership, land navigation, tactical skills and basic soldier skills. f.

**12—Leadership and the Problem Solving Process (1).** Course teaches the leadership principles and problem solving process. Topics include critical thinking skills, power and influence and rifle marksmanship. Military Science Lab 13 optional by highly encouraged. w.

**13—Introductory Military Science Laboratory II (1).** Field application of skills taught in Military Science 12, to include leadership, land navigation, tactical skills and basic soldier skills.

**20—Intermediate Military Science I (2).** Study of military leadership, practical application of critical reasoning and individual judgement with emphasis on developing leaders.

Application of physical fitness plan, land navigation, and confidence skills. Introduction to military orders. Written and oral presentations required. f.

**21—Intermediate Military Science Laboratory I (1).** Progressively more challenging leadership scenarios presented in a field and classroom environment. Students practice basic military skills such as squad-level offensive and defensive operations. First aid topics and drill and ceremony are also taught. f.

**22—Intermediate Military Science II (2).** Introduction to values and ethics with emphasis on developing leaders. Students learn officer duties including counseling and mentoring techniques. Practical application of confidence skills and marksmanship. Further study of military orders. Written and oral presenations required. w.

**23—Intermediate Military Science Laboratory II (1).** Progressively more challenging leadership scenarios presented in a field and classroom environment. Students practice basic military skills such as platoon-level offensive and defensive operations. Practical application of night land navigation. w.

**161—Topics (1-3).** Organized study of selected military science topics. Subjects and credit vary semester to semester. Repeatable once with departmental consent. Prerequisites: sophomore standing and instructor's consent.

**230—Advanced Techniques of Military Science and Leadership (3).** Specific instruction in the principles of war, decision-making processes, planning models and risk assessment. Advanced leadership instruction focuses on the role and actions of leaders, leadership laboratory required. Prerequisite: junior standing and instructor's consent.

**231—Command Operations (3).** Specific instruction is given in individual leader development, planning and execution of small unit operations, individual and team development. Leadership laboratory required. Prerequisite: 230.

**250—Leadership, Management and Ethics (3).** Develops the skills to: coordinate activities with military staffs; counseling theory and application; training and administrative/logistical management; ethics. Leadership lab required. Prerequisite: 231. f.

**251—Transition to Lieutenant (3).** Instruction and application of Military Law; organization for military operations; administrative/logistical management; service as an officer; capstone exercise. Leadership lab required. Prerequisite: 250. w.

# Molecular Microbiology and Immunology

**School of Medicine**
**M616 Medical Sciences Building (573) 882-8152**
*The School of Medicine does not offer an undergraduate degree in microbiology, but some courses are available to undergraduate students.*

**DEGREE** AB in microbiology

The Division of Biological Sciences in the College of Arts and Science, in cooperation with the colleges of Agriculture, Food and Natural Resources and Veterinary Medicine and the School of Medicine, offers an area of concentration with emphasis in microbiology.

Graduates of the program often obtain employment in industrial and academic research laboratories.

**The following courses are required to receive the undergraduate degree in microbiology.**
Bio Sci 212: Basic Microbiology (4)
Bio Sci 202: General Genetics (4)
Chem 31 (2) and 32 (3): General Chemistry I, II and Chem 33: General Chemistry III (3)
Chem 210 (3): Organic Chemistry
Physics 21 (4) and 22 (4): College Physics
Math 108 (3) and 208 (3): Calculus for Social and Natural Sciences I and II (Math 80 and 175 may be substituted for a total of 10 hours)

**In addition to the above required courses, 18 to 24 credits in electives must be taken. The following courses are suggested as appropriate electives.**
Bio Sci 203: Introduction to Cell Biology (3)
Bio Sci 241: Genetics Laboratory (2)
Biochem 270: Biochemistry I (3)
Biochem 272: (3) Biochemistry II (3)
Biochem 274: Biochemistry Laboratory (3)
Chem 212: Organic Chemistry (5)
Micro 301: Microbiology-Bacteriology (3)
Micro 302: Medical Microbiology (3)
Micro 304: Immunology (3)
Vet Micro 343: Animal Virology (4)

Other courses in biochemistry, microbiology, veterinary microbiology, food science and human nutrition, and engineering are recommended based on discussions between the student and the undergraduate microbiology adviser.

## COURSES

**205—Introduction to Medical Microbiology (4).** Principles of infection, immunity and control of infectious disease agents; primarily for students in School of Nursing and School of Health Related Professions. f,w.

**301—Microbiology-Bacteriology (3).** Microbial diversity, physiology, genetics and membrane structure and function. Microbial mechanisms of pathogenesis and current strategies for diagnostics, treatment and prevention. Prerequisites: Biological Sciences 212 and Biochemistry 270 and instructor's consent.

**303—Medical Virology (3).** Classification of viruses, life cycles, genome organization and expression, host virus interactions, oncogenes and cellular transformation, strategies for anti viral therapy, recombinant vaccines and viruses as vectors for gene therapy. Prerequisite: Microbiology-Bacteriology 301 or equivalent or instructor's consent.

**304—Immunology (3).** Covers immunocytology and immunochemistry of antigens, immunoglobulins, and the complement system, serologic reactions, immunoglobulin and T cell mediated allergy, tumor and transplantation immunology and autoimmune disease, also laboratory demonstrations. Prerequisites: Organic Chemistry and Biochemistry recommended. f.

**400—Problems (cr.arr.).** Students assigned individual problems in microbiology for library or lab investigation. Prerequisite: strong background in Microbiology. f,w,s.

**401—Topics (cr.arr.).** Current topics, highly specialized topics taught infrequently, or courses taught by visiting professors. Prerequisite: graduate standing and instructor's consent.

**403—Advanced Medical Microbiology (3).** Similar to 301 but treats medical microbiology and immunology in a more advanced manner. Methods of preparation and instruction stressed. Prerequisite: 301 or equivalent. w.

**404—Pathogenic Mechanisms (3).** Microbial toxins, virulence factors, and host interactions. Prerequisites: Microbiology 301, medical microbiology, graduate standing and instructor's consent. w, odd yrs.

**407—Advanced Immunology (3).** Lectures and discussions emphasizing theoretical aspects of immunology and detailed considerations of the more involved areas of this science. Prerequisites: 304 or instructor's consent. w, even years.

**410—Seminar (1).** Presentation and critical discussion of student and staff research, current literature, and guest lectures on subjects in various areas of microbiology. Prerequisite: graduate standing and instructor's consent.

**411—Responsible Conduct of Research (1).** Ethical, legal and sociological ramifications of research including data management, authorship, human and animal use, conflict of interest and misconduct. Round table discussions and interactive forums. Grading based on participation in discussions and assignments. Graded on S/U basis only. w, odd yrs.

**432—Molecular Biology II (3).** Detailed experimental analysis of eukaryotic cellular and molecular biology relevant to cellular and viral gene expression, post-transcriptional and post-translational modifications and genome replication. Models for developmental genetic analysis and genetic determinants controlling developmental processes utilizing the current literature will be examined. Prerequisite: Molecular Biology I/Biochemical Genetics 430, graduate standing, and instructor's consent. w. (Same as Biochemistry 432.)

**490—Research (cr.arr.).** Original investigations in various areas of microbiology related to bacteria, fungi, rickettsia, viruses, and animal parasites, or immunology relating to antigens and antibodies of infectious and noninfectious nature designed for graduate thesis research. Graded on a S/U basis only. f,w,s.

# Music

**School of Music in the College of Arts and Science, 140 Fine Arts Center (573) 882-2604**
**DIRECTOR** Melvin Platt
**PROFESSORS** T. McKenney, M. Platt, D. Rayl, W. Sims, E. Szekely, J. Wenger
**ASSOCIATE PROFESSORS** M. Bergee, M. Budds, E. Dolbashian, P. Garritson, S. Geibel, A. Harrell, *K. Larvick, J. McLeod, D. Willett
**ASSISTANT PROFESSORS** L. Black, S. Bottom, D. Dillner, D. Dolezal, E. Freer, F. Hemke, *J. Hillbrick, *D. Kutz, *S. Langmead, L. Lewis, *T. Marsh, N. Minturn, L. Perna, *G. Schallert, M. Spence, *S. Stubbs, J. Todd, *K. Tse
**PROFESSORS EMERITI** J. Burk, J. Cheetham, R. Herbert, R. Hills, C. Kyriakos, J. Middleton, A. Minor, H. Morrison, P. Parrigin, A. Pickard, I. Powell, B. Scott, C. Sherman, C. Spotts, B. Wood

*non-regular faculty

**DEGREES** AB, BM, MA, MM in music; BS, BM, MEd, MAEd, EdD and PhD in music education are offered through the Department of Curriculum and Instruction

The School of Music has been an accredited member of the National Association of Schools of Music since 1933. The school offers instruction to those who wish professional training in music as well as those who wish to pursue music as an avocation. Applied music instruction in piano, voice, string, woodwind, brass and percussion instruments is offered by the school for beginning as well as for advanced students. Practice facilities for the students are available. Elementary and advanced courses are given in music theory and composition. The appreciation, literature and history of music are covered by survey and specialized courses.

The School of Music also offers opportunities for all students of the university to participate in various performing groups. The University Philharmonic Orchestra, Symphonic Wind Ensemble, Marching Mizzou, Symphonic Band, Concert Band, University Band, Jazz Ensembles, Choral

Union, University Singers, Chamber Singers, Concert Chorale, Opera Workshop and many vocal, string, percussion and wind chamber ensembles give regular programs on campus and throughout the state. Membership in these groups is open to interested students by audition.

The bachelor of music degree is a professional degree that offers the maximum concentration in music. The student may focus on instrumental, keyboard or vocal performance; music theory; composition or music history. Specific requirements include 16-33 hours in studio instruction courses including recitals, 23-28 hours of music theory and 12-20 hours of music history. All BM students (except voice majors) must also take 36-40 hours of general education courses including English 20, Math 10, a math reasoning proficiency course, 12-13 hours of foreign language, nine hours in social and behavioral sciences, and nine hours in physical, biological and math sciences. At least one 100-level course must be taken in either social/behavioral science or physical/biological/math sciences. In addition, one lab course must be taken in physical/biological/math sciences. Voice majors must complete 45-47 hours of general education study, including 21-22 hours of foreign language.

Candidates for all bachelor of music degrees must pass a candidacy examination in the areas of performance at the completion of their sophomore year. This exam is administered by the applied faculty concerned and must be passed before entrance to the 355-level (for performance concentrations) or 255-level (for all other concentrations) studio instruction is approved. All BM candidates are required to fulfill the school's recital attendance requirement. In addition, each performance major is required to present a junior and senior recital. The performance must be approved two weeks in advance by a faculty hearing committee.

Courses completed in the D range may not be included in the area of concentration without the approval of the adviser and the dean, and the student must achieve an overall average of at least C (2.0) in all of the courses attempted in the School of Music at MU.

The bachelor of arts degree in music is a general, liberal arts degree for the student wishing to have a strong music emphasis along with a greater breadth of study. While music is the main area of concentration, students are required to pursue, in some depth, a minor or related field. The requirements include 40 hours in music: 16 hours in music theory, nine hours in music history, 10 hours in applied music, four hours of ensembles and a one-hour capstone problems course. All AB candidates are required to fulfill the departmental recital attendance requirement. General education requirements are the same as for other AB degrees.

Specific course requirements are available from the School of Music office.

**MINORS IN MUSIC** Students who have chosen a major in another field but who wish to continue their musical growth may wish to pursue a music minor. A minimum of 18 hours are required:

**Music theory**
190: Syntax, Structure and Style of Music I (2)
191: Syntax, Structure and Style of Music II (2)
**Music history**
122: Intro to Music in the United States (2)
217: History of Western Music I (2)
218: History of Western Music II (2)
**Ensembles/Applied Music**
41, 42, 154: Any combination for total of four hours
**"Emphasis area"**
four additional hours in any of these three areas

## COURSES

### MUSIC-GENERAL

**100—Problems (cr.arr.).** Independent investigation leading to a paper project. May be repeated for credit. Prerequisite: instructor's consent. Sections are: Music Theory, Music Composition, Music History, Music Performance/Pedagogy.
**101—Topics (2).** Organized study of selected topics. Subjects vary from semester to semester. May be repeated once for additional credit with departmental consent.
**129—Music Travel Course (1-4).** Study tour designed to broaden perspective of persons interested in music. Stresses relationship of music to art and ideas in a variety of social and cultural contexts. Participant bears cost of course. Prerequisite: instructor's consent.
**300—Problems (cr.arr.).** Independent investigation leading to a paper or project. May be repeated for credit. Prerequisite: instructor's consent. Sections are: Music Theory, Music Composition, Music History, Music Performance/Pedagogy.
**301—Topics (cr.arr.).** Organized study of selected topics in music. Subjects and credit variable. May be repeated for additional credit with departmental consent. Prerequisites: junior standing in Music and instructor's consent.
**400—Problems (cr.arr.).** Independent investigation leading to a paper or project. May be repeated for credit. Prerequisite: instructor's consent. Sections are: Music Theory, Music Composition, Music History, Music Performance/Pedagogy.
**401—Topics (cr.arr.).** Organized study of selected topics in music. Subjects and credit variable. May be repeated with departmental consent. Prerequisites: graduate standing and departmental consent.
**413—Introduction to Graduate Study (2).** Introduction to library procedures, basic sources of information in music and techniques for research.
**414—Introduction to Graduate Studies in Music II (1).** The application of basic music bibliography, research techniques, and conventions of music scholarship. Prerequisite: Music 413 or instructor's consent.
**429—Travel Seminar (1-4).** Selected topics for directed study in music undertaken in context of the tour. Emphasis on subjects with cross-disciplinary implications. Participant bears cost of course. Prerequisite: instructor's consent.
**490—Research (cr.arr.).** Thesis course. May be repeated for additional credit. Graded on S/U basis only. Sections are: Music Theory, Music Composition, Music History. Performance/Pedagogy
**499—Seminar (1-3).** Sections are: Music Theory, Music Composition, Music History, Performance/Pedagogy.

### MUSIC-MUSIC THEORY

**1—Fundamentals of Music I (2).** Introduction to rhythmic, melodic, harmonic, and structural elements of music. Designed for non-music majors. No credit for music majors or minors.
**2—Fundamentals of Music II (2).** Continuation of Music 1. No credit for music majors or minors. Prerequisites: 1 or instructor's consent.
**115—Composition I (2).** Fundamentals of composition and writing in small forms. Prerequisites: 191 or instructor's consent.
**116—Composition II (2).** Continuation of 115. Prerequisite: 115.
**180—Aural Training and Sight Singing I (2).** Development of aural and sight singing skills. Prerequisite or concurrent registration: 190.
**181—Aural Training and Sight Singing II (2).** Contiunation of 180. Prerequisite: 180 and 191 (or 191 concurrently.
**190—Syntax, Structure and Style of Music I (2).** Review of fundamentals. Study of rhythm, melody, harmonic, structure and stylistic characteristics of various periods. Application through original composition projects. Prerequisites: none for Music majors; others: instructor's consent.
**191—Syntax, Structure and Style of Music II (2).** Continuation of 190. Study of smaller forms and introduction to chromatic harmony. Prerequisites: 191 or instructor's consent.
**215—Composition III (2).** Further development of creative writing in traditional forms. Prerequisite: 116.
**216—Composition IV (2).** Continuation of 215. Prerequisite: 215.
**280—Aural Training and Sight Singing III (2).** Continuation of 181. Further development of aural and sight singing skills with an emphasis on chromatic harmony and decorative pitches. Introduction of structural perception. Prerequisites: 181 & 290 or 290 concurrently.
**281—Aural Training and Sight Singing IV (2).** Continuation of 280. Prerequisites: 280 and 291 or 291 concurrently.
**290—Syntax, Structure and Style of Music III (2).** Chromatic harmony, variation techniques and contrapuntal genres. Study of traditional forms in instrumental, vocal and choral compositions. Applications through original composition projects. Prerequisite: 191
**291—Syntax, Structure and Style of Music IV (2).** Continued study of chromatic harmony and compositions in larger forms. Application through original composition projects. Prerequisite: 290.
**303—Eighteenth-Century Counterpoint (3).** Study of contrapuntal procedures and representative works of the eighteenth century. Emphasis on compositions and style of Johann Sebastian Bach. Original composition projects: canon, invention, and fugue. Prerequisite: 291 or instructor's consent
**305—Sixteenth-Century Counterpoint (3).** Analysis of contrapuntal procedures and representative compositions of 16th century. Emphasis on styles of Palestrina, Lassus and Victoria. Stylistic writing in two, three or more voices. Prerequisite: 291.
**307—Orchestration (2).** Study of orchestral instruments and the process of scoring for various orchestral combinations. Prerequisite: 291.
**309—Band Arranging (2).** Transcription, scoring of solo and ensemble literature for band instrument combinations of varying sizes up to and including concert band. Prerequisite: 291.
**310—Choral Arranging (2).** Transcription and arrangement of music suitable for performance by various vocal ensembles. Prerequisite: 291.
**311—Composition I (2).** Fundamentals of Composition: Writing in small forms. For non-composition graduate students in music. Prerequisite: graduate standing. f.
**312—Composition II (2).** Continuation of 311. Prerequisite: 311. w.
**313—20th Century Compostion Techniques (2).** The study and application of analytical procedures to 20th century music literature. Special readings; individual projects. Prerequisite: graduate standing or instructor's consent.
**314—Computer Technology and Music (2).** The introduction of music software for educational and professional use. Music notation software will be learned. Sequencing software will be studied in depth. Hands-on experience with Macintosh computers, multiptimbral synthesizers and various CD-ROMS. Prerequisite: 313 or instructor's consent.
**315—Composition V (2).** Writing of works in larger forms for a solo instrument or chamber ensemble. Prerequisite: 216.
**316—Composition VI (2).** Continuation of 315. May be repeated for additional credit. Prerequisite: 315.
**331—Schenkerian Analysis (3).** Techniques of musical analysis developed by Heinrich Schenker. Prerequisite: 291.
**332—Rhythmic Analysis of Tonal Music (3).** Introduction to rhythmic analysis, including context of current thinking, basic concepts, various approaches, selected topics, performance issues, and particular problems. Prerequisite: Music 291 or graduate standing. w.
**333—Acoustics of Music (2).** The study of tuning systems and the properties, production and reception of musical sound. Prerequisites: 3 or instructor's consent.

**344—Analysis of Music (2).** An analytical study of rhythmic, melodic, harmonic and structural aspects of 18th-, 19th- and 20th-century music. Prerequisite: 291 or equivalent.

**345—Introduction to Electronic Music (2).** Techniques used in the creation of music with tape recorders, voltage-controlled synthesizers and electronics. Prerequisites: 313 or instructor's consent.

**347—Introduction to Digital Synthesis (2).** Introduction to the techniques of digital synthesis, including the study of programming, and Musical Instrument Digital Interfacing.

**401—Topics (cr.arr.).** Organized study of selected topics in music. Subjects and credit variable. May be repeated with departmental consent. Prerequisite: instructor's consent.

**403—Analysis of Musical Styles (2).** Analytical study of specific rhythmic, melodic, harmonic, and structural factors which constitute the stylistic practices of a specific period or composer. Prerequisite: 344 or equivalent. departmental consent for repetition.

**408—Advanced Orchestration II (2).** Continuation of 407. Survey of original works for orchestra. Prerequisite 407.

**411—Comparative Approaches to Music Theory I (2).** Techniques and materials for teaching basic music theory courses for high schools and colleges. Prerequisite: 291.

**415—Composition VII (2).** Intensive work in larger forms. Seminar, private lessons. Prerequisites: 316 or instructor's consent. Departmental consent for repetition.

**444—Contemporary Analytical Techniques (2).** Study and application of various analytical systems for 20th- century compositions. Analysis of music employing contemporary theories.

## MUSIC-MUSIC HISTORY AND LITERATURE

**21—Masterpieces of Western Music (3).** Introduction to the Western fine-art tradition through the study of representative masterworks, emphasis on developing listening skills; directed to non-majors.

**30—Jazz, Pop, and Rock (3).** Historical introduction to jazz (to approximately 1970) and the American popular song, including rock and roll (to approximately 1980); directed to non-majors.

**31—History of Jazz (2).** Historical survey of American jazz from its origin to the present. No credit for students who have taken 30.

**32—Introduction to World Music (3).** Introduction to the musical traditions of selected non- Western societies; emphasis on developing listening skills; directed to non-majors, but music majors may enroll.

**122—Introduction to Music in the United States (2).** Historical overview of American folk, popular, and fine-art music; emphasis on listening skills.

**217—History of Western Music I (2).** Historical survey of selected European practices up to 1700 following a consideration of the major fine-art traditions of the world. Prerequisite: Music 122.

**218—History of Western Music II (2).** Historical survey of Western fine-art music from approximately 1700 to the present. Prerequisite: 217.

**265—American Musicals (3).** (same as Theatre 265). Historical survey of the development of the 20th-Century American Musical in Theatre and Film.

**297—Honors in Music History I (3).** Special readings, directed research for graduation with Honors in music history. Prerequisites: 217 and 218.

**298—Honors in Music History II (3).** Continuation of 297 leading to Honors thesis in music history. Prerequisite: 297.

**317—Graduate Review of Music History I (2).** Survey of the history of Western music from ca. 600 A.D. to ca. 1750. Special readings; individual projects.

**318—Graduate Review of Music History II (2).** Survey of the history of Western music from ca. 1750 to the present. Special readings; individual projects.

**371—Historical Studies in Art Song (3).** Historical survey of works for solo voice and instruments. Prerequisite: Music 218 or graduate status.

**372—Historical Studies in Choral Music (3).** Historical survey of works featuring choral ensembles. Prerequisite: Music 218 or graduate status.

**373—Historical Studies in Opera (3).** Historical survey of opera. Prerequisite: Music 218 or graduate status.

**374—Historical Studies in Large Ensemble Music (3).** Historical survey of works for large instrumental ensembles. Prerequisite: Music 218 or graduate status.

**375—Historical Studies in Chamber Music (3).** Historical survey of works for small ensembles, instrumental and vocal. Prerequisite: Music 218 or graduate status.

**376—Historical Studies in Keyboard Music (3).** Historical survey of works for solo keyboard instruments. Prerequisite: Music 218 or graduate status.

**377—Historical Studies in Jazz and Popular Music (3).** Historical survey of works from the realm of American jazz and popular music. Prerequisite: Music 218 or graduate status.

**423—Studies in Music History I (2).** Selected themes for detailed investigation of the Medieval, Renaissance or Baroque periods. Special readings; individual projects. May be repeated once for additional credit. Prerequisite: instructor's consent.

**424—Studies in Music History II (2).** Selected themes for detailed investigation of the Classic, Romantic or Modern periods. Special readings, individual projects. May be repeated once for additional credit. Prerequisite: instructor's consent.

**426—History of Performance Practices (2).** Performance practices; emphasizes Renaissance and Baroque periods. Prerequisite: instructor's consent.

**435—Music of the Middle Ages and the Renaissance (3).** Systematic study of European musical practice before 1600. Prerequisite: graduate status or instructor's consent.

**436—Music in the Baroque Era (3).** Systematic study of European musical practice from approximately 1600 to 1750. Prerequisite: graduate status or instructor's consent.

**437—Music of the Classic Era (3).** Systematic study of European musical practice from approximately 1750 to 1800. Prerequisite: graduate status or instructor's consent.

**438—Music of the Romantic Era (3).** Systematic study of European musical practice from approximately 1800 to 1900. Prerequisite: graduate status or instructor's consent.

**439—Music of the Modern Era (3).** Systematic study of fine-art musical practice from approximately 1900 to the present. Prerequisite: graduate status or instructor's consent.

**440—Focal Composers (3).** Systematic study of the works of landmark composers: J.S. Bach, Mozart, Beethoven, Verdi/Wagner, Debussy, or Stravinsky, studied in rotation. Prerequisite: graduate status or instructor's consent. Repeatable for up to 6 hours or credit.

**441—Advanced Studies in American Music (3).** Systematic study of the diverse streams of musical practice in the United States from the colonial time to the present. Prerequisite: graduate status or instructor's consent.

**442—Contemporary Issues in Musicology (3).** Systematic study of single musicological problem of contemporary relevance. Prerequisite: graduate status or instructor's consent.

## MUSIC-APPLIED MUSIC

**54—Studio Instruction (1).** Acceptable for non-majors and majors requiring a half-hour lesson with instructor's consent. May be repeated for credit.

**55—Studio Instruction for Majors (1).** Acceptable as a secondary applied subject on B.S. in music education and B.M. degrees. Materials varies according to educational purpose. May be repeated for credit. Prerequisite: instructor's consent.

**91—Recital Attendance for Undergraduate Music Majors (0).** Required attendence of fourteen music events from the Music Department listing. 0 credit, graded on s/u basis, and may be repeated until the total degree requirement is satisfactorily met. Undergraduate music majors only. No tution charged.

**154—Studio Instruction for Non-Majors (1-2).** Acceptable for non-majors only. Prerequisites: audition by examining committee and instructor's consent. May be repeated for credit.

**155—Studio Instruction (1-5).** Credit accepted toward all undergraduate music and music education degrees. May be repeated for credit. Prerequisite: instructor's consent.

**254—Studio Instruction for Non-Majors (1-2).** Acceptable for upperclass credit for non-majors only. May be repeated for credit. Prerequisite: student has passed a 200 level exam, has completed four semesters of 154 or the equivalent, and instructor's consent.

**255—Studio Instruction (1-3).** Accepted as upperclass credit only in Music Education and for Graduate credit on M.Ed. degree. May be repeated for credit. Prerequisites: 8 hours and 4 semesters of 155 or equivalent; audition by committee, and instructor's consent.

**295—Junior Recital (1).** Preparation and presentation of Junior Recital. Appropriate applied music course to be taken concurrently. May be repeated for credit. Each recital must be approved by a committee at least two weeks before the recital.

**340—Individual Instruction in Instrumental and Vocal Techniques (1).** For music teachers needing instruction in secondary instruments or voice. Maybe repeated for credit.

**355—Studio Instruction (1-5).** For B.M. degree, graduate credit on M.A., M.Ed., and Ph.D. degrees. Study of pedagogy in studio class. May be repeated for credit. Prerequisite: 8 hours and 4 semesters of 155; audition; instructor's consent.

**395—Senior Recital (1).** Preparation and presentation of Senior Recital. Appropriate applied music course to be taken concurrently. May be repeated for credit. Each recital must be approved by a committee at least two weeks before the recital.

**455—Studio Instruction (1-5).** Required for graduate credit as major applied study on M.M. degree. Acceptable for graduate credit on M.A., M.Ed., Ed.D., and Ph.D. degrees. Maybe repeated for credit. Prerequisites: audition by committee and instructor's consent.

**495—Graduate Recital (1).** Preparation and presentation of Graduate Recital. Appropriate applied music course to be taken concurrently. May be repeated for credit. Each recital must be approved by a committee at least two weeks before the recital.

## MUSIC-INSTRUMENTAL AND VOCAL TECHNIQUES

**8—Beginning Piano Class (1).** For non-music majors only.

**9—Intermediate Piano Class (1).** For non-music majors only. Continuation of 8.

**10—Piano Class for Proficiency I (1).** Beginning piano for music majors and concentrations only. Prerequisite: instructor's consent.

**11—Piano Class for Proficiency II (1).** Continuation of 10. Prerequisite: instructor's consent.

**12—Elementary Folk Guitar Class (1).** Teaching correct hand position, strum patterns, and chords needed for accompaniment of popular and folk songs.

**15—Beginning Classical Guitar Class (1).**

**17—Beginning Drumset (1).** Fundamentals of the drumset, including an historical survey and biographical sketch of several performers. Also can be used as a pedagogical outline for future music teachers.

**18—Basic Music Skills (2).** Development of music reading and performance skills, including study of pitch, rhythm, notation, structure and interpretation of music. Emphasis on performance. No credit for music majors or minors or students who have completed Music 1 or Music 2.

**51—Voice Class I (1).** Fundamentals of singing: posture, breath support, control, vocalization, concepts of tone qual-

ity, placement and resonance. Literature selected for students with no previous vocal training. Adapted to needs of drama and other interdisciplinary students.

**52—Voice Class II (1).** Continuation of 51. Prerequisite: 51.

**110—Piano Class for Proficiency III (1).** Continuation of 11. Prerequisite: instructor's consent.

**111—Piano Class for Proficiency IV (1).** Continuation of 110. Prerequisite: instructor's consent.

**131—Basic Conducting and Score Reading (2).** To develop the basic psychomotor and score reading skills prerequisite to the art of conducting.

**132—Rehearsal Clinic: String Orchestra Conducting (2).** To develop musical and interpersonal skills requisite for successful rehearsal leadership, emphasizing strategies effective for rehearsal of string ensembles. Prerequisites: 131 and either 140 or 141; or instructor's consent.

**133—Rehearsal Clinic: Choral Conducting (2).** To develop musical and interpersonal skills requisite for successful leadership of a choral ensemble, emphasizing rehearsal strategies and repertoire. Prerequisite: 131 or instructor's consent. May be repeated once for credit.

**134—Rehearsal Clinic: Band Conducting (2).** To develop musical and interpersonal skills requisite for successful rehearsal leadership, emphasizing strategies effective for rehearsal of wind and percussion ensembles. Prerequisites: 131 and one course chosen from 137, 138, 145 and 146; or instructor's consent.

**137—Woodwinds I (1).** Class instruction in clarinet and saxophone; playing and methods/materials for teaching. Taught on a laboratory basis. Meets twice weekly. Prerequisite: major in Music or Music Education.

**138—Woodwinds II (1).** Class instruction in flute and double reeds; playing and methods/materials for teaching. Taught on a laboratory basis. Meets twice weekly. Prerequisite: major in Music or Music Education.

**140—Strings I (1).** Class instruction in violin and viola; playing and methods and materials for teaching. Taught on a laboratory basis. Meets twice weekly. Prerequisite: major in Music or Music Education.

**141—Strings II (1).** Class instruction in violoncello and string bass; playing and methods and materials for teaching. Taught on a laboratory basis. Meets twice weekly. Prerequisite: major in Music or Music Education.

**145—Brass I (1).** Class instruction in trumpet and horn; playing and methods/ materials for teaching. Taught on a laboratory basis. Meets twice weekly. Prerequisite: major in Music or Music Education.

**146—Brass II (1).** Class instruction in trombone, euphonium, and tuba; playing and methods/materials for teaching. Taught on a laboratory basis. Meets twice weekly. Prerequisite: major in Music or Music Education.

**148—Percussion (1).** Class instruction in percussion instruments; playing and methods and materials for teaching. Taught on a laboratory basis. Meets twice weekly. Prerequisite: major in Music Education.

**242—Seminar in String Techniques (1).** In-depth study of publications, philosophies, repertory, grading, specific problems for the string player. May be repeated once for credit. Prerequisites: 140 & 141, or instructor's consent.

**243—Symposium in Instrumental Music (2).** Study of procedures, techniques and literature for variable combinations of wind, string, and percussion classes and the administration of instrumental music programs. Prerequisite: junior standing in Music or Music Education or instructor's consent.

**244—Jazz Methods and Materials (1).** Training and supervised practice in conducting Jazz Ensembles; study of administration, methods, and materials pertinent to teaching Jazz, Rock, and Commercial Music in high school and college. Prerequisites: junior standing or instructor's consent.

**245—Jazz Improvisation (1).** Melodic and harmonic creation on the basis of rhythmic vitality, making use elementary and advanced forms, chord structures, and chromatic alterations. Modal tunes and basic blues progressions are emphasized in class performance. Prerequisites: 244 or instructor's consent.

**246—Marching Band Techniques (2).** Study of techniques and procedures used in the development of field and street marching. Prerequisite: junior standing in Music or Music Education.

**261—Accompanying Skills I (2).** Sight reading, harmonization, transposition, score reading, score reduction and figured bass realization. Prerequisites: 181, 191.

**262—Accompanying Skills II (2).** Continuation of 261 including basic accompanying principles for voice, string, wind and percussion. Prerequisite: 261.

**270—Diction in Singing: Italian (1).** Study of the correct principles and application of Italian diction in singing the solo vocal, operatic and choral literature; the International phonetic alphabet; spoken language drill, study and recitation of representative literature. Prerequisite: sophomore standing.

**271—Diction in Singing: German (1).** Study of the correct principles and application of German diction in singing the solo vocal, operatic and choral literature; the International Phonetic Alphabet spoken language drill, study and recitation of representative literature. Prerequisite: sophomore standing.

**272—Diction in Singing: French (1).** Study of the correct principles and applciation of French diction in singing the solo vocal, operatic, and choral literature; the International Phonetic Alphabet spoken language drill, study and recitation of representative literature. Prerequisite: sophomore standing

**361—Piano Pedagogy Survey I (2).** Study of approaches for teaching young beginning and intermediate student; survey of materials and resources. Prerequisite: instructor's consent.

**362—Piano Pedagogy Survey II (2).** Study of approaches for teaching older, more advanced and class piano students; survey of materials and resources. Prerequisite: instructor's consent.

**363—Piano Pedagogy Laboratory (1).** Supervised instruction in private and class piano . May be repeated once for additional credit. Prerequisites: 361 and 362.

**431—Principles of Singing I (2).** Prerequisite: instructor's consent.

**433—Advanced Choral Conducting (2).** Advanced conducting techniques in the interpretation of choral literature; score analysis. May be repeated for additional credit. Prerequisites: 133 or instructor's consent.

**434—Advanced Instrumental Conducting (2).** Advanced conducting techniques in the interpretation of band and orchestral literature; score analysis. May be repeated for additional credit. Prerequisites: 134 or instructor's consent.

**461—Advanced Piano Pedagogy I (2).** (same as Curriculum and Instruction T461). A survey of materials and techniques of instruction for teaching the young beginner and the intermediate piano student. Prerequisites: graduate standing and instructor's consent.

**462—Advanced Piano Pedagogy II (2).** (same as Curriculum and Instruction T462). A survey of materials and techniques of instruction for teaching class piano, the older beginner, and the advanced student. Prerequisites: graduate standing and instructor's consent.

**463—Piano Pedagogy Internship (1).** Supervised teaching of individual and group lessons. Prerequisite: Music 461 and 462 and instructor's consent. May be repeated once for credit.

**466—Choral Techniques (3).** Study of techniques for developing choral singing and musical interpretation. Prerequisites: graduate standing and instructor's consent.

**469—Band Techniques (3).** To develop individual conducting techniques as well as instrumental ensemble techniques. Emphasis is placed on the learning process to give the student a perspective to improve the techniques of others. Prerequisites: graduate standing and instructor's consent.

## MUSIC-INSTRUMENTAL AND VOCAL REPERTORY

**353—Piano Literature I (2).** Survey of keyboard music from ca. 1600 to ca. 1800. Prerequisites: junior standing and instructor's consent.

**354—Piano Literature II (2).** Survey of keyboard music from Beethoven's time to the present. Prerequisites: 353 or instructor's consent.

**367—Vocal Literature I (2).** Introduction to and study of song literature with emphasis on style and interpretation. Prerequisites: junior standing or instructor's consent.

**368—Vocal Literature II (2).** Continuation of 367. Prerequisites: 367 or instructor's consent.

**453—Piano Repertory I (3).** Study of specific aspects of Baroque and Classical keyboard music. Individual projects in research, analysis and performance. Prerequisites: 355 or instructor's consent.

**454—Piano Repertory II (3).** Study of specific aspects of nineteenth- and twentieth- century piano music. Individual projects in research, analysis and performance. Prerequisites: 453 or instructor's consent.

**465—Choral Repertory (2).** Survey of choral works from selected periods with an emphasis on various aspects of choral performance. May be repeated once for additional credit. Prerequisites: graduate standing and instructor's consent.

**467—Vocal Repertory I (3).** Study of specific aspects of vocal repertory. Individual projects in research, analysis and performance. Prerequisites: 355 or instructor's consent.

**468—Vocal Repertory II (3).** Continuation of 467. Prerequisites: 467 or instructor's consent.

**470—Band Repertory (3).** To survey band and wind ensemble repertoire with emphasis on various aspects of performance practice in order to prepare the student for a career which includes conducting advanced high school and college bands and wind ensembles.

**473—String Instrument Repertory I (1).** Prerequisites: 355 or instructor's consent.

**474—String Instrument Repertory II (1).** Continuation of 473. Prerequisite: 473.

**475—Orchestral Repertory (2).** A survey of orchestral repertory, emphasizing various aspects of performance practice. Appropriate for graduate music conducting majors who wish to pursue a career which includes conducting orchestras at the advanced high school, college, and professional levels. May be repeated. Prerequisite: Conducting experience at the high school or college level and instructor's consent.

## MUSIC-ENSEMBLE COURSES

**41—Instrumental Ensemble (1).** Provides experience in instrumental performance and repertory. Open to all UMC students by audition. May be repeated for credit. Enrollment in Marching Band is limited to a maximum of five semesters. Prerequisite: Audition. Sections are: Philharmonic Orchestra, Chamber Orchestra, Symphonic Band, Wind Ensemble, Concert Band, Varsity, Band, Studio Jazz Ensemble, Jazz Lab Band, Marching Band.

**42—Choral Ensemble (1).** Provides experience in choral performance and repertory. Open to all UMC students. May be repeated for credit. Prerequisite: audition required for all but Choral Union; sections are: University Singers, Chamber Singers, Choral Union, Vocal Jazz Ensemble, Concert Chorale, Men's Chorus, Women's Chorus.

**43—Piano Ensemble (1).** Preparation and performance of standard piano literature for four hands. May be repeated for credit. Prerequisite: instructor's consent.

**46—Chamber Music (1).** Preparation and performance of chamber music. May be repeated for credit. Prerequisites: audition and instructor's consent. Sections are: String Ensemble, Woodwind Ensemble, Brass Ensemble, Percussion Ensemble. Jazz Combo.

**65—Opera Workshop (1-2).** Study, preparation and performance of selected operatic or musical theatre work in staged or concert versions. Open to all UMC students by audition. Credit arranged; may be repeated for credit. Prerequisite: audition and instructor's consent.

**266—Musical Theatre Performance (3).** (same as Theatre 266). A practical study for the actor of theatrical songs through character analysis, lyric interpretation, and movement. A performance course. Prerequisite: instructor's consent.

**341—Instrumental Ensemble (1).** Research, preparation and performance of instrumental compositions. May be repeated for credit. Prerequisites: audition and instructor's consent. Sections and credit hours are: Philharmonic Orchestra, Chamber Orchestra, Symponic Band, Wind Ensemble, Concert Band, Studio Jazz Ensemble, Jazz Lab Band, Marching Band.

**342—Choral Ensemble (1).** Research, preparation and performance of choral compositions. May be repeated for credit. Prerequisites: graduate standing, audition and instructor's consent. Sections are: University Singers, Chamber Singers, Choral Union, Vocal Jazz Ensemble, Concert Choral, Men's Chorus, Women's Chorus.

**343—Advanced Piano Ensemble (1).** Study, preparation and performance of standard piano literature for four hands. May be repeated for credit. Prerequisite: instructor's consent.

**346—Advanced Chamber Music (1).** Study, preparation and performance of chamber music. May be repeated for credit. Prerequisites: audition and instructor's consent. Sections are: String Ensemble, Woodwind Ensemble, Brass Ensemble, Percussion Ensemble, Jazz Combo.

**365—Opera Production (1-2).** Study, preparation and performance of selected operatic or musical theatre works in staged or concert versions. Credit arranged; may be repeated for Credit. Prerequisite: graduate standing, audition and instructor's consent.

# Natural Resources

**The School of Natural Resources**
**124 Anheuser-Busch Natural Resources Building (573) 882-7045**

*The School of Natural Resources does not offer an undergraduate degree in natural resources, but does offer a minor which requires a minimum of 15 credit hours of course work in The School of Natural Resources.*

Six credit hours may be taken in courses numbered below 200:

NATR 60: Ecology & Conservation of Living Resources (3)
NATR 70: Ecology & Renewable Resource Management (3)
NATR 80: Computer Applications in Natural Resources (3)
NATR 160: Contemporary Issues in Natural Resources (3)
FOR 151: Dendrology (4)
SOILS 100: Introduction to Soils (3)
SOILS 106: Soil Science Laboratory (2)
ATM SCI 50: Introduction to Meteorology (3)
ATM SCI 102: Weather Briefing (1)
PRT 10: Introduction to Leisure Studies (3)
PRT 91: Research & Descriptive Statistics for Parks, Recreation and Tourism (3)
PRT 107: Organization of Aquatic Programs (2)
PRT 111: Introduction to Planning and Evaluating Leisure Environments (3)
PRT 115: Consortium Field Experience (2)

The remaining nine hours must be taken in courses numbered 200 or above in the following disciplines: Atmospheric Science; Soil Science; Forestry; Fisheries and Wildlife; and/or Parks, Recreation and Tourism.

### COURSES

**40—Conservation Studies (1).** A one-week field experience in natural resource management issues — soil and water conservation, air pollution, fish and wildlife habitat requirements, importance of forest ecosystems. Limited to high school students who have completed their junior year and taken the PSAT or equivalent.

**60—Ecology and Conservation of Living Resources (3).** Introduction to the principles of resource and conservation describing the foundation of the variety of living resources and conservation practices used to protect and maintain these resources. f.

**70—Ecology and Renewable Resource Management (3).** Introduction to ecological principles and their relationship to resource use and management. Introduces fisheries and wildlife management as a profession. Fisheries and Wildlife majors only. w.

**80—Computer Applications in Natural Resources (3).** Beginning experience with windows, word processing, spreadsheet, database, presentations and Geographic Information Systems (GIS). f,w

**160—Contemporary Issues in Natural Resources (3).** Natural resources, their management, renewability, and sustainability. Discussion of contemporary issues. f.

**201—Topics in Natural Resources (cr.arr.).** Organized study of selected topics. Subjects and credit may vary from semester to semester. f,w,s.

**211—Natural Resource Biometrics (3).** Sampling methods and analysis as applied to a variety of natural resources, including fisheries, range, recreation, forest, water and wildlife. Prerequisites: a course in Statistics or instructor's consent. f.

**300—Problems (cr.arr.).**

**315—Natural Resources Management and Water Quality (3).** Problems arising from non-point sources associated with forest management and mining. Management techniques for controlling erosion, nutrient loss. Examines methodologies for predicting management impacts. Prerequisites: Agronomy 100; Introductory Inorganic Chemistry or instructor's consent. w.

**353—Natural Resource Policy/Administration (3).** Principles of policy formation and analysis; relationship of organizational goals to structure, planning and budgeting. Historical background of present natural resource policies; examines current policy issues. Prerequisites: senior standing or instructor's consent. w.

**380—Resource Practicum (3).** Multidisciplinary planning of a natural resource management program. School of Natural Resources majors only. Prerequisite: senior standing or instructor's permission.

# Naval Science

**College of Engineering**
**105 Crowder Hall (573) 882-6693**
**(888) 686-7682**
**CHAIR** L. A. Hawks
**PROFESSOR** L. A. Hawks
**ASSOCIATE PROFESSOR** M. W. Walker

The Naval Reserve Officer Training Corps (NROTC) was established in 1926 to offer college students the necessary naval science courses required to qualify them for commissions in the Naval or Marine Corps Reserve. Today, NROTC is one of the primary sources of officers for the Navy and Marine Corps.

The NROTC unit at the university was established in 1946. The first NROTC midshipmen graduated in the class of 1950. Since that time, MU NROTC graduates have served the country in a host of Navy and Marine Corps billets attached to the fleets of the U.S. Navy worldwide.

NROTC graduates incur a minimum three- or four-year military obligation and receive starting salaries with allowances of up to $35,000 per year depending on their specialty. Nuclear power candidates receive a $13,000 starting bonus.

- **PROGRAMS** Navy/Marine ROTC students may major in any course of study leading to a baccalaureate degree. Midshipmen also take one Naval Science course for credit each semester, which provides education and training in various aspects of the Navy or Marine Corps. Associated with each course is a leadership laboratory designed to orient the student to the responsibilities of a junior naval officer. NROTC activities include water survival, self-defense, physical fitness, orienteering, aviation, nuclear power indoctrination, pistol/rifle marksmanship and a variety of field trips. Upon graduation, midshipmen are commissioned as Ensigns in the Navy or Second Lieutenants in the Marine Corps.
- **SCHOLARSHIPS** Navy/Marine ROTC offers scholarships of varying lengths available through the NROTC program. High school students applying for four-year scholarships are considered on the basis of a nationwide competition. Application must be made prior to December for the class entering the following fall. The NROTC scholarships pay tuition, costs of textbooks, miscellaneous fees and a tax-free subsistence allowance of $200 per month.

The two-year NROTC program is especially designed for transfer students and for MU students who did not participate in NROTC during the first two years. The program is similar to the programs described above. However, the equivalent of the first two years of naval science training is accomplished during a six-week summer session at the Naval Science Institute, U.S. Naval Base, Newport, RI. Students receive active duty pay while at the Naval Science Institute.

The two-year scholarship program is open to eligible students who have completed two semesters of calculus. Upon successful completion of training at the Naval Science Institute, students are eligible for scholarship benefits at the beginning of their junior year. These benefits are the same as stated for the four-year scholarship program.

- **COLLEGE PROGRAM** College program students are non-scholarship students enrolled in the NROTC program. During the junior and senior year if selected for advanced standing they receive $200 per month subsistence allowance and books. College program students are not required to complete the calculus/physics sequence required of scholarship students and may still compete for assignment to all available officer specialties. While active in ROTC they can compete for and are eligible for scholarships.
- **NURSE CORPS** Students who will matriculate with a baccalaureate degree in nursing may apply for four-year (national competition) or three- or two-year scholarships providing books, fees and tuition as well as $200 a month subsistence. Students will affiliate with the NROTC unit for military indoctrination, but will not be required to take all naval science courses nor academic core courses (calculus, physics, security policy and computer science) unless required by their degree program. Student nurses will participate in

two summer cruises, one in a hospital ship and one in a major naval hospital. Graduates of this program will be commissioned as Ensigns in the Navy Nurse Corps with a four-year active duty obligation.

- **ACADEMICS Freshmen and sophomore naval science students must complete four courses:** Introduction to Naval Science, Naval Ships Systems I and II, and a seminar, Seapower and Maritime Affairs. Navy students take navigation and naval operations in the junior year, and management and naval administration in the naval profession in their senior year.
  **Marine Corps students** take Evolution of Warfare and Amphibious Warfare, in lieu of the sophomore and junior Navy courses listed above.
  **Academic credit for naval science** courses toward a baccalaureate degree is accepted by most MU schools and colleges, and all courses are included in a student's grade point average.
- **MIDSHIPMEN ACTIVITIES** Midshipmen participate in a variety of activities sponsored by the NROTC Unit.
  **MILITARY OBLIGATION** NROTC midshipmen incur no military obligation during their freshman year. This provides a period to allow students to get a better understanding and appreciation of the life of a naval or Marine Corps officer. Once commissioned, they will incur a three-year minimum active duty obligation.

### COURSES

**11—Introduction to Naval Science (2).** This course serves as an introduction to Midshipmen to the organization of the Naval Service, the varied career opportunities available, the long held customs and traditions of the service, and the duties of a Junior Officer.

**123—Seapower and Maritime Affairs (3).** Seminars examine the application of seapower as an instrument of foreign policy by the major nations of the world. Emphasis placed on role of the Navy. w.

**124—Naval Ship Systems I (3).** Ship construction, stability and damage control, basic thermodynamics, the steam cycle and engineering plant, including introduction to gas turbine, diesel and nuclear powered systems. w.

**125—Naval Ship Systems II (3).** Naval weapons systems, their employment and control, including the basic fire control problem, with emphasis on new systems. f.

**155—Evolution of Warfare (3).** Evolution of strategy, tactics, weapons and leadership from earliest beginning through the Vietnam period. Development of military policy, the impact of warfare on the political, social and economic structure of nations. alt. f, even years.

**156—Amphibious Warfare (3).** History and development of amphibious warfare, principles of amphibious warfare techniques; their application in selected examples from modern history, alt. f, odd years.

**235—Marine Navigation (3).** Theoretical and practical application of the principles of marine navigation. Includes fundamentals of dead reckoning, piloting, tides and current, celestial navigation, electronic navigation. f.

**236—Naval Operations (3).** Principles and concepts of naval operations: rules of the road, command and control in naval operations, communications, ASW warfare, international maritime law, and practical solution of relative motion problems. Prerequisite: 235. w.

**248—Administration in the Naval Profession (3).** Administrative aspects of naval leadership including selected current topics in personnel management, materiel management, organization and military law. Prerequisites: 247 or Management 202. w.

# Nuclear Engineering

**College of Engineering**
**E2433 Engineering Building East (573) 882-3550**
**CHAIR** W. Miller
**PROFESSORS** T. Ghosh, S. Loyalka, W. Miller, M. Prelas, R. Tompson, W. Volkert,
**ADJUNCT PROFESSORS** E. Boote, J. Dawson, G. Ehrhardt, M. Glascock, K. Hickey, K. Kutikkad, J. Lattimer, D. Viswanath
**PROFESSORS EMERITI** R. Brugger, R. Carter, A. Emmons, W. Kimel, J. Kunze

**DEGREES** MS and PhD in nuclear engineering; MS in health physics or medical physics options

Nuclear engineering is an interdepartmental program offering graduate degrees only. However, the program has a number of courses that are available to undergraduate students as upper-division, technical electives. These courses are of particular interest to undergraduate students interested in nuclear power, health physics and nuclear medicine.

Nu Eng 302: Safe Handling of Radioisotopes (1)
Nu Eng 303: Radiation Safety (3)
ChEng/NuEng 306: Advanced Engineering Math (3)
EE/MAE/Nu Eng 315: Energy Systems and Resources (3)
EE/MAE/Nu Eng 346: Introduction to Nuclear Reactor Engineering (3)
EE/MAE/Nu Eng 382: Lasers and Their Applications (3)
Nu Eng 391: Radiation Detection and Measurements (3)

**With appropriate approval, undergraduates also may select:**
Nu Eng 402: Nuclear Fuel Cycles (3)
Nu Eng 404: Nuclear Reactor Lab (3)

Several special research facilities and laboratories are available to students. The University of Missouri Research Reactor (MURR), a 10-million-watt research reactor, has the highest steady-state neutron flux of any university reactor in the United States. Other facilities include a 150-curie Cobalt-60 facility, a mirror plasma machine, Macintosh and IBM personal computers, nuclear instrumentation devices and the Particulate Systems Research Center Laboratory.

### COURSES

**300—Special Problems (1-5).**

**301—Topics in Nuclear Engineering (2-5).** Current and new developments in nuclear engineering. Prerequisite: instructor's consent.

**302—Safe Handling of Radioisotopes (1).** Introduction of methods and procedures for safe handling of radioisotopes in the research laboratory. Intensive lecture and laboratory training sessions designed for persons planning to use radioisotopes at the University. Prerequisite: instructor's consent.

**303—Radiation Safety (3).** Types and origins of radiation; radiation detection and measurement; radiation interactions; shielding; dose calculations; federal, state and local regulations; and procedures for safe uses of radiation. Laboratory experiments in radiation measurements and protection. Prerequisite: college physics, calculus based.

**305—Survey of Nuclear Engineering (3).** Introductory topics in nuclear engineering. Atomic and nuclear physics; nuclear reactor principles under steady-state and transient conditions; heat removal; shielding; instrumentation; power generation; fusion. Prerequisite: Physics 124. Concurrent with Mathematics 304.

**306—Advanced Engineering Math (3).** (same as Chemical Engineering 306).

**315—Energy Systems & Resources (3).** (same as Electrical Engineering 315, Mechanical & Aerospace Engineering 315).

**328—Introductory Radiation Biology (3).** (same as Biological Sciences 328, Radiology 328, Veterinary Medicine & Surgery 328).

**341—Nuclear Chemical Engineering (3).** Principles and processes of importance in the field of nuclear technology.

**342—Advanced Health Assessment for Peadiatric Nursing Practice (3).** Comprehensive assessment of children through adolescence including those with significant health and/or developmental deviations using advanced diagnostic reasoning process. Emphasis on health history, cultural diversity, differentiation, interpretation and documentation of findings.

**346—Introduction to Nuclear Reactor Engineering I (3).** (same as Mechanical & Aerospace Engineering 346 and Electrical Engineering 346).

**349—Nuclear Engineering Materials (3).** Properties of materials for reactor components; radiation damage and corrosion; metallurgy of reactor materials. Prerequisites: upper division or graduate standing in Physical Sciences or Engineering, or instructor's consent.

**353—Introduction to Fusion (3).** Basic plasma physics, principles of thermonuclear fusion, plasma confinement and heating, and devices. Prerequisites: senior standing in Engineering or Science or instructor's consent.

**375—Introduction to Plasmas (3).** (same as Electrical Engineering 375, Mechanical & Aerospace Engineering 375).

**379—Particulate Systems Engineering (3).** An introduction to natural and engineered particulate systems. Prerequisites: Chemical Engineering 234 or Mechanical and Aerospace Engineering 299 or equivalent.

**382—Lasers and Their Applications (3).** (same as Electrical & Computer Engineering 382, Mechanical & Aerospace Engineering 382).

**391—Nuclear Radiation Detection (3).** Principles and application of radiation detectors and analyzers: ionization, Geiger-Muller, proportional, liquid and solid scintillation, semiconductor, pulse height analyzers, coincidence circuits, data reduction, tracer applications, activation analysis. Lectures, laboratory. Prerequisites: senior standing or instructor's consent.

**400—Problems (1-6).** Supervised investigation in nuclear engineering to be presented in the form of a report.

**401—Advanced Topics in Nuclear Engineering (3).** Advanced developments in nuclear engineering. Prerequisite: instructor's consent.

**402—Nuclear Fuel Cycle (3).** Covers the nuclear fuel cycle from mine through enrichment, fuel element burnup reactor physics, chemical reprocessing, waste disposal, with special emphasis on the newer proliferation-resistant fuel cycles. Prerequisites: 346 or 305 and instructor's consent.

**403—Applied Topics in Medical Physics & Health Physics (1-6).** Directed observations and experience in scientific aspects of daily operations in nuclear medicine, diagnostic radiology, radiotherapy and health physics. Prerequisite: departmental consent.

**404—Nuclear Reactor Laboratory I (3).** Application of reactor physics principals to operation of and experiments with the University of Missouri Research Reactor. Neuton activation analysis, instrumentation, reactivity evaluation. Prerequisites: 346 or 411.

**405—Nuclear Reactor Laboratory II (3).** Advanced experiments to measure diffusion length, Fermi age, material buckling, transfer function, neutron spectrum and other reactor characteristics. Reactor simulation with an analog computer. Prerequisite: 355, 411 or instructor's consent.

**408—State Variable Methods in Automatic Control (3).** (same as Chemical Engineering 408, Electrical & Computer Engineering 408, Mechanical & Aerospace Engineering 408).

**409—Interaction of Radiation with Matter (3).** Theory/

applications of radiation interaction processes. Reviews nuclear physics concepts; radioactive decay; sources/ spectra of ionizing radiation; collision mechanisms for changed particles, electromagnetic radiation, neutrons for interaction with matter. Prerequisite: Entrance requirements.

**410—Seminar (1).** Reviews of investigations and projects of importance in nuclear engineering.

**411—Nuclear Reactor Theory I (3).** Nuclear reactions; nuclear fission; introduces neutron transport; diffusion and slowing down of neutrons; steady-state homogeneous and heterogeneous reactor theory. Prerequisites: 347 or instructor's consent.

**412—Nuclear Reactor Theory II (3).** Linear and non-linear reactor kinetics; perturbation theory; temperature and fission product effects; control rod theory; transport theory. Prerequisites: 411 or 346 & 347.

**421—Advanced Radiation Detection Electronics (3).** Principles of radiation pulse analysis with emphasis on applications. Radiation detection devices; amplifying, shaping and discrimination circuits; nuclear pulse analysis; automated data analysis systems. Lectures and lab. Prerequisites: 346, 391 or instructor's consent.

**429—Radiation Dosimetry (3).** Basis and applications of conventional and microscopic radiation dosimetry. Dose concepts and quantities; biological dose-response models; dose measurement principles; photon, charged particle, and neutron dosimetry. Prerequisite: 409. Recommended: 328.

**432—Nuclear Thermal Hydraulics and Safety (3).** Engineering topics from reactor heat transfer and thermal stresses, fuel cycle analysis, power plant thermodynamics, shielding, and reactor safety analysis. Prerequisites: 411 or 346, or instructor's consent.

**434—Fracture Mechanics I (3).** (same as Mechanical & Aerospace Engineering 434).

**435—Physics of Diagnostic Radiology I (3).** Principles and applications of X-ray production and interactions. Images production concepts including X-ray film, intensifying screens, grids, fluoroscopy, image intensification and television monitors. Image quality analysis and assessment. Prerequisites: 409 or equivalent or instructor's consent. w.

**439—Clinical Physics in Radiotherapy (3).** Principles and applications of radiation producing units, exposure and dose measurements, and calibration. External beam physics parameters and application to fixed field and rotational field treatment planning. Prerequisite: 409 or equivalent or instructor's consent.

**444—Fracture and Fatigue Prevention in Engineering Practice (3).** (same as Mechanical & Aerospace Engineering 444).

**450—Superconductivity and Its Applications (3).** (same as Mechanical & Aerospace Engineering and Electrical Engineering 450). Phenomenology and theory of superconductivy; cryogenic practice; metallurgy of superconducting elements, alloys and compounds. Applications, present and prospective. Graded on an S/U basis only.

**451—Computational Methods of Reactor Analysis (3).** Applies numerical analysis and digital computation to topics from multigroup diffusion theory, transport theory, reactor kinetics, reactor thermal hydraulics, radiation shielding, reactor safety. Prerequisites: 304, 411, or Mathematics 307 or Mathematics 323.

**452—Ultrasound and Magnetic Resonance Imaging (3).** The physical principles of MRI and ultrasound including clinical instrumentation, artifacts in images, biological effects and quality control. Images obtained with both techniques will be presented. Prerequisite: 391, 409, 306 or equivalent.

**453—Advanced Fusion Theory (3).** Plasma stability theory, charged particle diffusion, slowing down of charged particles, interaction of radiation with matter, direct energy conversion using charged particles, and engineering considerations. Prerequisites: 353 and 375 or Physics 445 or instructor's consent.

**454—Clinical Physics of Nuclear Medicine (3).** Physical principles, statistics of radionuclide decay and highlights into the most current instrumentation to utilize invivo radionuclides for both diagnostic imaging and therapy. Also includes brachy therapy. Prerequisite: 306, 310, 409 or equivalent.

**455—Growth, Characterization & Appl. of Diamond & Related Materials (3).** This course explores the development of diamond films. Discussion of other wide band-gap materials are covered. Topics include Chemistry of Diamond Growth, Thermodynamics, Nucleation, Methods of Growth, Methods of Impurity Control, Characterization and Modification, Doping, and Applications.

**461—Neutron Transport Theory (3).** The Boltzmann equation; general properties and solution; numerical methods of solving the transport equation; neutron thermalization and neutron spectra. Prerequisites: 412; Mathematics 305, 307, or instructor's consent.

**471—Radiation Protection (3).** Theory and applications of radiation protection and health physics. Radiation dosimetry methods and calculations, shielding evaluations, equipment surveys and inspection, environmental monitoring, radiation standards and regulations and administration presented. Prerequisites: 303 & 328.

**490—Research (cr.arr.).** Independent investigation in nuclear engineering to be presented as a thesis. Graded on an S/U basis only.

# Nursing (SCHOOL)

*For additional information, see the School of Nursing in the front of this catalog.*

**PROFESSORS** V. Conn, L. Ganong, M. Rantz

**ASSOCIATE PROFESSORS** J. Armer, R. Johnson, A. Kuehn, P. LeMone, K. Libbus, R. McDaniel, D. Porock, E. Porter, R. Porter, M. Rantz

**ASSISTANT PROFESSORS** M. Aud, J. Banks-Wallace, L. Bullock, K. Burks, D. Finfgeld, V. Grando, C. Russell, D. Wipke-Tevis

**PROFESSOR OF CLINICAL NURSING** K. Marek

**ASSISTANT PROFESSORS OF CLINICAL NURSING** C. Bausler, S. Farrah, D. Gayer, S. Mustapha

**INSTRUCTORS OF CLINICAL NURSING** J. Baker, J. Bostick, C. Brooks, K. Chelini, C. Davis, L. Evans, V. Gorsegner, C. Grider, B. Hanson, A. Heine, S. Johnson, S. Kist, L. Kolostov, D. Mendenhall, A. Merrell, K. Metcalf-Wilson, K. Moore, L. Pennington, B. Traudes, M. Whitman, C. Yonkman

**CLINICAL INSTRUCTORS** S. Austin, D. Ketter, K. Knipfer, L. Popejoy, S. Revelle

**DEAN & PROFESSORS EMERITI** P. Drennan, T. Sullivan

**PROFESSORS EMERITI** E. Geden, V. Hagemann, S. Taylor

**ASSOCIATE PROFESSORS EMERITI** V. Bzdek, I. Fleeman, M. Manderino, V. Rhodes

**ASSISTANT PROFESSORS EMERITI** R. Benson, K. Kaiser, R. A. Kroth

**DEGREES** BSN, MS and PhD in nursing

## COURSES

**40—Advisory Seminar for Nursing (1).** Orientation to the undergraduate nursing program, professional role development, and introduction to the professional milieu. Graded on an S/U basis only. f,w.

**90—Nursing as a Profession (3).** Introduces the structure of nursing knowledge and explores professional nursing role characteristics from historical, ethical, legal, economic, professional, occupational and social perspectives. Examines nursing as subsystem of the health care system. Prerequisite: sophomore standing.

**96—Introduction to Nursing Science (3).** Introduces nursing as a science from the perspective of know- ledge development. Structures nursing knowledge from a self- care deficit nursing theory perspective. Presents nursing re- search as a method of knowledge development and validation. Prerequisite or concurrent: Statistics.

**110—Methods of Assisting I (3).** Introduces methods of assisting people with self-care needs across the lifespan. Includes basic nursing techniques and therapeutic nursing interventions for each methods of assisting Concurrent with 155.

**112—Methods of Assisting II (2).** Expands methods of assisting people with self-care needs across the lifespan. Includes selected complex nursing techniques and therapeutic nursing interventions for each method of assisting. (Prerequisite: 110 and 155.

**130—Pathophysiology and Therapeutics (5).** Examines alterations in and interferences with universal self-care requisites that occur as a result of physiologic deviations in health. Developmental concepts and treatment modalties are integrated throughout course content. Prerequisite: Foundational courses except Pharmacology.

**155—Foundations for Nursing: Physical Assessment & the Nusing Process (6).** Introduces concepts of health, well-being, and illness. Applies self-care deficit nursing theory to determine the health status of individuals across the life-span. Analyzes effects of basic conditioning factors on health will-being. Prerequisite or concurrent: 110, 130, Pharmacology.

**158—Concepts of Nursing Science (5).** Examines the structure of nursing knowledge; nursing research; nursing role form historical, ethical, legal, economic, professional and social perspectives; concept of health, well-being and illness. Applies S-CDNT to populations and develops assessment skills. Prerequisite: departmental consent.

**160—Nursing of Women and Newborns (5).** Examines family and reproductive health concepts. Applies nursing process to promote health and well being of newborns, mothers and fathers. Nursing management of persons with perinataland gynecologic concerns. Explores contemporary social and ethical issues surrounding reproduction. Prerequisite: 155, Pharmacology.

**162—Nursing of Adults I (7).** Application of nursing process to care for adults with chronic physiological health deviations. Knowledge of psychosocial health factors and developmental states will be incorporated in designing individualized nursing systems in a variety of settings. Prerequisites: 130, 155, Pharmacology 204.

**172—Nursing of Children (5).** Nursing of children with acute and chronic health and developmental deviations. Self-care and dependent care abilities are emphasized. Content includes health promotion for infants and children. Prerequisites: 112 and 160.

**173—Mental Health Nursing (6).** Behavioral, social, interpersonal, and systems dimensions of psychosocial nursing. Emphasis is on therapeutic use of self in designing and implementing nursing systems for clients throughout the life cycle with mental health deviations. Prerequisite: 155.

**174—Nursing Ethics and Law (3-4).** Analyzes clinical nursing situation using ethical principles and decision making models. Examines the basic doctrines and principles foundational for providing legally sound nursing practice. Prerequisites: 110 and 155.

**180—Communication and Computer Skills (1).** Introduces RN students to MU and MU Sinclair School of Nursing. Provides education in essential competencies needed for

success in the RN-BSN Option including writing skills, computer literacy, library and Internet research. Prerequisite: Clinical Major.

**181—Role Transitions (3).** Explores returning-to-school issues important to adult learners. Links previous basic nursing courses with baccalaureate courses and begins building new knowledge on prior nursing education. Co-requisite: 180.

**182—Nursing Theory and Research (3).** Addresses nursing research as means of acquiring and refining knowledge. Research utilization to impact nursing practice is addressed. Examines development and utilization of nursing theory, primarily Self-Care Deficit Nursing Theory. Prerequisite: 180. Co- or Prerequisite: 181.

**183—Health Assessment and Pathophysiology (4).** Examines biologic basis for selected commonly occurring diseases throughout the life-span. Considers behavioral, environmental, genetic influences on pathogenesis. Study and performance of health assessments with application of findings to adults and children. Prerequisites: 180, 181, 182.

**184—Nursing Issues/Leadership and Management (3).** Examines leadership, management, and organizational theories in relation to resource management and effective delivery of nursing to sets of clients. Analyzes societal and political issues and trends related to nursing and contemporary health care. Prerequisite: 162.

**185—Evidence-Based Nursing Practice (4).** Concepts of evidence-based nursing practice are applied to selected clinical situations. Care of aging person and patient safety issues are included. Clinical application experiences are designed to translate research to practice. Prerequisites: 180, 181, 182. Co- or prerequisites: 183.

**186—Nursing of Adults II (7).** Application of nursing process to care for adults with acute physiological health deviations. Leadership and management principles are integrated in delivering care for sets of clients. Prerequisites: 162; prerequisite or concurrent: 184.

**188—Nursing in Communities (6).** Nursing care of persons in the community based on nursing knowledge and public health concepts; care of individuals, families, and groups. Uses concepts and application of nursing theory and relevant research. Final semester, capstone experience.

**190—Individual Study (cr.arr.).** Independent study for qualified students in specific areas of interest in nursing under faculty guidance. Prerequisite: instructor's consent. f,w,s.

**300—Problems (1-3).** Guided readings, special study, and/or a practicum in an area of the student's interest or an area which the student needs to strengthen. Prerequisite: instructor's consent. f,w,s.

**301—Special Topics in Nursing (1-3).** Specialized topics in advanced nursing not available through regularly offered courses.

**302—Cultural Expeditions in Rural Nursing (3).** Directed field experiences in a variety of rural settings exploring local customs and cultural/ethnic diversities influencing health care delivery. Prerequisite: 162 or instructor's consent. Graded on S/U basis only.

**303—Human Health and the Environment (3).** Examination of relationships between human health and global environmental quality. Overview of assessing, communicating, and managing environmental risks within the framework of public health's core functions.

**305—Women's Health (3).** (same as Women's Studies 305). A survey of international and domestic women's health issues; considers historical antecedents and specific effects of socio-cultural variables and economic development on women's health in developing and developed nations.

**310—Theories in Nursing (3).** Analysis, application and evaluation of nursing theories with special emphasis on Orem's Self-Care Deficit Nursing Theory. Metaparadigm, grand and middle range theories as well as theory development will be examined.

**311—Trends and Issues in Nursing (3).** Issues and trends involving professional nursing practice are examined from socioeconomic, organizational, legal and ethical perspectives. Past, present and future roles and practice of nurses are examined.

**314—Physiological Concepts for Nursing (3).** Focus on biophysiological knowledge that contributes to an understanding of health deviations and related nursing interventions. Common physiological concepts with clinical relevance for the advanced practice nurse are explored. Prerequisite: current enrollment in graduate school.

**340—Clinical Pharmacology (3).** Emphasis on drug therapy management of various client populations in the primary care setting.

**341—Advanced Health Assessment and Promotion (3).** Health assessment techniques are expanded. Introduces concepts of well-being, assessment of health risk factors and illness behaviors across the lifespan. Emphasizes design of nursing systems. Prerequisite: BSN or instructor's consent.

**381—Teaching Nursing (3).** Principles and methods of teaching, evaluation, and curriculum construction in undergraduate nursing education. Prerequisite: Educational & Counseling Psychology A301 or equivalent.

**390—Research Methods in Nursing (3).** Rationale of scientific research; research methodology pertinent to nursing problems; hypothesis formulation, selection of appropriate design, instruments and analysis. Prerequisite: 310, concurrently and appropriate statistics.

**400—Problems (1-4).** Guided readings, special study and/or a practicum in an area of the student's interest or in an area which the student needs to strengthen. Prerequisites: instructor's consent. f,w,s.

**401—Topics in Advanced Clinical Nursing (3).** Specialized topics in advanced clinical nursing not available through regularly offered courses.

**402—Primary Care for Women (3).** Focuses on the etiology, symptomatology, diagnosis, and management of primary health care problems as they relate to women from adolescence through the climacteric. Co-/Prerequisite: 341 or instructor's consent. w.

**411—Epidemiology for Public Health Practice (3).** Explores important concepts of epidemiology, including distribution and determinants of disease. Focus will be on the public health/population based practice. Prerequisite: Statistics 292 or equivalent or faculty permission.

**412—Family Dynamics and Intervention (3).** (same as Human Development and Family Studies 412). Theories of family function and dysfunction; techniques of assessment; models of family intervention. Practicum with selected families. Prerequisite: 310 (Nursing students).

**415—Conceptual Structure of Nursing (3).** Conceptualization and theoretical analysis of nursing phenomena; critical evaluation of nursing theories. Prerequisite: 310.

**416—Nursing Practice Theories and Models (3).** Development of practice theory, and practice models from the perspective of various populations and other theories; development of procedures and protocols. Prerequisites: 310, 415

**417—Foundations in School Health Nursing (3).** The student will learn the public health principles of leadership, collaboration, advocacy, communication and policy formation as they relate to the school setting. Prerequisite: 310.

**418—Special Health Care Needs of Children in the School Setting (3).** The student will learn to assess factors impeding a child's learning, determine services needed, so the child can experience academic achievement. Prerequisite: 310.

**424—Clinical Manage. in Primary Health Care I: Adults Through Aging (3).** Health maintenance of adults and older adults. Design, implementation, evaluation of nursing management of acute and chronic problems. Integrated clinical practicum. Issues of clinical management within advanced practice role. Prerequisite: 314, 340, 341.

**425—Clinical Manage. in Primary Health Care II: Adults through Aging (3).** Continuing emphasis on nursing management of selected acute and chronic problems. Clinical preventive services; integrated clinical practicum. Nurse practitioner role within changing health care system. Prerequisite: 424.

**426—Primary Health Care Management: Newborn Through Adolescence (3).** Infant-child health maintenance/promotion. Nursing management of common childhood illness, health maintenance/promotion. Nursing management of common childhood illness, behavioral, developmental problems. Advanced knowledge of human growth, development, fawmily dynamics, community resources, collaborative relationships. Integrated clinical practicum. Prerequisites: 314, 340 and 341.

**427—Primary Health Care Mangement: Reproductive and Sexual Health (3).** Reproductive, sexual issues, adolescence through aging. Design, delivery, evaluation of nursing management of women, reproductive health care of men. Stresses personal health promotion. Prerequisite: 341, 425 or instructor's consent.

**428—Primary Health Care Management: Aging Indviduals and Families (3).** Health promotion, wellness, concepts of normal aging. Design, delivery, evaluation of primary health care nursing management of problems of aging individuals, families. Prerequisites: 341 or instructor's consent.

**429—Aging Individuals (3).** Continuing emphasis on health promotion, wellness, concepts of normal aging. Nursing management of complex health care problems of individuals and families, late middle age, aging. Prerequisite: 428.

**431—Concepts for Specialization in Public Health Nursing (3).** Key concepts fundamental to specialization in public health nursing, including core public health functions. Emphasis upon integrating public health science, nursing theory, and methodological/leadership skills. Pre- or corequisite: 310.

**432—Community-Based Public Health Interventions (4).** Assessing and diagnosing health-related needs of at-risk and vulnerable populations. Evaluating outcome-based research. Clinical practice implementing a public health intervention. Pre-requisites: 431, Family & Community Medicine 420, Statistics 292. Pre or Co- requisite: 390

**433—Developing and Evaluating Public Health Programs (3).** Designing and implementing cost-effective programs in public health agencies serving specific geographic jurisdictions. Controversies associated with specifying and appraising outcomes of public health programs. Prerequisite: 432.

**438—Advanced Public Health Theory (3).** Explores concepts of public health with a focus on the advanced practice nurse in population-based/primary care practice; core public health functions will be addressed at three service levels—the aggregate, the family, and the individual. Prerequisite: 310.

**450—Clinical/Scholarly Project (1-3).** Design, implement and evaluate nursing projects derived from theory, including written report with explanation or justification to support the empirical and/or theoretical basis for the project. Prerequisites: 310, 390, graduate statistics. Graded on a S/U basis only. f,w,s.

**452—Diagnostics and Psychopharmacology for Mental Health Nurses (3).** Emphasis is on the neurobiologic basis and diagnosis of mental health problems and advanced nursing management of psychiartric conditions using pharmaceutical agents. Prerequisites: 340, 341, 414.

**454—Brief Individual Psychotherapy for Mental Health Nurses (3).** Develops advanced skills in assessment, treatment, and follow- up evaluation of individuals experiencing acute mental health problems. Emphasizes brief psychotherapy based on frameworks from nursing and other disciplines. Prerequisites: 310 or concurrent. w

**456—Health Promotion and Restoration in Mental Health Nursing (3).** Application of group and behavioral methods in mental health prevention, promotion, maintenance, and restoration. Designing, implementing, and evaluating mental health promotion groups and social skills training programs. Prerequisite: N310 or concurrent.

**458—Mental Health Nursing Interventions for Families (3).** Application of nursing and family theories in advanced nursing management of families experiencing a variety of problems. Emphasis on designing, implementing, and evaluating advanced nursing interventions for families. Prerequi-

sites: 454 or instructor's consent.

**461—Case Management for Advanced Nursing Practice (3).** Examines case management as nursing care delivery system/ interdisciplinary model of health care. Emphasizes coordination of health care across diverse setting with individuals/families at risk for poor health outcomes. Pre or Corequisite: 310.

**462—Knowledge & Skills f/Adv. Practice w/Selected Patient Populations (3).** Readings for this course allow the student to develop depth and breadth of knowledge and skills for advanced practice nursing with a selected patient population. Pre/corequisite: 314.

**463—Advanced Clinical Practice with Selected Patient Populations (3).** 1) didactic, 2) clinical. Focus is support/ restoration of selected patient populations. Emphasizes identifying patient problems-nursing interventions requiring advanced knowledge. Explores clinical management of advanced nurse practice role. Pre/corequisites: 341, 461.

**464—The Continuum of Care (3).** 2) didactic 1) clinical. Examines settings wherein care is given, focusing on impact of setting on patient, delivery models/personnel providing care. Focuses on role/structure of care in various setting. Pre/Corequisite: 461.

**470—Research Practicum (1-3).** Selected independent research activities in conjunction with ongoing research programs of faculty. Written report required. Prerequisites: 390, graduate stantistics, instructor's consent. Graded on S/U basis only. f,w,s.

**472—Clinical Management of Patient Care (3).** Course for nurse managers at management level with complete responsibility for limited areas in nursing. Focuses on management of nursing units demonstrating quality nursing practice. Prerequisite: 471 or instructor's consent.

**478—Nursing Administration (3).** Examines organizational/ leadership theories and their application to nursing service administration. Selects concepts, theories and paradigms to identify/investigate current nursing administrative practices. Role specifics of a nurse administrator are examined. Prereq-uisite: 472 or instructor's consent. f.

**479—Nursing and Health Policy (3).** Exploration and critical evaluation of the role of nursing and and nurse leaders/ scholars in health policy development in response to health and social needs of the public. Prerequisites: graduate standing, Nursing 311 or equivalent, and permission of instructor.

**480—Advanced Clinical Nursing Practicum (3-6).** A preceptored or faculty-guided intensive clinical experience focused on synthesis and application of previous theory and clinical courses and development of an autonomous nursing practice role. Prerequisites: 390, and instructor's consent. Graded on S/U basis only.

**481—Teaching Practicum (3).** Participation in application of principles and methods of teaching, learning, and evaluation to the education of nursing students. Prerequisite: 381. S/U graded only. w.

**482—Nursing Administration Practicum (3).** The practicum and seminar minimizes the gap between knowledge about nursing administration and producing a viable solution in an action context. Examination of theories and application to nursing service. Prerequisite: 478. w.

**485—Seminar (cr.arr.).** Course content varies. Prerequisite: graduate standing or instructor's consent. May be repeated to a maximum of six hours.

**486—Advanced Research Practicum in Nursing (1-6).** Supervised experience in nursing research before candidacy. Activities designed by student, faculty mentor, and program committee based on student's research expertise, substative focus, and probable research trajectory. Includes seminar. Prerequisite: 416, 491, 495, or 496; instructor's consent. Graded on S/U basis only.

**489—Health Policy Practicum (3).** Field experiences for exploring and critically evaluating health policy shaping activities of nurse leaders/scholars as they respond to health and social needs of the public. Mentored practicum. Prereq-uisites: 479 and permission of instructor.

**490—Research in Nursing (cr.arr.).** Original investigation for presentation as thesis or dissertation. Prerequisites: graduate statistics, instructor's consent. Graded on S/U basis only. f,w,s.

**491—Advanced Research Methods in Nursing (3).** Study of explanatory and predictive quantitative designs in nursing science. Designs may include nested, double-blind, time series, casual models, retrospective cohort. Use of secondary databases will be explored. Prerequisite: 390, Advanced Statistics.

**495—Nursing Phenomena I (3).** Examines the following selected qualitative research approaches appropriate for the study of nursing phenomena and the extension or modification of scientific knowledge so as to be relevant to nursing: case study research methods, verbal qualitative approaches, and nonverbal qualitative approaches. Prerequisite: 390.

**496—Nursing Phenomena II (3).** Examines techniques used to estimate the various types reliability and validity of psychological and biological measures of nursing phenomena as well as the appropriate use of existing measures. Prerequisites: 390, 495.

**497—Advances in Health Care Systems (3).** Guided in-depth exploration, analysis, and evaluation of selected nursing and other current literature in health care systems. Prerequisite: 415, doctoral standing or instructor's consent.

**498—Advances in Health Restoration and Support (3).** Guided in-depth exploration, analysis, and evaluation of selected nursing and other current literature in health restoration and support. Prerequisite: 415, doctoral standing or instructor's consent.

**499—Advances in Health Promotion and Protection (3).** Guided in-depth exploration, analysis, and evaluation of selected nursing and other current literature in health promotion and protection. Prerequisite: 415, doctoral standing or instructor's consent.

**650—Philosophy of Sciece in Nursing (3).** Telecommunications from UMKC to Columbia and St. Louis. Prerequisite: PhD nursing students or permission of instructor.

# Nutritional Sciences

**College of Human Environmental Sciences**

**Nutritional Sciences Office**
**217 Gwynn Hall**
**(573) 882-4526**
**Fax: (573) 882-0185**
**E-mail: sunder@missouri.edu**
**http://web.missouri.edu/~nutsci/**

**Dietetics and Exercise Physiology Office**
**103 Rothwell**
**(573) 882-4136**
**Fax: (573) 884-4885**

**CHAIR** R. Sunde
**DIRECTOR OF UNDERGRADUATE EDUCATION** R. MacDonald
**DIRECTOR OF GRADUATE EDUCATION** *K. Fritsche
**DIRECTOR OF THE COORDINATED PROGRAM IN DIETETICS** C. Peterson
**PROFESSORS** L. Hillman, R. MacDonald, R. Sunde, T. Thomas, G. Weisman
**ASSOCIATE PROFESSORS** R. Dowdy, D. Eide
**ASSISTANT PROFESSORS** P. Hinton, C. Peterson, M. Petris, E. Rogers, M. Raedeke
**INSTRUCTORS** T. Lafontaine, R. Sharp
**PROFESSORS EMERITI** G. Amick, J. Flory, M. Flynn, E. Hensley, L. Hoover, R. Lutz, M. Mangel, A. Moore, J. Typpo, B. Tuthill, C. Weaver
**ASSISTANT PROFESSORS EMERITI** T. Kintner, M. McDonald



**Nutritional Sciences Graduate Program*

**DEGREES** BS in nutritional sciences (Human Environmental Sciences), MS and PhD in nutrition, MA and PhD in exercise physiology

**DEPARTMENTAL REQUIREMENTS** The Department of Nutritional Sciences administers the BSHES in nutritional sciences degree program, which offers designated emphasis areas in medical dietetics, nutrition and fitness, and nutritional sciences. Students are encouraged to meet with an adviser to clarify their goals, to decide the best emphasis area for their particular circumstances and to select specific courses to meet the requirements and prerequisites of their specific program. Students must complete all the general education requirements of the College of Human Environmental Sciences.

These offices also administer the Nutritional Sciences Graduate Program, which resides in the colleges of Human Environmental Sciences and Agriculture, Food and Natural Resources, and which offers MS and PhD degrees in nutrition. These offices also administer the Exercise Physiology Graduate Program, which resides in the College of Human Environmental Sciences and which offers MA and PhD degrees in exercise physiology.

**MEDICAL DIETETICS** The Coordinated Program in Dietetics combines academic course work with supervised practice in health-care settings. Graduates are eligible to write the Registration Examination for Dietitians, which is required to obtain the RD (Registered Dietitian) credential. The program is accredited by the Commission on Accreditation for Dietetics Education of the American Dietetic Association.

Enrollment is limited. To apply, students must have completed (or be enrolled in) prerequisite courses and have a minimum 2.5 GPA. Application deadline is the second Monday in February each year. Application materials and selection criteria are available from the program director, Dr. Catherine Peterson, 103 Rothwell.

**Biological and Physical Sciences** (23)
Biochemistry (3)
General Biology and Laboratory (5)
General Chemistry and Laboratory (5)
Organic Chemistry and Laboratory (5)
Physiology (5)
**English and Communications** (6)
**Exposition and Argumentation** (3)
**Humanities and Fine Arts** (9)
**Introduction to Speech Communication** (3)
**Math and Statistics** (6)
College Algebra (3)
Statistics (3)
**History and Political Science** (3)
**Food Science** (12)
FS 111: Principles and Science of Food Preparation (5)
FS 172: Elements of Food Microbiology (3)
FS 309: Food Chemistry and Analysis (4)
**Nutritional Sciences** (53)

NS 228L: Foodservice I (3)
NS 228P: Foodservice I SPE (1)
NS 234: Human Nutrition I (3)
NS 236L: Nutrition Assessment (3)
NS 236P: Nutrition Assessment SPE (2)
NS 237L: Nutrition Therapy I (3)
NS 237P: Nutrition Therapy I SPE (3)
NS 239L: Teaching & Counseling Techniques (2)
NS 239P: Teaching & Counseling Techniques SPE (1)
NS 245: Nutrition through the Life Span (3)
NS 259L: Community Nutrition (2)
NS 259P: Community Nutrition SPE (1)
NS 313L: Research in Dietetics (2)
NS 313P: Research in Dietetics SPE (1)
NS 328L: Foodservice II (1)
NS 328P: Foodservice II (2)
NS 334: Human Nutrition II (3)
NS 338L: Nutrition Therapy II (2)
NS 338P: Nutrition Therapy II (4)
NS 339: Issues in Dietetics (1)
NS 340P: Practice of Dietetics SPE (10)
**Additional Requirements (5)**

**NUTRITION AND FITNESS** Graduates of this program will be prepared for employment in the fitness and health promotion area or graduate studies in exercise science. This is a rapidly expanding area with opportunities in corporate and commercial industries, government and non-profit sectors. Typical employment responsibilities might include fitness assessment, nutrition education, health promotion, exercise supervision and program administration.

For additional information see director of undergraduate education Dr. Ruth MacDonald, or the program office, 217 Gwynn Hall.
**Biological and Physical Sciences** (28)
General Biology and Laboratory (5)
General Chemistry and Laboratory (5)
Organic Chemistry and Laboratory (5)
Biochemistry (3)
Physiology (5)
Anatomy Lecture and Laboratory (5)
**English and Communications** (6)
**Exposition and Argumentation** (3)
**Introduction to Speech Communication** (3)
**Humanities and Fine Arts** (9)
**Math and Statistics** (9)
College Algebra (3)
Statistics (3)
Computer Science (3)
**Social and Behavioral Sciences** (9)
Must include one course in history or political science.
**Nutritional Sciences** (13)
NS 134: Nutrition and Fitness (3)
NS 234: Human Nutrition I (3)
NS 236L: Nutrition Assessment (3)
NS 245: Nutrition through the Life Span (3)
NS 303: Nutrition Capstone Seminar (1)
**Exercise Physiology** (9)
NS 280: Care and Prevention of Athletic Injuries (2)
HRP 375: Kinesiology (3)
NS 385: Physiology of Exercise (3)
NS 386: Exercise Testing and Prescription (3)
**Supporting Area** (13)
Choose from selected courses in Curriculum and Instruction, Educational and Counseling Psychology, Nutritional Sciences, Human Development and Family Studies, Psychology or Sociology
**Electives** (16-24 hours) chosen to meet college requirements and career objectives

Opportunities for internships are available and highly recommended.

**NUTRITIONAL SCIENCES** This program of study provides a strong foundation in science with a focus on human nutrition. Graduates will be prepared for advanced study in human nutrition, medicine, dentistry or other health-related careers. This program is a particularly excellent choice for pre-medicine students with an interest in family practice or rural medicine.

For additional information see director of undergraduate education Dr. Ruth MacDonald, or the program office, 217 Gwynn Hall.
**Biological and Physical Sciences** (25)
General Biology and Laboratory (5)
General Chemistry and Laboratory (6)
Organic Chemistry and Laboratory (6)
Physics (8)
**English and Communications** (6)
**Exposition and Argumentation** (3)
**Introduction to Speech Communication** (3)
**Humanities and Fine Arts** (9)
**Math and Statistics** (15)
College Algebra (3)
Calculus (10)
Statistics (3)
Computer Science (3)
**Social and Behavioral Sciences** (9)
Political Science or History (3)
**Core Curriculum** (30)
NS 234: Human Nutrition (3)
NS 245: Nutrition through the Life Span (3)
NS 303: Capstone Seminar (1)
NS 333: Human Nutrition II lab (2)
NS 334: Human Nutrition II lecture (3)
BIOCH 270: Biochemistry (3)
BIOCH 272: Biochemistry (3)
BIOSC 202: General Genetics (4)
BIOSC 203: Intro Cell Biology (3)
PHYS 201: Physiology (5) **or**
BIOSC 270: Animal Physiol (5)
**Supporting Areas** (5)
Choose from selected courses in Biochemistry, Chemistry, Nutritional Sciences or Molecular Microbiology and Immunology.

Additional courses may be required to meet college requirements or career objectives. On-campus research internships are available and highly recommended.

**MINOR IN NUTRITIONAL SCIENCES** Intended for students majoring in biological sciences, biochemistry, health and exercise sciences or related fields. A minor must include NS 234: Human Nutrition I (3) plus a minimum of 12 hours elected from the list of approved nutrition courses numbered 100 or above.
NS 236L: Fundamentals of Nutrition Care (3)
NS 237L: Nutrition Therapy I (3)
NS 239L: Teaching & Counseling Techniques in Nutrition (2)
NS 245: Nutrition through the Life Span (3)
NS 246: Eating Disorders (2)
NS 333: Human Nutrition II Laboratory (2)
NS 334: Human Nutrition II Lecture (3)
NS 336: Body Composition and Nutrition (3)
NS 338L: Nutrition Therapy II (3)

## EXERCISE PHYSIOLOGY GRADUATE PROGRAM

MA and PhD degrees in exercise physiology are offered through the Department of Nutritional Sciences. Exercise physiology develops new knowledge in the area of exercise training, exercise metabolism and fitness and nutrition. The mission of the Exercise Physiology Graduate Program is to train graduate students who will provide professional leadership and educational services in the public and private enterprise. For more information, contact the director, Dr. Tom Thomas, ThomasTR@missouri.edu.

## COURSES

**34—Nutrition, Current Concepts and Controversies (3).** Basic nutrition principles and current controversies are presented. Emphasis on role of nutrition in maintaining health as well as exploring the scientific validity of popular nutrition beliefs. No credit if taken after NS 234.

**101—Topics in Nutritional Sciences (cr.arr.).** Supervised study in specialized topic of nutritional sciences.

**131—Basic Concepts of World Nutrition (3).** Transdisciplinary approach to nutrition, considering anthropological, physiological, geographical, socioeconomic and psychological elements in world nutrition.

**134—Nutrition and Fitness (3).** The utilization and requirement of nutrients for physical activity and athletic performance. Letter grading. f,w.

**200—Problems (cr.arr.).** Supervised study in a specialized phase of nutritional sciences.

**201—Topics in Nutritional Sciences (cr.arr.).** Supervised study in a specialized topic of Nutritional Sciences.

**228L—Food Service I: Introduction to Food Service (3).** Organizational structure and relationships; policy making and implementation; budgeting and cost control; menu as a management tool; sanitation and safety; food preparation; and food delivery systems. Prerequisite: FS 111.

**228P—Food Service I: Supervised Practice Experience (1).** A practicum designed to expose the student to concepts of quantity food production, evaluation of products and resources, personnel administration and application of food microbiological principles. 4 hours of supervised practice per week. Prerequisites: concurrent enrollment in 228; open to students enrolled in the Coordinated Program in Dietetics only.

**234—Human Nutrition I (3).** Basic concepts of normal nutrition related to physiological/ chemical processes; changing nutrient needs during human life cycle, emphasis on adult; some social/psychological influences on dietary habits. Prerequisites: Organic Chemistry, Physiology or instructor's consent.

**236L—Nutritional Assessment (3).** Introduction to the nutrition assessment process. The identification of dietary, anthropometric, laboratory, clinical and sociocultural parameters used to assess nutritional status of individuals. Lecture course. Prerequisites: Psychology 1, NS 234.

**236P—Nutrition Assessment Supervised Practice Experience (2).** Supervised practice to develop skills in screening individuals for nutrition risk; use of dietary, anthropometric, laboratory, clinical and sociocultural criteria to assess nutritional status of individuals, 8 hours of supervised practice per week. Prerequisites: concurrently enrolled in 236; Open to students enrolled in the Coordinated Program in Dietetics only.

**237L—Nutritional Therapy I (3).** In-depth study of physiological/biochemical changes in selected disease states (cardiovascular disease, rehabilitation, diabetes and cancer); development of principles underlying nutrition therapy. Lecture course. Prerequisites: 236.

**237P—Nutrition Therapy I: Supervised Practice Experience (3).** Practice and application of principles of nutrition care for selected disease states. 12 hours of supervised practice per week. Prerequisites: Concurrently enrolled in 237; Open to students enrolled in the Coordinated Program in Dietetics only.

**238—Diet Therapy for Health Professionals (3).** Principles underlying normal nutrition and diet for health and disease. Prerequisites: instructor's consent.

**239L—Teaching and Counseling Techniques in Nutrition (2).** Prinicples and theories of learning; Resources, methods and techniques for teaching food/nutrition prin-

ciples and dietary guidelines; Group dynamics and facilitation; Introduction to counseling theories and methods used in nutrition care of individuals. Lecture course. Prerequisites: Psychology 1, NS 234.

**239P—Teaching & Counseling Techniques in Nutr. Supervised Practice Exp (1).** Skill development and practice in counseling individuals for health promotion and disease prevention and the teaching of food and nutrition topics to groups. 4 hours of supervised practice per week. Prerequisites: concurrent enrollment in 239L; Open to students enrolled in the Coordinated program in Dietetics only.

**245L—Nutrition Throughout the Life Span (3).** Nutritional requirements, challenges, community nutrition programs, and eating patterns throughout the life span with emphasis on health promotion and disease prevention; Role of beliefs, culture, socio-psychological influences, and economic resources in food selection and nutrition/health status. Lecture/discussion course. Prerequisites: introductory nutrition course.

**246—Eating Disorders (2).** Definition, etiology, treatment, and research related to eating disorders: anoriexia nervosa, bulimia nervosa and binge eating disorder/obesity. Prerequisites: NS 34 or higher level nutrition course. Graded on A/F basis only. f.

**259L—Community Nutrition (2).** Food production systems, public policy development, food security, laws and regulations pertaining to food and nutrition, nutrition programming, food availability and access and the use of mass media in community-based food and nutrition programs. Lecture/discussion course.

**259P—Community Nutrition Supervised Practice Experience (1).** A practicum which explores and applies the concepts and techniques of nutrition programming in a community setting. 4 hours of supervised practice per week. Prerequisites: 259L; Open to students enrolled in the Coordinated Program in Dietetics only.

**280—Prevention and Care of Athletic Injury (2).** Theory, practice in prevention, emergency care, rehabilitation of injuries encountered in vigorous games. Prerequisite: Anatomy.

**300—Problems (cr.arr.).** Advanced problems in a selected field of food science and nutrition.

**301—Topics in Nutritional Science (cr.arr.).** Instruction in specific subject matter areas in the field of food science and nutrition.

**302—Monogastric Nutrition (3).** (same as Animal Science and Nutrition 302). Principles of nutrition, feed formulation and recent research in poultry feeding. Prerequisite: Animal Science 202 and Biochemistry 193. Letter grading only. f.

**303—Nutrition Capstone Seminar (1).** Integration of research literature with knowledge from previous coursework. Examination of research articles in major. Presentation or research results in a formal setting. Prerequisite: senior standing or instructor's permission.

**311—Investigation of Food Properties (3).** Study of the chemical and physical properties of foods and the interaction of food components. Lecture and laboratory. Prerequisites: 121 and Organic Chemistry.

**313L—Research in Dietetics (2).** Introduction to research, including the relationship of basic, clinical, and outcomes-based research to dietetics practice. Defining research problems in a dietetics practice setting, developing hypotheses, reviewing scientific literature, writing research protocols, analyzing data. Lecture course. Prerequisites: statistics course, senior standing or instructor's permission.

**313P—Research in Dietetics Supervised Practice Experience (1).** Implement, analyze, document, and present the results of the outcomes research proposal developed in NS 313L. 4 hours of supervised practice per week. Prerequisite: 313L; Open to students enrolled in the Coordinated Program in Dietetics only.

**328L—Food Service II: Advanced Food Service Management (1).** Issues related to marketing and financial control in the foodservice sector. Lecture course. Prerequisite: 228L, 228P.

**328P—Food Serv. II: Adv. Food Service Manage. Supervised Practice Exp (2).** A practicum tailored to apply marketing and budgetary principle in the foodservice industry. 8 hours of supervised practice per week. Prerequisite: Concurrent enrollment in 328L; Open to students enrolled in the Coordinated Program in Dietics only.

**333—Human Nutrition II Laboratory (2).** A techniques course in nutrition, usually taken concurrently with 334. Prerequisites: 234, Biochemistry and instructor's consent.

**334—Human Nutrition II Lecture (3).** Physiological and biochemical aspects of nutrition; functions of methods of measuring nutritional status; various aspects of applied nutrition. Continuation of 234. Prerequisites: 234, Biochemistry or instructor's consent.

**336—Human Body Composition and Nutrition (3).** Basic concepts of human body composition related alternative models, measurement techniques, and nutritional, physiological, and life-style factors. Prerequisite: NS 234. Graded on A/F basis only.

**338L—Nutrition Therapy II (2).** Evaluation, design and monitoring of the nutrition care of complex health disorders such as renal disease, trauma, and multi-system organ failure; emphasis on nutrition support (enteral and parenteral nutrition). Lecture course. Prerequisites: 237L.

**338P—Nutrition Therapy II: Supervised Practice Experience (4).** Practice in the nutrition care of complex health disorders with emphasis on nutrition support. 16 hours of supervised practice per week. Prerequisites: concurrent enrollment in 338L; Open to students enrolled in the Coordinated Program in Dietetics only.

**339L—Issues in Dietetic Practice (1).** Lectures and discussions focus on issues and trends in dietetics. Discussions are used to encourage the development of skills and attitudes which foster life-long professional learning. Lecture/discussion course. Prerequisite: 313 and 338; or instructor's consent.

**340P—Practice of Dietetics Supervised Practice Experience (10).** Supervised practice in providing quality nutrition services in clinical, community, management and long-term care settings. 40 hours of supervised practice per week. Prerequisite: 328L, 328P, 338L, and 338P; Open to students enrolled in the Coordinated Program in Dietetics Program only.

**350—Readings (cr.arr.).** Prerequisites: 8 hours of course work in field of subject and instructor's consent.

**380—Kinesiology (3).** Study of the relationships of physical laws, mechanical principles, and structural parameters to the analysis of human motion, with emphasis on application to daily activities, sport/athletic performance, and developmental exercise. Prerequisite: Anatomy 201.

**381—Advanced Athletic Training (3).** Advanced study in areas of prevention, evaluation, care, and treatment and rehabilitation of athletic injuries at high school and college level. Letter grading. Prerequisite: H201.

**385—Physiology of Exercise (3).** Effects of exercise on the human organism; physiologic capacity and limitation for activity; role of exercise in health and fitness. Prerequisite: Physiology 201 (Anatomy 201 recommended.

**386—Exercise Prescription (3).** Course investigates theory and methods of testing and prescribing exercise for circulatory fitness, body composition, muscle strength, joint and muscle ranges in motion, and posture. Prerequisites: 385 and HRP 375.

**390—Field Training (cr.arr.).** Prerequisites: junior or senior standing and instructor's consent.

**391—Internship in Nutritional Science (1-6).** Combines study, observation and employment in an area of food science and nutrition. Written reports, faculty evaluation . Prerequisites: 90 hours including 3 courses in department and instructor's consent.

**400—Problems (cr.arr.).** Individual studies include a minor research problems.

**410—Seminar (1).** Provides students with opportunities for development in depth of advanced aspects of food science through reviews of research in progress and of current scientific publications. f,w.

**415—Readings (cr.arr.).** Prerequisites: 15 hours course work in field of subject and instructor's consent.

**428—Advanced Food Systems Management (3).** An intensive study of the application of current management concepts and management science techniques to financial and professional accountability in food systems. Prerequisites: graduate student in Food Systems Management or instructor's consent.

**431—Nutritional Biochemisty of Lipids (3).** (same as Animal Science 431). Current concepts in the nutritional regulation of lipid metabolism. Emphasis on integrating information and interpreting current research data. Prereq-uisites: Biochemistry 270 and 272.

**434—Nutrition in Human Health (3).** (same as Nutrition 434). Nutritional aspects of maintaining human health with emphasis on chronic disease prevention. Grades based on classroom particpation and four exams. Prerequisites: Biochemistry 270 and 272; 300-level nutrition course.

**436—Nutritional Biochemistry of Carbohydrates (3).** (same as Nutrition, Biochemistry, and Animal Science 436). Provides a critical understanding of current developments in carbohydrate metabolism in animals and humans, particularly as it relates to nutrition and health. Prerequisite: Biochemistry 270 and 272; at least 1-300 level nutrition course.

**438—Nutrient Regulation of Gene Expression (3).** (same as Nutrition 438). Current concepts with in-depth coverage of several minerals that illustrate themes in molecular mineral nutrition. Based entirely on research literature and taught in a tutorial format. Prerequisites: Biochemistry 270 and 272; 300-level nutition course.

**439—Molecular Biology of Mineral Nutrition (3).** (same as Nutrition and Biochemistry 439). Current concepts of metal ion transport, intracellular metal trafficking and metal-dependent regulation of gene expression. Based entirely on research literature and taught in a tutorial format. Prerequisites: Biochemistry 270 and 272; 300-level nutrition course.

**450—Research (cr.arr.).** Original investigations, usually in connection with one of the research projects of Agricultural Experiment Station. Written report required.

**461—Nutritional Endocrinology (2).** (same as Food Science and Human Nutrition 415) The overall objective is to understand the relationships between nutrient requirements, utilization and transport and hormonal factors in normal and disease states. Prerequisites: Biochem 270, 272 and 274, nutrition or instructor approval. f., even years.

**481—Sports Conditioning (3).** Course covers scientific aspects of preparing athletes for sports competition. Topics range from those related to youth sports to those related to elite performance. Major topics include muscular function, nutrition, and endurance and sprint training. Prerequisite: exercise physiology.

**484—Cardiovascular Health and Fitness (3).** Physiology underlying best methods for obtaining and maintaining cardiovascular health and fitness. Includes exercise and weight control, plasma lipids, energy metabolism, cardiovascular dynamics, and recent research findings.

**485—Advanced Exercise Physiology (3).** Lectures, laboratory experiences, and readings in current literature to provide reasonable depth in selected areas of physiology as applied to activity and health. Prerequisites: H385; Chemistry.

**487—Exercise Metabolism (3).** Review of major metabolic pathways and the effect of exercise upon them. Special topics include indirect calorimetry, EPOC, anaerobic threshold; weight control, ergogenic aids, and exercise nutrition. Prerequisites: H385 and chemistry.

**490—Research (cr.arr.).** Original investigation of advanced nature, leading to thesis/dissertation. Graded on a S/U basis only.

# Nutritional Sciences Graduate Program

**INTERDEPARTMENTAL GRADUATE PROGRAM IN THE COLLEGE OF AGRICULTURE, FOOD AND NATURAL RESOURCES AND THE COLLEGE OF HUMAN ENVIRONMENTAL SCIENCES**

**CHAIR** R. Sunde
**DIRECTOR OF GRADUATE STUDY** K. Fritsche
**PROFESSORS** L. Hillman, R. MacDonald, G. Sun, R. Sunde, T. Veum, G. Weisman
**ASSOCIATE PROFESSORS** R. Dowdy, D. Eide, K. Fritsche, D. Ledoux
**ASSISTANT PROFESSORS** P. Hinton, C. Peterson, M. Petris, E. Rogers

**DEGREES** MS and PhD in nutrition are offered by the Nutritional Sciences Graduate Program. BS degrees with an emphasis in medical dietetics, nutritional sciences and nutrition and fitness are offered through the Department of Nutritional Sciences. Requirements for the MS and PhD degrees include mastery of the broad fundamentals of nutrition, metabolic integration, lipid and mineral biochemistry, signal transduction and regulation of gene expression, as well as demonstrated ability to conduct independent, innovative research.

## COURSES

**302—Monogastric Nutrition (3).** (same as Animal Science and Nutritional Science 302). Principles of nutrition, feed formulation and recent research in poultry feeding. Prerequisites: Animal Science 202 and Biochemistry 193. Letter grading only. f.

**335—Nutrition During the Life Cycle (3).** (same as Hotel and Restaurant Management 335).

**402—Advanced Nonruminant Nutrition (3).** (same as Animal Science 402). w.

**403—Trace Elements and Macro Minerals (3).** (same as Animal Science 403). Focuses on nutritional needs for minerals by humans, livestock and experimental animals. Emphasis given to nutrients of interest to class. Prerequisites: Biochemistry 270-272 and 300-level nutrition course. Letter grading only. w.

**410—Seminar (1).** f.

**415—Readings (1).** Readings in current nutrition research. Prerequisite: graduate standing and approval of faculty advisor. Offered on a S/U basis only.

**431—Nutritional Biochemistry of Lipids (3).** (same as Nutritional Science 431). Current concepts in the nutritional regulations of lipid metabolism. Emphasis on integrating information and interpreting current research data. Prerequisites: Biochemistry 270 and 272.

**434—Nutrition in Human Health (3).** (same as Nutritional Science 434). Nutritional aspects of maintaining human health with emphasis on chronic disease prevention. Grades based on classroom participation and four exams. Prerequisites: Biochemistry 270 and 272; 300-level nutrition course.

**436—Nutritional Biochemistry of Carbohydrates (3).** (same as Animal Science, Nutritional Science, Biochemistry 436). Nutritional regulation of carbohydrate metabolism. Emphasis is on integrating information, interpreting current research data. Prerequisites: Biochemistry 270 and 272; one 300-level nutrition courses. Grades based on classroom participation; case-study reports; and two exams with written and oral components. f.

**438—Nutrient Regulation of Gene Expression (3).** (same as Nutritional Science 438). Current concepts with in-depth coverage of several minerals that illustrate themes in molecular mineral nutrition. Based entirely on research literature and taught in a tutorial format. Prerequisites: Biochemistry 270 and 272; 300-level nutrition course.

**439—Molecular Biology of Mineral Nutrition (3).** (same as Nutritional Science and Biochemistry 439). Current concepts of metal ion transport, intracellular metal trafficking and metal-dependent regulation of gene expression. Based entirely on research literature and taught in a tutorial format. Prerequisites: Biochemisty 270 and 272; 300-level nutrition course.

**450—Investigations in Experimental Nutrition (1-6).** Written report required. f,w,s.

**465—Amino Acid and Protein Metabolism (2).** (same as Biochemistry 465).

**490—Research (cr.arr.).** Investigation in any area of experimental nutrition. Thesis required. Graded on a S/U basis only. f,w,s.

# Occupational Therapy

**School of Health Professions**
**406 Lewis Hall (573) 882-3988**
**INTERIM CHAIR** D. Baldwin
**INSTRUCTOR** D. Baldwin
**CLINICAL INSTRUCTORS** S. Borcherding, C. Nelson, C. Quay
**ASSISTANT PROFESSOR** S. Matsuda

**DEGREE** BHS in occupational therapy

The Department of Occupational Therapy's curriculum focuses on the value of occupation as it relates to health and wellness. The department's philosophy supports the adaptation model that emphasizes empowerment and transformation when an individual has a disability. As the only publicly funded professional-level occupational therapy education program in Missouri, the department's mission is to produce graduates who are competent clinicians expected to meet the challenges and changes occurring in multi-delivery and community-based health and educational services in both urban and rural setting in Missouri.

Occupational therapists are skilled health professionals who provide services to infants, children, adults and elderly persons who experience physical, emotional or mental limitations in performing everyday activities. The practice encompasses evaluations of performance and cognitive abilities, treatment interventions, and consultation using selected rehabilitative, educational, and vocational activities to help individuals become self-reliant and to return to or establish a sense of normalcy in their lives. Specific occupational therapy services include: teaching daily living skills; developing perceptual-motor skills and sensory integrative functions; developing play skills and prevocational leisure capacities; designing, fabricating, or applying selected orthotic and prosthetic devices or selected adaptive equipment. This may involve teaching simple tasks such as eating or dressing, or evaluating for more difficult tasks such as driving a car or developing new job skills, providing activities that help a baby or young child with problems develop more normally; adapting personal equipment or a home to meet the needs of a physically handicapped person; or providing support and skills to enhance independent living with emotionally or socially handicapped adolescents and adults.

Occupational therapists are employed in public and private schools and hospitals, rehabilitation centers, mental health facilities, nursing homes, home health agencies, community health programs, and industry. As independent health practitioners, they are also involved in business, working with disability claims, in work hardening programs and stress management programs, or as proprietors of their own therapy services for children, long term care facilities, and home health settings. Therapists also provide services as educators, administrators, consultants, and researchers.

The degree program involves two years of professional courses on the MU campus followed by six months of field experiences in affiliated clinical and community based sites primarily in Missouri. Required field work must be completed within 24 months of completion of required didactic courses.

The degree program is in transition to meet accreditation requirements requiring a graduate degree. Contact the Department of Occupational Therapy regarding updates on status.

**PREREQUISITE COURSES** The following are MU courses. Students transferring from other institutions need to seek advice from the OT adviser and select appropriate prerequisite courses to meet qualifications for admission.
22OT: Introduction to Occupational Therapy
HDFS 150: Principles of Human Development
Psych 180: Fundamentals of Abnormal Psychology (3)
Physio 201: Elements of Physiology (5)
E&CPSY A354: Introduction to Educational Statistics (3) or Stat 31: Statistics
Comm 75: Speech (3)
Course in Applied Humanities (2-3)
CECS 575: Computer Science (3)
Medical terminology proficiency required

**PROFESSIONAL CERTIFICATION** Upon successful completion of all courses, including the field work experiences, students will be eligible to sit for the National Board for Certification in Occupational Therapy's examination. Successful completion of exam is required by state regulatory agencies before entry into the profession.

**ACCREDITATION** Department accreditation is granted by the Accreditation Council for Occupational Therapy Education of the American Occupational Therapy Association, 4720 Montgomery Lane, Bethesda, MD 20814-3425 (301) 652-2682.

## COURSES

**22OT—Introduction to Occupational Therapy (1).** Introductory course to provide students information about the occupational therapy profession. Registered therapists lecture on clinical aspects. Students participate in discussions on program requirements, placement, and trends in the profession.

**205—Loss and Disability (3).** Reactions to illness, disability, and death. Identifies the roles of caregivers and patients. Addresses body image, self concept, and adjustment problems met in life when terminal illness or disability is present.

**220OT—Creative Media I (1).** Laboratory course for developing competency in creative media. Emphasis on developing competencies in woodworking, activity analysis and adaptation, and the value of creativity in wellness. Graded on a S/U basis only

**221OT—Creative Media II (1).** Laboratory course for developing competency in creative media. Emphasis on arts and crafts, activity analysis and adaptation, and the value of creativity in wellness. Graded on a S/U basis only.

**222OT—Creative Media III (1).** Laboratory course for developing competency in creative media. Emphasis on arts and crafts, activity analysis and adaptation, and the value of creativity in wellness. Graded on a S/U basis only.

**223OT—Adaptive Media (1).** Laboratory course in adapting media and developing assistive technology. Activty analysis emphasized. Taken concurrently with 322OT. Graded on a S/U basis only.

**225OT—Professional Perspectives (2).** Understanding and directing personal and professional communication through experiential activities. Includes formation of a professional and therapeutic relationships, and leadership development. Also concepts of dyad and group dynamics will be presented.

**233OT—Clinical Conditions in Pediatric Occupational Therapy (1).** A systems approach to etiology, physiology, clinical manifestations, and clinical management of diseases and conditions and developmental deviations of pediatric populations relevant to occupational therapy practice.

**234OT—Clinical Pathophysiology II (3).** A system approach to normal physiology, disease and clinical manifestations of disease.

**235OT—Occupational Performance (4).** The course examines occupation within the health-wellness continuum. Activity analysis and adaptation are performed in laboratory and community experiences. Seminar topics include self awareness, stress management, examination of personal values and human diversity.

**240OT—Human Motion and Activity (3).** Analysis of movement within the framework of human occupation. Assessment of musculoskeletal function. Participation in activity adaptation and analysis of performance components. Introductory motor control concepts.

**243OT—Applied Neurophysiology for Allied Health Students (3).** (same as Communicative Science and Disorders 243 and Physical Therapy 243). Principles of basic neurophysiology, emphasizing correlation of structure and function of the nervous system.

**245OT—Developmental Framework (3).** Lecture and Laboratory course designed to provide the occupational therapy student with an understanding of the process of normal development and prepare the student to administer common developmental assessments for infants and young children.

**270—Clinical Kinesiology (3).** Functional anatomy and biomechanics in normal and abnormal conditions of extremities, back, neck and thorax. Dynamics of human motion and motor skills. Muscle testing and goniometry lab.

**280OT—Fieldwork Level I-Disability in Context (2).** Community experiences for observational, interviewing, assesssment, and relational skills with persons experiencing cross disabilities throughout the lifespan. Overview of professional and therapeutic relationships. Lecture, seminar weekly.

**281OT—Fieldwork Level I - Lifespan Developmental Processes (2).** Fieldwork developing clinical observational skills of pre-school children and older adults in supported living environments. Emphasis on data collecting and synthesis, developing therapeutic relationships, planning and implementing developmental activities. Lecture, seminar weekly.

**314OT—Occupational Therapy Practice in Health Care Systems (3).** Examines current practice from historical and philosophical perspective. Analyzes influence of environment in delivering health care services. Examines issues and trends in practice from professional, legal, political, ethical viewpoints.

**315OT—Organization & Administration (3).** Organizational structure of occupational therapy service programs in various types of community and institutional practice settings. Interdepartmental and intradepartmental relationships, management and supervision, standards, regulations, and ethical guidelines emphasized.

**316OT—Programming and Evaluation Methods in Occupational Therapy (3).** Research methodology and efficacy studies emphasizing development of knowledge and skills in critiquing research and professional literature pertinent to occupational therapy. Scholarly writing and application of research results to practice settings.

**320OT—Rehabilitiation Priniciples in Occupational Performance (4).** Analysis of major disability areas from an occupational perspective. Administration and interpretation of assessments and application of treatment theories and approaches for deficits in movement, sensation, cognition and perception.

**322OT—Rehabilitation Priniciples in Occupational Performance II (3).** Analysis of major disability areas from an occupational perspective. Administration and interpretation of assessments and application of treatment theories and approaches for deficits in movement, sensation, cognition and perception.

**331—Psychopathology (2).** Focus on the major theories in etiology of psychosocial dysfunction as applicable to occupational therapy; review of classification and characteristics of pathological syndromes.

**332OT—Psychosocial Dysfunction in Practice (3).** Theories and techniques of occupational therapy in treatment of psychosocial dysfunction. Emphasizes occupational performance in evaluation methods, treatment techniques, program planning, therapeutic use of self, group leadership in the integration of mental health concepts.

**345OT—Neuromotor and Sensory Processing Bases of Function (2-3).** Examines neuromotor and sensory processing bases of function in relation to children. Emphasizes occupational therapy process through application of evaluation methods, intervention techniques in pediatric practice.

**350OT—Clinical Cases in Occupational Therapy (2).** Synthesis of occupational therapy approaches to clinical cases across age-span in primary practice areas. Identifying community health needs and health promotion/prevention interventions. Clinical reasoning, life-long learning, self-evaluation emphasized utilizing case methodology.

**380OT—Fieldwork Level I-Foundations of Health Care Delivery (1).** Clinical experiences in occupational therapy practice. Integration and application of theory and techniques in a treatment setting. Emphasis on clinical reasoning and documentation. Lecture, seminar weekly.

**381OT—Fieldwork Level I-Rehabilitation (1).** Clinical experiences in rehabilitation practice settings. Emphasis on integration and application of human occupation theory and treatment techniques. Explores roles and functions of occupational therapy in rehabilitation. Promotion of professional values. Lecture, seminar weekly.

**382OT—Fieldwork Level I-Children (1).** Clinical experiences in practice settings focused on children. Emphasis on integration and application of human occupation theory and treatment techniques. Explores roles and functions of pediatric occupational therapy. Promotion of professional values. Lecture, seminar weekly.

**383OT—Fieldwork Level I-Mental Health (1).** Clinical experiences in mental health settings. Emphasis on integration and application of human occupation theory and treatment techniques. Explores mental health occupational therapy roles and functions. Promotion of professional values. Lecture, seminar weekly.

**390OT—Fieldwork Level II-Foundations of Rehabilitation (3-9).** Clinical practicum in rehabilitation setting for application of rehabilitation principles and techniques. Emphasis on connection of theory of human occupation to practice in biopsychosocial model and collaborative professional relationships. Graded on a S/U basis only.

**395OT—Fieldwork Level II-Transition to Independence (3-9).** Clinical practicum in specialized or community based settings. Integrates occupational therapy concepts and interventions. Emphasizes critical analysis and application of human occupation theory in biopsychosocial model and collaborative professional relations. Graded on a S/U basis only.

# Parks, Recreation and Tourism

**School Natural Resources**

# Nutritional Sciences Graduate Program Occupational Therapy Parks, Recreation & Tourism

**105 Anheuser-Busch Natural Resources Building (573) 882-7086**
**Fax: (573) 882-9526**
**CHAIR** R. Vessell
**ASSOCIATE PROFESSORS** J. Card, G. Hitzhusen, R. Vessell
**ASSISTANT PROFESSOR** S. Cole
**INSTRUCTOR** D. Vaught
**PROFESSORS EMERITI** G. Gilespie, K. Roys
**ASSOCIATE PROFESSORS EMERITI** H. Bhullar, S. Lamphear, G. Weaver

**DEGREES** BS and MS in parks, recreation and tourism

The Department of Parks, Recreation and Tourism undergraduate curriculum provides students with a solid university education as well as appropriate professional skills to perform in entry-level positions within the parks, recreation and tourism professions. The components of quality leisure services and recreation experiences are complex — people, resources, activities and leadership unite to form one of the fastest-growing professions in the world.

The Department of Parks, Recreation and Tourism is one of the most comprehensive accredited programs nationally, with approved options in four professional areas. When the program was accredited in 1977, it was the second of its type to be accredited and the first in Missouri. The department seeks to integrate classroom learning with applied research and internship experiences, and is a leader in technology applications. Excellent faculty advisement is available to students.

The department ranks with the leaders in grants and contracts among parks, recreation and tourism departments. It hosts numerous workshops, seminars, institutes and conferences in Missouri and coordinates continuing education programs nationally.

Satisfactory completion of 132 credit hours is required for the BS degree in parks, recreation and tourism. Students must pass a minimum of 120 semester hours and a 12-hour internship with a cumulative grade point average of 2.0. Professional preparation includes course work in approved career options, professional core, and professional electives. CLEP credits are accepted and evaluated on an individual basis.

Because of the recommended order of studies, it is possible for students who have a broad, liberal education to transfer into the department without a significant time penalty toward graduation.

The department offers four professional options at the undergraduate level: leisure service management; natural resources recreation management; therapeutic recreation; and tourism development.

**REQUIREMENTS FOR THE BS DEGREE IN PARKS, RECREATION AND TOURISM**

**Communication Skills** nine hours
Eng 20: Exposition and Argumentation (3)
Comm 75: Introduction to Speech Communica-

tion (3)
Communication elective (3)
**Humanities** nine hours
Courses are often selected from the areas of fine arts, philosophy, religion, foreign language and literature.
**Science and Mathematics** 11-13 hours
A minimum of 11 hours is required within this category, including course work in a biological, natural or physical science (to include laboratory experience) and Math 10, its equivalent or above.
**Social and Behavioral Science** 21 hours
A minimum of 21 hours is required, including three hours of approved course selections in each of the following: economics; history/political science (must satisfy the state requirement for history); social science; behavioral science; human growth and development.

**GENERAL ELECTIVES** Each student is required to complete a minimum of 16 hours within this area. This category represents a broad range of courses selected from the University catalog.

**PROFESSIONAL EDUCATION** Undergraduate professional preparation in the Department of Parks, Recreation and Tourism consists of four basic categories: a professional core; required competencies; professional option electives; and an internship placement.

**PROFESSIONAL CORE** Each student must complete professional core courses in the department that provide a fundamental, general understanding of the park, recreation and tourism profession.
PRT 10: Introduction to Leisure Studies (3)
PRT 11: Career Orientation in Recreation, Parks and Leisure Service (1)
PRT 111: Introduction to Planning and Evaluating Leisure Environments (3)
PRT 205: Personnel Management and Leadership in Leisure Services (3)
PRT 226: Introduction to Leisure and Special Populations (3)
PRT 316: Administration of Leisure Services (3)

**REQUIRED COMPETENCIES A minimum of three hours of approved course selections in** statistics and research; and computer applications.

**APPROVED PROFESSIONAL OPTION** The undergraduate curriculum consists of four specific professional options designed to reflect the career interests of students. Each option requires completion of approved courses.
**Leisure Service Management**
PRT 333: Park Management (3)
PRT 355: Private and Commercial Recreation Principles and Practices (3)
PRT 356: Tourism Management (3)
**Natural Resources Recreation Management**
PRT 231: Principles of Interpretive Outdoor Recreation (3)
PRT 333: Park Management (3)
PRT 380: Resource Practicum (3)
**Therapeutic Recreation**
PRT 227: Delivery Models in Therapeutic Recreation (3)
PRT 327: Operation of Therapeutic Recreation Services: Procedures and Principles (3)
PRT 329: Therapeutic Recreation Education/ Counseling Techniques (3)
PRT 330: Therapeutic Recreation Assessment/ Evaluation Procedures (3)
**Tourism Development**
PRT 355: Private and Commercial Recreation Principles and Practice (3)
PRT 356: Tourism Management (3)
PRT 357: Tourism Planning and Development (3)

**INTERNSHIP** All students are required to complete an internship placement, which is normally taken during the student's last year of study. The semester-long internship is with an off-campus agency or organization chosen by the student and faculty. Regional, national and international internship placements are possible. Students may receive direct financial assistance from the agency or organization during their internship.

Internship credit comprises 13 hours and includes PRT 189: Pre-internship Seminar (1) and PRT 289: Parks, Recreation and Tourism Internship (12).

**PROFESSIONAL OPTION ELECTIVES** Based on a student's chosen option each student is required to complete a minimum of 18-21 hours of approved courses appropriate to the student's selected academic option.

**SCHOLARSHIPS** Scholarships are awarded annually through the department and the Missouri Park and Recreation Association. In addition, scholarships and student aid are available through other MU services.

**PROFESSIONAL OPPORTUNITIES** Many career options are available to leisure professionals. These include:
- Managing and operating public parks and recreation systems
- Providing direct services to the ill, elderly, incarcerated and disabled
- Operating corporate, military or university recreation programs
- Coordinating and directing youth-serving agencies such as 4-H, YMCA, YWCA, Boy Scouts, Girl Scouts and church organizations
- Managing tourism and commercial recreation businesses, including resorts, theme park agencies, tour and travel programs, and hospitality enterprises
- Managing recreation and leisure services such as sports products manufacturing and marketing, leisure consultation, planning and investments, spectator entertainment, entertainment and convention bureaus, zoos and aquaria, theme parks, ski resorts, golf courses, health clubs and tennis and racquet clubs, etc.

## COURSES

**10—Introduction to Leisure Studies (3).** History of recreation and leisure movement; theories and philosophies of play, recreation and leisure. Developmental stages of leisure services to contemporary status. f,w.

**11—Academic Planning & Career Orientation in Parks, Rec. & Tourism (1).** Orientation to the field and analysis of career opportunities in leisure services. Academic planning leading to B.S. in recreation and park administration. S/U graded only. Prerequisite: PRT major. Must be taken in first semester as a major.

**91—Research & Descriptive Statistics for Parks, Recreation & Tourism (3).** An introduction to research methods and techniques and descriptive statistics and their application in the field of recreation and park administration. f.

**101—Topics in Park, Recreation and Tourism (1-3).** Specialized topic content in parks, recreation and tourism programs, management and/or development. Subject content and credit may vary by semester based on faculty resources and student needs. Offered periodically.

**111—Introduction to Planning and Evaluating Leisure Environments (3).** Presentation of basic planning principles. Evaluation of existing areas and facilities based upon planning guidelines. Consideration of park plan, standards, terminology, map preparation and evaluation. f.

**115—Consortium Field Experience (1-3).** An organized undergraduate experiential learning opportunity. Prerequisite: instructor's consent. w.

**189—Pre-Internship Seminar (1).** The course is designed to prepare students for 289 Parks, Recreation and Tourism Internship. Emphasis is placed on students' responsibilities prior to enrollment in 289, selecting internship sites and completing internship requirements. f,w.

**205—Personnel Management and Leadership in Leisure Services (3).** Considers theories and practices of leadership and management in leisure services employment. Topic presentation in relationships, attitudes, supervision, motivation and group functioning. w.

**206—Program Development in Leisure Services (3).** Fundamental principles and techniques of program development; seasonal, year round, specialty areas and total agency program planning. Prerequisites: a course in human growth and development, 10, 11, 151 or instructor's consent. w.

**212—Planning Recreation and Leisure Environments (3).** Practical application of basic planning principles and design. Layout and design of various leisure-oriented areas and facilities. Site planning and analysis.

**226—Introduction to Leisure & Special Populations (3).** Principles, concepts and historical development of recreation and leisure services to specific populations. Explanation of attitudes, issues, practice and barriers related to leisure fulfillment. f.

**227—Introduction to Therapeutic Recreation (3).** An investigation of therapeutic recreation service delivery models of the 111 and disabled in both institutional and community settings. Particular emphasis will be placed on advanced leadership and therapeutic interactional skills and dynamics. f.

**230—Introduction to Parks and Outdoor Recreation Services (3).** An overview of parks and outdoor recreation, natural environment, supply-demand-need relationships, interpretative programming, management philosophies/practices will be studied. w.

**231—Principles of Interpretive Outdoor Recreation (3).** Interpretive principles and techniques employed to communicate values, natural history and cultural features to the recreation user. w.

**289—Parks, Recreation and Tourism Internship (12).** Supervised professional experience with an approved organization. Course entails weekly reports, case studies, agency evaluations and a special project related to the student's curricular emphasis. Prerequisite: PRT 189, majors only, instructor's consent. f,w,s.

**298—Independent Research in Parks, Recreation and Tourism (1-3).** Independent research project in parks, recreation and tourism. Prerequisite: instructor's consent. Letter grading only. f,w,s.

**300—Problems (3).** cor.

**316—Administration of Leisure Services (3).** Theoretical foundations of the organization and administration of leisure services in both community and institutional settings. Emphasis on the roles of the administrator. w.

**327—Operation of Therapeutic Recreation: Procedures and Principles (3).** Theories and principles of leadership and programming as they apply to recreation services for the ill, handicapped, and aged. w. cor.

**329—Therapeutic Recreation Education/Counseling Techniques (3).** Techniques and models of leisure facilitation for use within a variety of clinical, residential and Institutional models. Theories of positive/negative leisure engagement reviewed. f.

**330—Therapeutic Recreation Assessment/Evaluation Procedures (3).** Reviews accepted clinical protocols for determining a client's physical, emotional, social and cognitive levels of functioning. Competencies in administering,

scoring and interpreting multiple tools included. w.

**333—Park Management (3).** Basic principles, practices and problems involved in managing public park systems. Consideration given to local, district, county, state, federal and foreign park systems. f.

**355—Private and Commercial Recreation Principles and Practice (3).** Considers principles, practices, influences in public/ private leisure services; influence of tourism/travel on public/private recreation services.

**356—Tourism Management (3).** Introduction to the scope and scale of the tourism industry. Focus on the industry components, concepts, structures, relationships, and issues with regard to accommodation, transportation, travel, regional development, political system, and the economic, social and environmental effects of tourism. f.

**357—Tourism Planning and Development (3).** Nature and scope of tourism planning at the local, regional, and national levels; economic social, environmental, and policy considerations. Comparative study of initiating, planning and implementing tourism and the organization of community resources for developing and controlling a tourism industry. Prerequisite: PRT 356. w.

**391—Topics in Leisure Studies (1-3).** Specialized topics in leisure and leisure delivery systems. Subjects and earnable credit vary semester to semester. Specific content varied depending upon available faculty resources and student needs. Course content announced in advance. Prerequisite: instructor's consent. Offered periodically.

**400—Problems (1-6).** Independent research on special projects. Prerequisites: Instructor's consent; graduate major. f,w,s.

**401—Constructs of Leisure (3).** Review analysis and implications of fundamental psycho-social determinants of leisure behavior. Application theories of determinants to existing and proposed leisure service systems. f.

**403—Research Methods in Parks, Recreation and Tourism (3).** Analysis of basic research methodology. Review and analysis of research work completed in recreation, park and leisure field. Prerequisites: PRT graduate major or instructor's consent. w.

**405—Administration in Leisure Service Delivery (3).** Review, analysis and synthesis of administrative functions as related to public and private recreation and leisure service enterprises. f.

**406—Financial Operations in Leisure Service Delivery (3).** Review and critical analysis of financial functions, strategies and methodology a related to public and private recreation and leisure service enterprises. w.

**410—Masters Level Graduate Seminar (2).** Discussion and critical analysis of contemporary issues on social concerns relating to leisure services. Prerequisites: PR&T graduate major or instructor's consent.

**411—Independent Work in Parks, Recreation and Tourism (1-3).** Independent research or special projects in parks, recreation and tourism. Prerequisites: instructor's consent. f,w,s.

**450—Guided Reading in Parks, Recreation and Tourism (1-3).** Selected reading in parks, recreation and tourism identified to fulfill a graduate student's academic needs or specialized interests. Prerequisites: instructor's consent. f,w,s.

**480—Research Project (1-3).** Individual research on approved project. Involves creativity and scholarly inquire where product does not adhere to the traditional thesis format. Prerequisite: PRT graduate major. Graded on S/U basis only. f,w,s.

**481—Internship (1-6).** Supervised student practice in recreation, park or related settings under qualified instructor. Prerequisites: PRT graduate major. f,w,s.

**490—Thesis Research (1-6).** Research leading to thesis in field of recreation. Prerequisite: PRT graduate major. Graded on S/U basis only. f,w,s.

# Pathology & Anatomical Sciences

**School of Medicine**

**M263 Medical Sciences Building (573) 882-1201**

*The School of Medicine does not offer an undergraduate degree in pathology, but some courses are available to undergraduate students.*

## COURSES

**193—Cytology Female Genital Tract (10).** A definitive study of normal and abnormal cellular changes occurring within the organ system by means of light microscopy with histologic correlation. Prerequisite: instructor's consent.

**194—Respiratory Cytology (4).** A definitive study of the normal and abnormal cellular changes occurring within the system by means of light microscopy, with histologic correlation. Prerequisite: instructor's consent.

**195—Cytology of Body Fluids (4).** Normal and abnormal cellular changes within pleural, peritoneal, pericardial and cerebrospinal fluids by means of light microscopy, with histologic correlation. Prerequisite: instructor's consent.

**196—Gastrointestinal Cytology (4).** A definitive study of the normal and abnormal cellular changes occurring within the system by means of light microscopy, with histologic correlation. Prerequisite: instructor's consent.

**197—Oral Cytology (2).** Studies normal and abnormal cellular changes within the oral cavity and oropharynx by means of light microscopy, with histologic correlation. Prerequisite: instructor's consent.

**198—Urinary Cytology (4).** Studies normal and abnormal cellular morphology from kidney, ureter and bladder samples, with histologic correlation. Prerequisite: instructor's consent.

**199—Special Problems in Cytology (2).** Relating hematologic morphologic findings in conventional body fluid cytology; also review of techniques used in chromosome cultures and karyotyping, with emphasis on sex-related abnormalities.

**200—Basic Pathology (2).** Provides nonmedical students with a general understanding of the essential nature of disease, including mechanisms of its development and cause/effect relationships. Prerequisites: 5 hours Biological Science or equivalent and 5 hours Chemistry. or Physiology 201. w.

**201—Elementary Anatomy Lecture (3).** Basic microscopic and gross human anatomy for Nursing, and Health Related Profession students.

**203—Elementary Anatomy Laboratory (2).** Laboratory. Study of human microscopic and gross anatomical materials. Concurrent registration or passing grade (C) in PTH&AS 201 required.

**222—Gross Human Anatomy (The Health Related Professions) (7).** Gross structure and neuroanatomy of the human body; dissection of extremities, back, head, neck abdomen and thorax. Prerequisites: instructor's consent.

**251—Interpretations of Lab Procedures in Primary Health Care (1).** Discussion and analysis of selected laboratory test procedures used in office and clinic settings involved with primary health care. Prerequisites: graduate level Physiology course and departmental consent. f.

**280HT—Elementary Histology (3).** (same as Clinical Laboratory Sciences 280HT.)

**281HT—Basic Histotechnology (6).** (same as Clinical Laboratory Sciences 281HT.)

**282HT—Special Staining (6).** (same as Clinical Laboratory Sciences 282HT.)

**283HT—Applied Histotechnology (9).** (same as Clinical Laboratory Sciences 283HT.)

**284HT—Research and Instructional Techniques (3).** (same as Clinical Laboratory Sciences 284HT.)

**285HT—Clinical Management (2).** (same as Clinical Laboratory Sciences 285HT.)

**286HT—Basic Disease Processes (2).** (same as Clinical Laboratory Sciences 286HT.)

**300—Problems (cr.arr.).** Regions or systems which may include developmental, microscopic, and gross anatomy. Prerequisite: instructor's consent.

**300HT—Problems in Histotechnology (1-3).** (same as Clinical Laboratory Sciences 300HT.)

**300MT—Problems in Medical Technology (1-3).** (same as Clinical Laboratory Sciences 300MT.)



**301—Human Developmental and Gross Anatomy (10).** General principles of systemic and developmental anatomy. Gross anatomy and dissection of back, upper and lower extremities, head and neck, thorax, abdomen and pelvis. Prerequisites: graduate standing and instructor's consent.

**301HT—Advances Histotechnology (6).** (same as Clinical Laboratory Sciences 301HT.)

**301MT—Fundamentals of Medical Technology I (3).** (same as Clinical Laboratory Sciences 301MT.)

**302MT—Fundamentals of Medical Technology II (3).** (same as Clinical Laboratory Sciences 302MT).

**303MT—Fundamentals of Medical Technology III (3).** (Same as Clinical Laboratory Sciences 303MT.)

**304—Human Histology and Organology (4).** Detailed study of cytology, histology and microscopic anatomy. Prerequisites: 10 hours of Biology and instructor's consent. f,w.

**304MT—Clinical Practicum (3).** (same as Clinical Laboratory Sciences 304MT.)

**305—Anatomy of the Human Nervous System (3).** A comprehensive consideration of the morphology of the nervous system, emphasizing correlation of structure and function. Prerequisites: 201, Comparative Anatomy or equivalent, and instructor's consent. w.

**305MT—Hemostasis (2).** (same as Clinical Laboratory Sciences 305MT.)

**306—Autonomic Nervous System (2).** A comprehensive consideration of the autonomic nervous system in man, with emphasis on morphology. Prerequisites: 201, Comparative Anatomy or equivalent, and instructor's consent. f.

**306CT—Cytology of Breast (2).** (same as Clinical Laboratory Sciences 306CT.)

**306MT—Clinical Immunology (3).** (same as Clinical Laboratory Sciences 306MT.)

**307MT—Blood Banking (3).** (same as Clinical Laboratory Sciences 307MT.)

**308—Hematopoietic Organs (2).** Morphological and functional relationships of the blood-forming organs. Prerequisites: Basic Histology & instructor's consent. w.

**308MT—Clinical Hematology (6).** (same as Clinical Laboratory Sciences 308MT.)

**309MT—Clinical Microbiology (6).** (same as Clinical Laboratory Sciences 309MT.)

**310—General Pathology (5).** Basic pathological mechanisms of human disease. Introductory principles of clinical laboratory measurements of altered organ system function studied. Prerequisites: Biochemistry 206, Physiology 250; PTH&AS 301, 302, 304, 305; and instructor's consent. f.

**310MT—Clinical Chemistry (6).** (same as Clinical Laboratory Sciences 310MT.)

**311—General Pathology Laboratory (3).** Gross and microscopic applied study of basic pathological disease mechanisms. Laboratory assessment of these basic disease mechanisms. Prerequisites: Biochemistry 206, Physiology 250; PTH&AS 301, 302, 304, 305; or the equivalents; and instructor's consent. f.

**311MT—Principles of Management and Education (1).** (same as Clinical Laboratory Sciences 311MT.)

**312—Advanced Pathology (5).** Demonstration and simulation study of gross, microscopic and clinical laboratory pathology of major human organ systems. Prerequisites: 310 and 311 or equivalent and instructor's consent. w.

**312MT—Research and Instructional Techniques (3).** (same as Clinical Laboratory Sciences 312MT.)

**313—Advanced Pathology Laboratory (3).** Demonstration and simulation and character of work depend upon needs, qualifications, and of major human organ systems. Prerequisites: 310 and 311 or equivalent and instructor's consent. w.

**404—Advanced Pathology (cr.arr.).** Graduate course in which amount and character of work depends upon needs, qualifications, and interests of student. Prerequisite: instructor's consent.

**410—Seminar (1).** Presentation and discussion of original investigations and current literature. f,w.

**450—Research (cr.arr.).** Work equal to research in 490, but not leading to dissertation. Prerequisite: instructor's consent.

**490—Research (cr.arr.).** Work leading to dissertation. Graded on a S/U basis only.

**491—Research (cr.arr.).** Open only to properly qualified graduate students, with counsel of faculty. Includes preparation of dissertation.

# Peace Studies

**INTERDISCIPLINARY PROGRAM IN THE COLLEGE OF ARTS AND SCIENCE**
**19 Parker Hall (573) 882-6060**

The Peace Studies program draws from a variety of courses that address the issue of peace and violence. The interdisciplinary nature of the program enables a student to pursue the concepts and realities of peace, war, and violence from a variety of perspectives: strategies of transition to global cooperation; theories and practices of conflict resolution; non-violent methods of social change; economics of war and peace; images of peace and violence in philosophy, literature, and the arts; anticipation and prevention of armed conflict; social, political and cultural roots of war; history of pacifism and non-violent resistance; relations between peace and the environment, peaceful and non-peaceful uses of technology. Due to the interdisciplinary nature of the program most of the courses are cross-listed with courses in other departments.

**AREA OF CONCENTRATION REQUIREMENTS** A student concentrating in Peace Studies is required to fulfill the general educational requirements for a BA degree in the College of Arts and Science and 32 hours in peace studies as follows:

**Core Requirements** (12 hours)
Peace Studies 50: Introduction to Peace Studies (3)
Nine hours selected from the following
Peace Studies 118: Gandhi: The Man and His Ideas (3) (same as History 118)
Peace Studies 137: Philosophies of War and Peace (3) (same as Philosophy 137)
Peace Studies 150: The Amish Community (3) (same as Rural Sociology 150)
Peace Studies 180, 181, 182, 183: Undergraduate Seminars

**Additional hours** (minimum 20) selected in consultation with the program director from the Peace Studies courses. Students may elect a general program or focus on such areas as War, Diplomacy and Society, Social Justice and Social Movements, The Psychology, Sociology and Culture of Power, in choosing from the Peace Studies courses listed below, or a number of other recommended courses, including but not limited to:
Pol Sc 55: International Relations (3)
Geog 105: Environmental Geography (3)
Hist 136: History of South Africa (3)
Hist 252: America in the 1960s (3)
Pol Sc 151: Politics and the Military (3)
Anth 260: The Third World (3)
Pol Sc 371: Third World Politics (3)
WS 105: Feminism: The Basic Questions (3)
WS 110: Women, Race and Class (3)
Hist 136: History of South Africa (3)
Hist 252: America in the 1960s (3)
Hist 285: Race and Class in South Africa (3)
HDFS 352: Violence in the Family (3)
Pol Sc 371: Third World Politics (3)
Pol Sc 385: International Organizations (3)
Soc 200: Class, Status and Power (3)
Soc 260: Social Psychology (3)
WS 105: Feminism: the Basic Questions (3)
WS 110: Women, Race and Class (3)
Hist 202: America's Environmental Experience (3)
Hist 203: Ireland: Revolution and Nationalism, 1780-1976 (3)
Bio 108: Genetics and Human Affairs (3)
Classics 130: Foreigners and Dangerous Women in Graeco-Roman Literature (3)

Students are strongly encouraged to include one of the courses as partial fulfillment of following degree requirements:
Peace Studies 280: Internship (3)
Peace Studies 288: Senior Thesis (3)

**MINOR** A minor of a minimum of 15 hours of course work is also available.
**Requirements**
Peace Studies 50 Introduction to Peace Studies (3)
Twelve hours additional hours selected in consultation with the program director, at least nine selected from the core requirements above.

**INTERNATIONAL STUDIES** The Peace Studies area of concentration may be used as an Emphasis Area for the International Studies AB program.

**COURSES**

**50—Introduction to Peace Studies (3).** Interdisciplinary overview including theories on the nature of aggression and war, case studies of contemporary conflicts, consideration of various peace proposals, conditions making war or peace likely. f,w. cor.

**130—Foreigners and Dangerous Women in Greek and Latin Literature (3).** (same as Classical Humanities 130). The study of how Greek and Roman writers depicted and reacted to other races and cultures, compared them with their own, and thereby revealed both their own values and prejudices.

**137—Philosophies of War and Peace (3).** (same as Philosophy 137). Moral issues about the recourse to war by the nation and the individual's obligations to participate. The nature of peace, social and personal. Special attention to the Vietnam War and the nuclear age.

**139—Russia in Modern Times (3).** (same as History 139).

**141—Late Imperial China: China Enters the Modern World (3).** Survey of China under the Manchu Ch'ing dynasty. Within framework of the dynastic cycle, examines imperial rule, Chinese society, culture, art, internal rebellion, Western intrusion, modernization. Prerequisite: sophomore standing.

**150—The Amish Community (3).** (same as Rural Sociology 150). Examines historical antecedents and contemporary culture and social structure of the Amish. Topics include cultural symbols, life ceremonies, the family, counter cultural pressures, stresses, social change, and conscientious objection.

**151—Politics and the Military (3).** (same as Political Science 151). Comparative study of post-cold war civil-military relations; military as an interest group, change agent, policy instrument and competitor of civilian politicians.

**160—Social Bases of War and Peace (3).** (same as Sociology 160).

**173—Age of Ascendancy: American Foreign Policy Since World War II (3).** Surveys the Cold War in Europe and Asia, the Vietnam war, Middle East policy, and the nuclear arms race. Not for advanced students in History. Prerequisite: sophomore standing.

**180—Undergraduate Seminar I (3).** Conflict Resolution in Theory and Practice. Conflicts are studied in the light of the social and behavioral sciences. Prerequisites: 50 or instructor's consent.

**181—Undergraduate Seminar II (3).** Contemporary International Conflict: A readings and research seminar in which students will address such problems as global conflicts, the Arms Race and disarmament, global development. Prerequisites: 50 or instructor's consent. f, odd years.

**182—Undergraduate Seminar III (3).** History and Theory of Nonviolent Action. Study of such cases as Gandhi's Independence, American Civil Rights and Polish Solidarity movements. Prerequisites: 50 or instructor's consent.

**183—Undergraduate Seminar IV (3).** Images of War and Peace. Study of war and peace in philosophical and religious systems, film, poetry, art, fiction, and the media. Prerequisites: 50 or instructor's consent.

**184—World Political Geography (3).** (same as Geography 180).

**195—Service Learning in Peace Studies (1).** Students will perform significant and long term community service while exploring issues central to peace studies.

**201—Topics in Peace Studies (2-3).** Organized study of selected topics in Peace Studies. Subjects and credit hours may vary from semester to semester. Prerequisite: sophomore standing.

**202—America's Environmental Experience (3).** (same as History 202). Team-taught analysis of American thought and action on physical environment during 19th-20th centuries. Relation between politics, economics, technological change, environmental quality; roles of science, law, regulatory agencies, grassroots action. Topical satellite courses offered concurrently.

**213—Political and Social Philosophy (3).** (same as Philosophy 213). Contemporary and/or historical theories of justice and the state. Utilitarianism, liberalism, libertarianism, Marxism, Communitarianism and feminism may be among the views covered. Prerequisite: sophomore standing.

**215—Collective Behavior (3).** (same as Sociology 215).

**224—Literature of the Spanish Civil War (3).** A study of the Spanish Civil War in all its manifestations: political, historical, ideological and literary. Special attention will be devoted to literature as a means of conveying ideas on war and peace. Prerequisite: 50.

**241—Imperial China (3).** (same as Peace Studies 141). A survey of China under the Manchu Ch'ing dynasty. Within framework of the dynastic cycle, examines imperial rule, Chinese society, culture, art, internal rebellion, Western intrusion and modernization.

**245—Nonviolence in the Modern World (3).** (same as History 245 and South Asia Studies 245). Readings on recent world history, emphasis on Gandi and nonviolent tradition in America Europe and the Third World. Prerequisite: sophomore standing.

**252—America in the 1960's (3).** (same as History 252). Examines the political and cultural main currents of the 1960s. Emphasizes the challenges mounted by protest groups and the responses of America's political leadership to the ferment of the period. Prerequisite: sophomore standing.

**261—The Third World: An Anthropological Perspective (3).** (same as Anthropology 260).

**271—Group Decision Making Processes (3).** (same as Communications 271).

**280—Internship (1-3).** Students work in a peace-related agency or institution for 1 to 3 credit hours. Repeatable for maximum of 6 hours. Prerequisite: departmental consent. S/U graded only. f,w,s.

**283—Gandhi: The Man and His Ideas (3).** (same as History 283).

**286—Race, Ethics, and Gender in International Relations (3).** (same as Political Science 286). Explores topics often neglected in the study of international relations, including racism, the laws and ethics of warfare, human rights, and

gender. Prerequisite: Political Science 55 or Peace Studies 50, instructor's consent.

**288—Senior Thesis I (3).** Senior essay on a Peace Studies topic requiring major research. Prerequisite: Peace Studies 50 and senior standing. f,w.

**302—International Journalism (2).** (same as Journalism 303). Requires approval of the Dean of the School of Journalism.

**303—Politics and War (3).** (same as Political Science 303).

**326—Political Anthropology (3).** (same as Anthropology 325).

**340—Ethical Issues in Communication (3).** (same as Communication 340). Exploration and analysis of ethical dimensions intrinsic to human communication. Prerequisite: junior standing or departmental consent.

**350—Readings in Peace Studies (1-3).** Students may receive 1 to 3 credit hours for doing readings and research in a particular area of peace studies. At least one paper will be required. Repeatable for a maximum of 6 hours. Prerequisite: instructor's consent. f,w,s.

**354—Political Sociology (3).** (same as Sociology 354).

**355—Western Europe's Foreign Policy (3).** (same as Political Science 355).

**360—Economic Development (3).** (same of Economics 360). The study of less-developed countries including problems of measureing economic growth, analysis of sources of economic growth, causes of changes in economic and social structure, development and trade policies. The consequences of goals and assumptions for development policy are analyzed. Prerequisites: 229 and 251 or 351.

**370—Political Development and Social Change (3).** (same as Political Science 370).

**371—American Foreign Policy from Colonial Times to 1898 (3).** (same as History 370).

**373—History of United States Foreign Relations, 1945 to Present (3).** (same as History 373).

**384—International Problems in the Middle East (3).** (same as Political Science 384). Nature and causes of the Arab-Israeli Conflict, inter-Arab rivalries, the Persian Gulf Problems, and the involvement of external powers in these conflicts. Prerequisites: junior standing.

# Pharmacology

**School of Medicine**
**M517B Medical Sciences Building (573) 882-7186**
*The School of Medicine does not offer an undergraduate degree in pharmacology, but some courses are available to undergraduate students.*

## COURSES

**204—Elements of Pharmacology (3).** Introductory study of drugs commonly used in clinical medicine; particular reference to pharmacodynamics. Designed for medical science writers and nurses desiring a brief survey course. Prerequisite: Physiology 201 or equivalent. f,w.

**305—Topics in Pharmacology (cr.arr.).** Selected topics not in regularly offered courses. Prerequisite: Instructor's consent.

**310—Introduction to Pharmacology Literature (1).** Practice reading and analyzing journal articles, polishing writing skills, and delivering oral research presentations from pharmacology literature and student laboratory experiences. Prerequisite: instructor's consent. f.

**311—Introduction to Pharmacology Literature (1).** Practice reading and analyzing journal articles, polishing writing skills, and delivering oral presentations from pharmacology literature and student laboratory experiences. Continuation of Pharmacology 310. Prerequisite: instructor's consent. w.

**331—Principles of Drug Action I (4).** A course for graduate students in pharmacology, toxicology and related fields emphasizing the physiological and biochemical principles of drug action. Discussion format. Prerequisite: Instructor's consent. f.

**334—History of Pharmacology (1).** Historical background of contemporary pharmacology. Prerequisite: instructor's consent.

**400—Problems (cr.arr.).** Individual projects in pharmacology.

**405—Pharmacology of Transmembrane Signaling (3).** To develop state of the art knowledge (and emerging research issues) of drug actions on transmembrane signaling. Prerequisites: Pharmacology 331; Biochemistry 270 or 272, Physiology 250 or equivalent. f.

**410—Seminar (2).** Instruction in critical evaluation, review, and summary of scientific data and practice in oral presentation of scientific research seminar. Taught in conjunction with weekly department seminar series. f,w.

**427—Fate of Drugs in the Animal Body (2).** (same as Veterinary Anatomy-Physiology 427). The course is concerned with the absorption, distribution, metabolism and elimination of drugs using a comparative approach. The pharmacokinetic aspects of elimination are stressed.

**432—Principles of Drug Action II (3).** A course for graduate students in pharmacology and related fields focusing on receptors as physiological regulators and targets of therapeutic agents, using the current literature in a discussion formate. Prerequisite: 331 or equivalent.

**435—Neuropharmacology/Neurochemistry (3).** (same as Biochemistry 469). Covers modern concepts and basic mechanisms about the central and peripheral nervous system to better understand pathophysiology of neurological diseases and mechanisms of drug action. alt.w.

**438—Neuropharmacology (3).** Biochemical and behavioral actions of drugs affecting the nervous system. Effects of drugs on synaptic mechanism including neurotransmitter metabolism and receptor interactions. Effects of drugs on unconditioned and conditioned behavior. Prerequisite: 331 or equivalent.

**450—Research (cr.arr.).** Opportunities for research in pharmacology, not leading to dissertation.

**490—Research (cr.arr.).** Research in pharmacology, leading to dissertation. Graded on a S/U basis only.

# Philosophy

**College of Arts and Science**
**438 General Classroom Building (573) 882-2871**
**Fax: (573) 884-8949**
**E-mail: Andresenk@missouri.edu**
**http://www.missouri.edu/~philwww/**
**CHAIR** P. Weirich
**PROFESSORS** J. Bien, W. Bondeson, B. Gupta, J. Kultgen, J. Kvanvig, P. Markie, D. Sievert, P. Weirich
**ASSOCIATE PROFESSORS** R. N. Johnson, A. Melnyk, A. von Schoenborn
**ASSISTANT PROFESSOR** C. Horisk

**DEGREES** AB, MA, PhD in philosophy

The study of philosophy provides students with an opportunity to develop argumentative and critical skills while becoming familiar with some of the most important ideas and texts in the history of thought. The philosophy curriculum includes undergraduate and graduate courses in logic, ethics, epistemology (theory of knowledge) and metaphysics (theory of reality), as well as in the major periods of the history of philosophy. These courses are taught by faculty who have been selected for their scholarship, enthusiasm and teaching ability (nearly half have won teaching awards). The department also offers courses in conjunction with the Honors College and such interdisciplinary programs as South Asian Studies and Peace Studies.

**MAJOR** A major in philosophy offers students an opportunity to hone valuable critical skills and prepares them for graduate work in the field and



for advanced work in other liberal arts. A major in philosophy is excellent preparation for advanced training in law, the ministry, business, medicine, and other professions. Undergraduates pursuing an area of concentration in philosophy are required to complete 27 semester hours of philosophy courses, with a C- or above in every course, including:

**One of the following courses in logic**
Phil 52: Introduction to Logic (3)
Phil 153: Mathematical Logic (3)
**One of the following courses in ethics**
Phil 51: Introduction to Ethics (3)
Phil 135: Ethics and the Professions (3)
Phil 137: Philosophies of War and Peace (3)
Phil 213: Political and Social Philosophy (3)
Phil 214: Ethical Issues in Business (3)
Phil 331: Medical Ethics (3)
Phil 332: Philosophy of Law (3)
Phil 366: Theories of Ethics (3)
**All of the following courses**
Phil 204: Ancient Western Philosophy (3)
Phil 205: Early Modern Philosophy (3)
Phil 206: Kant to Hegel or 207: 19th Century Philosophy (3)
Phil 208: Contemporary Philosophy (3)
Phil 390: Senior Seminar (3)

**In addition, philosophy majors must complete:**

- Either a course of study in a related field by taking nine hours in one or more other departments, including six hours of upperclass courses
- Or a minor in another field by taking 15 hours in a single department, including at least nine hours in courses other than readings, methods, techniques or problems, and at least six hours in upperclass courses

The courses to be counted toward the related field or the minor, as well as the courses in philosophy, must be approved by the department's director of undergraduate studies.

In developing a related field or a minor, students are urged to concentrate on courses relevant to their main interest in philosophy, such as classical studies for ancient philosophy, math for logic, or science for philosophy of science.

**MINOR IN PHILOSOPHY** Students may earn a minor in philosophy in other areas of concentration. To do this, students must first gain the permission of the concerned department, complete 15 hours of courses in philosophy, including at least nine hours other than readings, methods, techniques or problems and six hours of upperclass courses that are approved both by the adviser in the student's major and by the department's director of undergraduate studies.

It is recommended that these courses be chosen from those required for a major in philosophy as listed above (not including Phil 390). However, other philosophy courses particularly relevant to the student's major may be substituted. Such substitutions are subject to the approvals mentioned.

**DOUBLE MAJOR** A philosophy major can be paired with a major in another department by meeting the requirements of both departments and using some of the same courses from each department to meet the related field or minor requirements of the other department. The program for each department must be approved by the adviser for that department.

**MAJOR WITH HONORS** The undergraduate program in philosophy also can include six semester hours of honors thesis courses (Phil 298 and 299). These courses, coupled with the regular major requirements and both a 3.3 grade point average in all courses and a 3.5 grade point average in all philosophy courses, lead to an AB degree with honors in philosophy.

## COURSES

**1—General Introduction to Philosophy (3).** Introduction to traditional philosophical problems and methods of philosophical enquiry. Consideration given to different philosophical theories on the nature of reality, man, nature and God; knowledge and how it is acquired; values and social issues.

**51—Introduction to Ethics (3).** Introduction to different philosophical theories regarding when acts are morally right rather than wrong; when things are good rather than bad; nature of the "good life", nature of ethical reasoning and justification.

**52—Introduction to Logic (3).** Methods of analyzing and evaluating arguments of all types. Uses both informal and formal techniques. Identifies informal fallacies and introduces elementary symbolic logic.

**110—Philosophical Ideas in Literature (3).** Philosophical ideas and issues revolving around human freedom as these ideas and issues are embodied in great literary works from Plato through Dostoyevski to Burgess. Prerequisite: sophomore standing.

**115—Philosophy: East and West (3).** (same as South Asia Studies 115). Compares the interpretation and role of philosophical concepts such as experience, reason, permanence, change, immortality, soul, God, etc., in Indian, Chinese and European traditions. Prerequisite: sophomore standing.

**120—Philosophy of Religion (3).** Considers basis for and nature of religious beliefs. Philosophical approaches to religion, cultural implications of religion, psychoanalysis and religion, mysticism and myth. Prerequisite: sophomore standing.

**130—Philosophy and Human Nature (3).** Human existence, its nature, condition, foundations and significance, according to contemporary philosophies such as existentialism, pragmatism, Marxism, positivism, theism, etc. Students are asked to formulate their own self-conceptions. Prerequisite: sophomore standing.

**135—Ethics and the Professions (3).** Examination of ethical issues confronted by members of different professions such as medicine, law, business, journalism and engineering. Prerequisite: sophomore standing.

**137—Philosophies of War and Peace (3).** (same as Peace Studies 137). Moral issues about the recourse to war by the nation and the individual's obligations to participate. The nature of peace, social and personal. Special attention to the Vietnam War and the nuclear age.

**152—Rational Decisions (3).** Principles for making decisions in a rational way. Special attention to principles that use probabilities and utilities. Some discussion of decisions made in conjunction with other people, and decisions made for other people. Prerequisite: grade of C or higher in Math 10 or equivalent course.

**153—Mathematical Logic (3).** (same as Linguistics 153). Introduces a symbolic language for representing the structure of arguments. Presents precise rules for demonstrating the validity of arguments. Covers natural deduction for sentence and predicate logic. Develops skill in constructing derivations. Prerequisite: grade of "C" or higher in Math 10 or equivalent.

**202—Medieval Philosophy (3).** Major thinkers from St. Augustine through 14th century Ockhamists. Prerequisite: sophomore standing.

**204—Ancient Western Philosophy (3).** Philosophical thought on nature, knowledge, the gods, human life and society, from Thales to Augustine. Emphasis on Plato and Aristotle. The relevance of the ancients to contemporary life. Prerequisite: sophomore standing.

**205—Early Modern Philosophy (3).** Surveys critical and speculative thinking of modern period from Descartes to Kant in relation to scientific, religious and social movements. Prerequisite: sophomore standing.

**206—Kant to Hegel (3).** Focus on the philosophic accomplishments of this very brief and yet extremely fertile period of the Enlightenment's transformation through Romanticism. Prerequisite: sophomore standing.

**207—19th Century Philosophy (3).** A careful and sympathetic study of some of the major thinkers of this period, notably Kierkegaard and Nietzsche. Prerequisite: sophomore standing.

**208—Contemporary Philosophy (3).** The course will be a survey of some of the notable philsophers/thinkers whose contributions have been made in the twentieth century, eg., Russell, Wittgenstein, Sartre, Freud, Dennett and Searle. Prerequisite: sophomore standing.

**212—Existentialism (3).** The nature of human existence, the meaning of life, the relation of the individual to nature, society, and any gods that may be, according to Kierkegaard, Nietzsche, Heidegger, Sartre, de Beauvoir, Camus and others. Students are encouraged to come to grips with the issues in relation to their own lives. Prerequisite: sophomore standing.

**213—Political and Social Philosophy (3).** (same as Peace Studies 213). Contemporary and/or historical theories of justice and the state. Utilitarianism, Liberalism, Libertarianism, Marxism, Communitarianism and Feminism may be among the views covered. Prerequisite: sophomore standing.

**230—Philosophy and Intellectual Revolution (3).** Examines such revolutions as the Copernican, Darwinian, Marxian and Freudian. What are the new views? How is man's place in the universe affected? What puzzles arise in replacing old by new views? Prerequisite: sophomore standing.

**298—Honors I (3).** Special work for Honors candidates.

**299—Honors II (3).** Special work for Honors candidates.

**301—Topics (cr.arr.).** Organized study of selected topics. Subjects and earnable credit may vary from semester to semester. Prerequisites: junior standing and instructor's consent, departmental consent for repetition.

**302—Epistemology (3).** An examination of contemporary philosophical theories concerning the nature, sources and limits of knowledge and justified belief. Previous work in Philosophy 1, Philosophy 204 or Philosophy 205 is recommended.

**303—Selected Modern Philosophers (3).** Advanced study of a particular philosopher or a number of philosophers from the same school in the modern period. May be taken twice for credit with permission of the department. Prerequisite: junior standing.

**304—Selected Contemporary Philosophers (3).** Advanced study of a particular philosopher or philosophers from the same school in the 20th century. May be taken twice for credit with permission of the department. Prerequisite: junior standing.

**305—Metaphysics (3).** Metaphysics studies what there is and how things are, most generally speaking. Topics may include realism versus nominalism, substance and attribute, facts, modality, identity and causality. Previous work in Philosophy 1, 204, or 205 recommended

**314—Formal Logic (3).** (same as Linguistics 314). Presents the method of truth trees for sentence and predicate logic. Examines proofs concerning the decidability, soundness, and completeness of formal systems. Emphasizes the theory of formal systems. Prerequisite: 153 or graduate status.

**318—Advanced Symbolic Logic (3).** Elementary set theory. Modal logic, the logic of possibility and necessity. Prerequisite: 153 or 314.

**320—Philosophy of Science (3).** Why believe the scientific world-view? What, if anything, is the scientific method? Are today's theories really superior to the past theories? Examines contemporary philosophical answers to such questions. Prerequisite: junior standing and 10 hours science.

**323—Philosophy of History (3).** Readings from classic and contemporary philosophers of history. Problems about nature and limits of historical knowledge; relation between history and other disciplines; the existence, nature, and kinds of historical laws. Prerequisite: junior standing.

**328—Philosophy of Mind (3).** Considers theories and arguments in contemporary philosophy of mind, focusing on the nature of mental states, their relation to brain states and the plausibility of various materialist theories of the mind. Prerequisite: junior standing.

**331—Medical Ethics (3).** Considers moral issues posed by developments in biological sciences and medical technology. Topics may include: genetic engineering, abortion and euthanasia, distribution of health care. Prerequisite: junior standing.

**332—Philosophy of Law (3).** What is law? Are there pre- or trans-legal rights? Is punishment justifiable? How can judicial decisions be justified? What are the relations between law and morality? Prerequisite: junior standing.

**341—Marxism (3).** A philosophical examination of (a) the notion of critique as seen in Marx's early and middle writings, and (b) specific topics by such authors as Lenin, Lukacs and Plekhanov. Prerequisite: junior standing.

**350—Special Readings (1-3).** Prerequisite: junior standing.

**360—Asian Philosophy (3).** (same as South Asia Studies 360). This course traces the origins of Indian and Chinese philosophical world views. Included are the major ideas in Hindu, Jaina, and Buddhist thought in India, and Taoism and Confucianism in China. Emphasis is placed on the diverse, assimilative, and pragmatic nature of Indian thought and its impact on contemporary Asian philosophy. Prerequisite: junior standing.

**362—Philosophy of India (3).** (same as South Asia Studies 362). General development of Indian philosophy. Prerequisite: junior standing.

**364—Contemporary Indian Philosophy (3).** (same as South Asia Studies 364). Indian philosophical traditions as represented in backgrounds of Gandhi, Tagore, Ramkrishna, and philosophical systems of Radharkrishnan, Aurobindo, etc. Prerequisite: junior standing.

**366—Theories of Ethics (3).** Normative and meta-ethical theories. Topics may include the rationality and objectivity of morality, the meaning of moral language, the differences between deontological, utilitarian and virtue theories. Prerequisite: junior standing.

**390—Senior Seminar (3).** A capstone course required of and only open to senior Philosophy majors. Course content will vary, depending on the professor teaching the course.

**405—Teaching of Philosophy (1).** Seminar meetings on course design, teaching methods, the evaluation of teaching, grading, instructor obligations, and teaching aids. Some individualized instruction, including help preparing for and assessing the effectiveness of practice teaching.

**406—The Teaching of Philosophy II (1).** A sequel to 405. Includes a re-examination of end of semester tasks such as the composition and grading of finals and the assignment of course grades. Prerequisite: 405.

**410—Seminar (3).** Special topics. May be repeated for credit.

**411—Ethical Theory (3).** Contemporary theories of the right and the good. Metaethical topics such as moral language, reasoning, and justification.

**415—Metaphysics (3).** Theories of the categories and structures of reality, e.g., appearance and reality, causality, space and time, God, Nature, the human being.

**418—Epistemology (3).** Knowledge and opinion, the types, sources, and extent of knowledge, according to a variety of views.

**421—Plato (3).** Advanced studies in Plato; emphasis on recent scholarship.

**423—Aristotle (3).** Advanced studies in Aristotle; emphasis on recent scholarship.
**430—The Rationalists (3).** Interpretation and evaluation of major works of Descartes, Leibniz, and/or Spinoza in relation to their historical context and current philosophical problems.
**435—The Empiricists (3).** Epistemological and metaphysical doctrines of Locke, Berkeley and Hume.
**436—Kant (3).** Critique of Pure Reason: historical context, meaning and cohesion of its claims, critical assessment of them.
**439—Topics in the History of Ethics (3).** Advanced study of the ethical views of major historical figures ancient and/or modern.
**440—History of Eastern Ethics (3).** Historical survey of major eastern ethical theories. Explores broad range of ethical theories developed in Asia: Hindu and Buddhist in India; Toaism and Confucianism in China; and Zen in Japan.
**441—Hegel (3).** Phenomenology of Spirit: historical context, meaning and cohesion of its claims, critical assessment of them.
**449—Marxism (3).** Basic works of Marx and his successors.
**450—Research (cr.arr.).** Research not leading to thesis.
**452—Medieval Thinkers (3).** Selected works of one or more: Augustine, Avicenna, Anselm, Maimonides, Aquinas, Scotus, Ockham. Not a survey. Prerequisite: graduate standing.
**455—Phenomenology (3).** Selected works of Husserl and other phenomenological thinkers. Implications for epistemology, science, metaphysics, ethics, and other philosophical topics.
**456—Whitehead (3).** Process and Reality and other works. Contributions to metaphysics, theology, epistemology, and philosophy of science.
**457—Russell and Wittgenstein (3).** Each initially defends, but then rejects logical atomism. Metaphysical and epistemological themes of such intellectual phases and shifts of one or both philosophers.
**458—Heidegger (3).** Being and Time: historical context, meaning and cohesion of its claims, critical assessment of them.
**459—Existentialism (3).** Being and Nothingness and other philosophy and literary works.
**460—Recent Anglo-American Philosophy (3).** Topics on which current philosophers of the Anglo-American or Analytic tradition are concentrating.
**461—Recent Continental Philosophy (3).** Topics on which current philosophers on the European continent are concentrating.
**465—Applied Ethics (3).** Methods for applying normative ethical theories to personal and social moral problems, illustrated by application of consequentialist, deontological and virtue-centered theories to such problems as euthanisia, capital punishment, pornography, world hunger, war and environmentalism.
**470—Decision Theory (6).** Principles for making rational decisions, including principles of expected utility theory, game theory, and social choice theory. A survey of basic ideas and an introduction to selected research topics. Prerequisite: 314.
**472—Social and Political Philosophy (3).** Topics of current interest in social and political philosophy. generally one of the following: social contract theory, utiltarianism, voting procedures, or convention. Prerequisite: 213 or instructor's consent.
**473—Philosophy of Science (3).** Examines central issues in general philosophy of science concerning the scientific method and the role in it of observation, the nature of rational theory-choice, progress, and the status of theories postulating unobservables.
**474—Seminar in Logic (3).** Topics of current interest in logic. Generally one of the following: inductive logic, set theory, conditionals, epistemic logic, or formal semantics. Prerequisite: 314.
**475—Indian Philosophy (3).** Reality, levels of being, status of the world, nature of knowledge in Indian philosophy in relations in Advaita Vendanta system of Samkara.
**476—Philosophy of Mind and Psychology (3).** Survey of important recent work in contemporary philosophy of mind and psychology. Graduate seminar.
**477—Foundations of Cognitive Science (3).** Examination of philosophical questions arising in cognitive science concerning, for instance, the nature of computation and representation, inter-disciplinary relations, the nature of cognitive scientific explanation, and its relation to folk psychological explanation.
**490—Research (cr.arr.).** Work toward preparation of thesis or dissertation. Graded on a S/U basis only.

# Physical Therapy

**School of Health Professions**
**106 Lewis Hall (573) 882-7103**
**CHAIR** M. Sanford
**ASSOCIATE PROFESSORS** M. Brown, M. Minor, M. Sanford
**ASSISTANT PROFESSORS** C. Roberts, K. Wingert
**INSTRUCTORS** C. Abbott, C. Blow, K. Gibson, J. Krug
**ASSISTANT PROFESSOR EMERITUS** G. Browning

**DEGREES** BHS in preprofessional physical therapy; MPT

The five-year **Master of Physical Therapy** degree must be completed before a physical therapy graduate is qualified to enter professional practice. The **Bachelor of Health Science** is awarded at the same time as the MPT degree upon satisfactory completion of all MU general education and physical therapy requirements.

Physical therapy involves the evaluation and treatment of physical disability and pain that may result from injury, disease or developmental disability. Prevention of disability and public education are also roles of the physical therapist. Physical therapists use tests and measurements to assess body system dysfunction and determine diagnosis and treatment. Therapeutic interventions focus on posture, locomotion, strength, endurance, cardiopulmonary function, balance, coordination, joint mobility, flexibility and pain management. Daily living skills, including work, are also addressed. Therapeutic exercise, assistive devices, gait training/ambulation, physical agents, electricity and manual procedures such as joint and soft tissue mobilization, neuromuscular re-education and bronchopulmonary hygiene are employed in treatment. Consultative, educational, research and other advisory services are provided by physical therapists.

**PREREQUISITE COURSES** Approximately 60 hours of prerequisites are required. Students must complete the campus general education requirements. The following MU courses are also prerequisite to the professional program. Students transferring from other institutions should contact a departmental adviser to select appropriate courses. Admission to the professional program is competitive and limited.
HP 22: Introduction to Health Professions (1)
Psychology (6)
Chem 31 and 32: General Chemistry I, II (5)
Bio Sci 42: Intro to Bio Systems (5) or Biol 1 and 2
Science Elective (3)
Physics 21 and 22: College Physics (8)
Physio 201: Elements of Physiology (5)
Advanced Math Elective (3)



**LICENSURE** Upon graduation, the student is eligible for testing and licensure in any state. Licensure is required before entry into professional practice.

**ACCREDITATION** Accreditation of the program is granted by the Commission on Accreditation in Physical Therapy Education.

**COURSES**
**203—Foundations of Therapeutic Exercise (3).** Physiologic basis of therapeutic exercise with emphasis on effects on the musculoskeletal and cardiopulmonary systems; principles of exercise prescription; types and methods of exercise.
**204—Introduction to Orthopedic Physical Therapy (3).** Physical therapy diagnosis, management, and prevention of disorders of the musculoskeletal system; basics of orthopedic manual therapy. Includes laboratory.
**213—Clinical Evaluation and Procedures (3).** Principles and procedures of basic evaluation methods and documentation: muscle strength, range of motion, muscle balance, posture, neurologic tests. Includes laboratory.
**214—Physical Agents (3).** Biophysics, theory and technique concerning the use of physical agents as adjuncts to exercise programs. Includes thermal, electrical, light, hydrotherapy and mechanical agents.
**220—Introduction to Physical Therapy (1).** History of physical therapy: the profession; basic skills: first aid, infection control, vital signs; medical terminology.
**223—Introduction to Clinical Education I (1).** Focus on professional attributes of communication, teamwork, problem solving, and therapeutic behaviors in a case-based format. Graded on S/U basis only.
**224—Introduction to Clinical Education II (1).** Continuation of Introduction to Clinical Education I with increased time in clinical settings. Graded on S/U basis only.
**234—Clinical Pathophysiology (3).** (same as Diagnostic Medical Ultrasound 234US). Abnormal function of organ systems in the presence of disease; clinical manifestations and medical management.
**243—Applied Neurophysiology for Allied Health Students (3).** (same as Communicative Science and Disorders 243 and Occupational Therapy 243OT). Principles of basic neurophysiology, emphasizing correlation of structure and function of the nervous system.
**254—Movement Theory and Application (2).** Human sensorimotor development; motor learning; motor control theories; developmental and practical appplication to exercise; proprioceptive neuromuscular facilitation.
**300—Problems in Physical Therapy (1-3).** Independent study, based upon educational goals, leading to completion of a project or paper. Specific objectives and time line developed with the supervision of a faculty member. Prerequisite: instructor's consent.
**301—Topics in Physical Therapy (1-3).** Organized study of a specified area of interest in physical therapy and related subjects. Topics and credit hours will vary. Prerequisite: instructor's consent.
**303—Evidence-Based Practice (3).** Clinical research design and methods overview. Critical review of current and historically important professional literature. Effective writing related to clinically applicable research using computer and library resources. Identification of research questions. Prerequisite: departmental consent.
**304—Professional Issues in the Twenty-First Century (3).** The physical therapist as health care professional, administrator, and educator; legal, ethical, and political issues.

Service delivery management; delegation of care; rural vs. urban health care needs.

**305—Orthopedic Physical Therapy (3).** Physical therapy diagnosis, management, and prevention of disorders of the musculoskeletal system; continuation of orthopedic manual therapy emphasizing the axial skeleton; traction; massage; taping; sport-specific injury rehabilitation; orthotics. Prerequisites: 204.

**316—Physical Therapy Case Management I (5).** Evaluation and team approach to physical therapy management in adult medical and surgical conditions: cardiopulmonary, rheumatic, oncologic, integumentary or wound care, including major burn injury. Psychosocial and ethical issues incorporated. Problem based; laboratory.

**323—Clinical Education I (3).** Full time, supervised clinical experience addressing application of basic skills in patient evaluation and treatment, documentation and professional behaviors. Graded on S/U basis only.

**324—Clinical Education II (5).** Continuation of supervised clinical education. (Capstone course)

**336—Pediatric Physical Therapy (3).** Physical therapy evaluation and treatment of children with movement dysfunction. Emphasis on therapeutic exercise.

**346—Rehabilitation of the Neurologically Impaired Adult (3).** Physical Therapy evaluation and treatment of adults who have incurred neurological deficits; emphasis on the restorative care of individuals following spinal cord injury, stroke, and traumatic head injury.

**350—Special Readings (1-3).** Independent readings selected in consultation with supervising faculty member. Identified educational goals and activities; discussion, annotated bibliography or report. Prerequisite: instructor's consent.

**375—Human Kinesiology (3).** (same as Health Professions 375). Study of principles of physical laws, biomechanics and anatomic structure relative to human movement. Applications through analysis of daily functional performance, exercise, and sport. Prerequisite: Human Anatomy. f.

**376—Clinical Kinesiology (3).** Advanced Kinesiology addressing functional mobility; specifics of normal human gait; pathokinetics of gait. Assistive devices; wheelchairs; orthoses and prostheses. Includes laboratory.

**400—Problems (1-3).** Independent study and development of a clinical or research paper, poster or workshop suitable for presentation in a symposium or conference. Specific plan individually developed with advisor. Journal reviews. Prerequisites: graduate standing.

**401—Topics in Physical Therapy (cr.arr.).** Organized study of selected topics in physical therapy, health and wellness, prevention of disease and disability, and the rehabilitation sciences. Specific content may vary from semester to semester. Prerequisite: instructor's consent.

**410—Seminar (3).** Presentation and critical discussion of research activities, summaries of clinical and research experience. Prerequisite: departmental consent.

**415—Case Management II (5).** Complex orthopedic problems in persons of all ages; supervision, reimbursement, ethical/legal situations; community programs for injury prevention; work capacity evaluation/work hardening; consultation. Problem-based format; laboratory. Prerequisite: 316.

**416—Case Management III (5).** Traditional and contemporary theories of physical therapy in advanced rehabilitation of children and adults with neurologic disorders; education/employment, ethical/legal issues; patient/client advocacy. Problem based format; laboratory. Prerequisite: 346.

**420—Directed Readings (cr.arr.).** Selected readings on specific topics. Prerequisite: instructor's consent.

**425—Clinical Education III (5).** A continuation of supervised clinical education. Graded on S/U basis only.

**426—Clinical Education IV (5).** A continuation of supervised clinical education. Graded on S/U basis only.

# Physics and Astronomy

**College of Arts and Science**
**223 Physics Building (573) 882-3335**
**FAX (573) 882-4195**
**http://www.missouri.edu/~physwww/physics.html**

**CHAIR** H. White

**PROFESSORS** H. Chandrasekhar, M. Chandrasekhar, B. DeFacio, G. Forgacs, B. Mashhoon, P. Pfeifer, J. Rhyne, S. Satpathy, H. Taub, G. Vignale, H. White, J. Willett

**ASSOCIATE PROFESSORS** S. Kopeikin, P. Miceli, C. Peterson,

**ASSISTANT PROFESSORS** S.-J. Chen, M. Grandbois, C. Wexler, S. Zhang

**PROFESSORS EMERITI** D. Cowan, L. Holroyd, P. Plummer, G. Schupp, C. Tompson, S. Werner

**DEGREES** AB, BS, MS, PhD in physics

Physics is the science that studies the structure and properties of matter and transformations of energy. With math as the language and experimental verification as a guide, physical study has established the fundamental laws of nature that are the foundation of all natural science and technology. The study of physics includes learning the general principles and the phenomena that have been discovered and developing the skills that enable such knowledge to be advanced through research.

The study of physics is the starting point for many career opportunities; training in physics allows immense flexibility for the future in terms of additional study and in the ability to fit into jobs and job training in many areas. A traditional path is to continue the study of physics in graduate school to earn a master of science or doctor of philosophy degree — a necessary achievement to be qualified to teach and continue research in a college or university. A background in physics is preparation for continued study in a variety of fields, including geophysics, health physics, meteorology and all other sciences, as well as medicine, law, business and many other professions. Opportunities for those with bachelor of science degrees and those with advanced degrees also can be found in a variety of industries and in state and federal laboratories and agencies.

Astronomy is the study of all phenomena outside the limits of our planet. It involves the application of physics to interpretation of observable phenomena from the near-space environment surrounding the earth to the distant limits of the universe. Astronomical science is a smaller field than physical science, but employment opportunities at the bachelor's level exist in federal laboratories (NASA), at other institutions where there are telescope and planetarium operations and in some industrial laboratories. More direct involvement in astronomical research or employment at the university level or at a major astronomical research observatory requires a graduate degree.

The AB degree offered by the physics department requires fewer physics and math courses (31 credit hours of physics and 24 credit hours of math and computer science). Most physics majors will prefer to earn a BS degree (40 hours of physics and 28 hours of math, chemistry and computer science), which gives a solid foundation for the further graduate studies necessary for most careers in physics and other sciences.

**AREA OF CONCENTRATION IN PHYSICS The core courses for a baccalaureate degree in physics are**

Phy 175, 176: University Physics (10)
Phy 215: Introduction to Modern Physics (3)
Phy 310: Electricity and Magnetism (3)
Phy 312: Introduction to Thermodynamics (3)
Phy 314: Mechanics (3)
Phy 380: Quantum Mechanics I (3)
Phy 385: Modern Physics (3)
Math 80, 175, 201: Calculus I, II, III (13)
Math 304: Differential Equations (3)
CECS 103: Algorithm Design and Programming I (3).
Chem 32: General Chemistry (3)

**In addition to these core courses, candidates for the BS degree will complete 12 additional hours of course work in physics/astronomy and six additional hours of math. Candidates for the AB degree will complete four additional hours in physics/astronomy.**

**AREA OF CONCENTRATION IN ASTRONOMY** The curriculum requirements are basically the same as those for a BS degree in physics with the addition, as elective courses, of the following astronomy courses:

Astron 201: Introduction to Modern Astrophysics (3)
Astron 202: Astronomical Observations and Measurements (2)

**And two or three of the following astronomy courses**

Astron 320: Observational Astronomy (3)
Astron 335: Galactic Astronomy (3)
Astron 340: Extragalactic Astronomy (3)

Students who elect an undergraduate program leading to the BS degree in physics have an option regarding the College of Arts and Science foreign language requirement. This requirement of 12 or 13 hours (depending on the language studied) may be satisfied alternatively by the substitution of an approved specialization. This consists of a minimum of 12 hours of upper-division course work and may not include courses normally required of all physics majors. It is to be selected from an area with special relevance to physics and to the student's own interests and future plans. Students have selected options in aerospace engineering, atmospheric science/geophysical fluid dynamics, radiation biology, chemistry, computer science, electrical engineering (circuits or computer hardware emphasis), geology, nuclear engineering, material science and math and other areas. The choice and planning of an option must be done under the direction of the departmental undergraduate adviser.

**The department also offers a minor in physics to students who major in other areas. The requirements for a minor in physics are:**

Phy 175, 176: University Physics (10 hours), plus three additional courses selected from the following list (to include at least one course dealing with topics in modern physics)
Astron 201: Introduction to Modern Astrophysics (3)
Phy 215: Introduction to Modern Physics (3)
Phy 305: Electronic Data Processing (4)
Phy 310: Electricity and Magnetism (3)
Phy 311: Light and Modern Optics (4)
Phy 312: Introduction to Thermodynamics (3)
Phy 314: Mechanics (3)
Astron 325: Galactic Astronomy (3)
Astron 340: Extragalactic Astronomy (3)
Phy 375: Computational Methods in Physics (3)
Phy 380: Introduction to Quantum Mechanics I (3)

Phy 385: Modern Physics (3)

In order to complete these requirements, the student must complete math courses through Math 304: Differential Equations.

**SCHOLARSHIPS** The department annually offers several undergraduate scholarships to physics majors. These include the O.M. Stewart Scholarship, Paul E. Basye Scholarship, Newell S. Gingrich Scholarship, Eugene B. Hensley Scholarship, Ernest W. Landen Scholarship, Clifford W. Tompson Scholarship, Samuel S. Laws Scholarship, Donald L. and Lona Lewis Packwood Scholarship, Guy Schupp Scholarship and the Eli and Nola Haynes Scholarship. These awards are based primarily on motivation and scholastic achievement. The exact number and the stipends associated with these awards vary from year to year but altogether represent about 12 to 14 scholarships in all with stipends of $1,000. They may be renewed annually and are independent of any other scholarship or awards the student may have received. Interested students should apply to the department's director of undergraduate studies.

Additional information on the requirements for undergraduate work, course descriptions, scholarships and typical study programs is available in the brochure *Undergraduate Study in Physics and Astronomy at the University of Missouri-Columbia,* which may be obtained from the departmental office.

**The department also offers several courses designed for non-science students.**

Astron 1: Introduction to Astronomy (4)
Astron 2: Introduction to Laboratory Astronomy (2)
Astron 110: Archaeo-astronomy (3)
Physics 15: Concepts of Physics (3)
Physics 21 (4) and 22: (4) College Physics

## COURSES
## PHYSICS

**5—Concepts in Cosmology (3).** Introduction to fundamental concepts of modern cosmology. Topics include Olbers' paradox, Hubble expansion, Big Bang, and the Cosmic Microwave Background Radiation.

**15—Concepts of Physics—Physics for Poets (3).** Introduction to fundamental concepts of physics for liberal arts majors. Topics include Conservation of Energy-Momentum, Special theory of relativity, entropy, quantum mechanics and structure from quarks to cosmology. Prerequisite: Math 10 or equivalent.

**21—College Physics (4).** First course in algebra-based physics. Covers statics, kinematics, dynamics, rotational dynamics, hydrostatics, oscillatory motion, and sound. Three lectures, one lab weekly. Prerequisite: Math 10 or equivalent.

**22—College Physics (4).** Continuance of 21. Covers electricity and magnetism, optics and modern physics. Three lectures, one lab weekly. Prerequisite: grade of 2.0 or better in Physics 21.

**33—Exploring the Principles of Physics (4).** A hands-on course covering topics in Matter, Mechanics, Energy, Light, Sound, Electricity and Magnetism. Pedagogy reflects styles used in K-12 classrooms; emphasis on inquiry, concept development, quantitative applications and technology. Prerequisite: Math 10.

**44—Physics of Sound and Music (2).** The course will be an introduction to acoustics, and the role that fundamentals physics plays in determining what we hear. No formal physics or music background is required, though the ability to read music is preferable. Topics covered will include standing waves, the harmonic series, synthesis, the response of the human ear, different tuning systems, and characteristics of different families of instruments. Prerequisite: Math 10.

**60—Undergraduate Seminar I (1).** Presentation of topics of current interest in physics by staff and students at freshman-sophomore level.

**175—University Physics (5).** First course in calculus-based physics for science and engineering students. Covers Newton's laws, statics, kinematics, work, energy, rotational dynamics, oscillations, gravitation, thermodynamics. Includes a laboratory. Prerequisite: Math 80 or equivalent. Corequisite: Math 175.

**176—University Physics (5).** Continuation of 175. Covers electrostatics, elementary circuits, magnetism, electromagnetic phenomena, optics, matter waves and particles, Includes a laboratory. Prerequisites: Mathematics 175 and grade of 2.0 or better in Physics 175. Corequisite: Mathematics 201.

**180—Honors Seminar (cr.arr.).** Presentation of topics of current interest in physics by staff and students at junior-senior level. Prerequisite: eligible for honors or departmental consent.

**215—Introduction to Modern Physics (3).** Relativistic kinematics and Lorentz transformations historical basis for quantum mechanics; atomic structure; physics of solids; nuclear structure and decay. Prerequisite: 176.

**275—The Mechanical Universe (3).** Includes the basic elements of differential and integral calculus. Emphasis on Astronomical applications and on historical development. Offered through Continuing-Education. Prerequisite: working knowledge of College Algebra. cor.

**296—Honors Problems in Physics (cr.arr.).**

**300—Problems (cr.arr.).** Special studies for advanced undergraduate students in physics covering subjects not included in courses regularly offered.

**301—Topics on Physics and Astronomy (1-3).** Organized study of selected topics. Subjects and earnable credit may vary from semester to semester. Prerequisites: Physics 176 or instructor's consent, departmental consent for repetition.

**305—Electronic Data Processing (4).** Acquaints students with techniques for the electronic acquisition and processing of physics data. Digital logic, integrated circuits, microprocessors and interfacing. Two lectures, 2 labs weekly. Prerequisite: 176.

**306—Advanced Physics Laboratory I (3).** Experiments in atomic, nuclear and solid state physics including X-ray and neutron diffraction, NMR and Mossbauer effect measurements. Experiments familiarize students with modern equipment found in most physics laboratories. Two 3-hour labs weekly. Prerequisites: 215 and 304.

**307—Advanced Physics Laboratory II (3).** Experiments include: superconductivity, resistivity, specific heat, optical, and computer-related measurements. Two 3-hour labs weekly. Prerequisites: 215 and 304.

**310—Electricity and Magnetism I (3).** Mathematical preliminaries. Properties of charge distributions at rest and in motion, the field concept, introduces electromagnetic radiation. Prerequisites: 176.

**311—Light and Modern Optics (4).** Interaction of light with matter, spectroscopic techniques, wave optics, interferometry, multilayer films, polarization, non-linear optics, design of optical instruments, matrix methods, waveguides, fiber optics, acousto-optic and photo-elastic modulation. Includes both lectures and laboratory. Prerequisite: Physics 176 or equivalent.

**312—Introduction to Thermodynamics (3).** Development of the concepts of temperature, heat, work, entropy, enthalpy and free energy. Applications to gases, liquids and solids. Statistical methods. Prerequisite: 176.

**313—Electricity and Magnetism II (3).** Application of Maxwell's equations. Prerequisite: 310.

**314—Mechanics (3).** Development of fundamental concepts, principles of mechanics using mathematical methods. Many problems used. Prerequisite: 176.

**320—Observational Astronomy (3).** (same as Astronomy 320). Elements of astronomical observational techniques and procedures for reduction of astronomical data: theory of the photographic plate. Emphasis on development of observing skills through use of the telescope. Prerequisite: 201 or equivalent.

**326—Modern Physics Laboratory for Secondary Science Teachers (3).**

**340—Extragalactic Astronomy (3).** (same as Astronomy 340).

**375—Computational Methods in Physics (3).** Use of modern computational techniques in solving a wide variety of problems in solid state, nuclear, quantum and statistical physics. Prerequisite: 215.

**380—Introduction to Quantum Mechanics I (3).** Foundations of wave mechanics; wave packets; Schrodinger equation and I-D problems; operators and eigenfunctions, spherically symmetric systems. Prerequisite: Mathematics 304.

**381—Introduction to Quantum Mechanics II (3).** Review of quantum mechanics and units, forms of radiation, radiation detectors, spacetime symmetries, internal symmetries, nuclear structure and form factors, low-energy nuclear models, recent developments. Prerequisite: 380 or equivalent.

**385—Modern Physics (3).** Atomic and structure, spectra; quantum statistics; band theory of solids, free electrons, Bloch's Theorem, semiconductors; superconductivity; nuclear models and elementary particles. Prerequisite: 380.

**400—Problems (cr.arr.).** Laboratory work involving study of literature of special experiments in physics. Introduces research methods.

**401—Topics of Physics and Astronomy (1-3).** Organized study of selected topics. Subjects and earnable credit may vary from semester to semester. Prerequisites: instructor's consent. Departmental consent for repetition.

**404—Study of Techniques of Teaching College Physics (1-3).** Objectives, methods and problems related to teaching college physics. Some credit in this course is required for all students teaching physics. May repeat for 3 hours maximum.

**411—Seminar in Physics (1).** Topics of current interest selected for discussion. May be elected repeatedly. S/U Graded only. Prerequisite: 415

**415—Condensed Matter Physics I (3).** Crystal structure, reciprocal lattice, phonons, neutron and x-ray scattering, free electron theory of metals, Fermi surfaces, energy bands, static properties of solids, semiconductors, devices, and quantum structures, optical properties, excitons, introduction to magnetism and superconductivity. Prerequisites: 380 or equivalent.

**416—Condensed Matter Physics II (3).** The basic Hamiltonian, Phonons, theory of the electron gas, second quantization, Hartree and Hartree-Fock approximation, local-density method, tight-binding theory, electron-electron interaction and screening, Fermi liquid theory, transport properties, impurities, Green's function's, Localization, Quantum Hall effect, magnetism, superconductivity. Prerequisites: 415

**420—Nuclear Physics I (3).** Properties of nuclei and nuclear radiation, detection methods, high-energy nuclear phenomena. Prerequisite: 380.

**432—Topics in Astronomy and Astrophysics (3).** (same as Astronomy 432). Selected topics from solar system, stellar, galactic and extragalactic astronomy and astrophysics. May be repeated to a maximum of six hours. Prerequisite: instructor's consent.

**440—Low Energy Neutron Scattering (3).** Theory, application of low energy neutron scattering to investigation of structure and dynamics of aggregate matter including lattice vibrations, ordered spin systems, spin waves, diffusive motions in liquids; experimental techniques discussed. Prerequisite: 415.

**445—Plasma Physics (3).** Single particle motion, plasma

kinetic theory, magnetohydrodynamics and other fluid theories, waves in unmagnetized and magnetized plasmas, transport phenomena, instabilities, controlled fusion. Prerequisite: instructor's consent.

**450—Research (cr.arr.).** Graduate research.

**461—Classical Mechanics (3).** The interplay of dynamics and symmetry, Hamilton's principle and Noether's theorem, Lagrangian, Hamiltonian, Hamilton-Jacobi theories of mechanics in special relativity. Rigid body motion, small oscillation, canonical transformations and fields as continuous mechanical systems. Prerequisites: 314 or equivalent.

**462—Electromagnetic Theory (3).** Electrostatics, dielectrics, magnetostatics, method of images, Green's functions, Maxwell's equations, time-varying fields, plane electromagnetic wave propagation, reflection, refraction, wave guides. Additional topics may include plasma physics diffraction, radiation. Prerequisites: 461.

**464—Electrodynamics (3).** Tensor analysis, special theory of relativity and the Lorentz group. Classical theory of fields including variational principle, Noether's theorem and invariance principle. Microscopic Maxwell's equation, electromagnetic conservation laws and applications to radiation. Prerequisites: 462 or instructor's consent.

**466—Methods in Mathematical Physics (3).** Concentrates on mathematical techniques used in modern physics. Infinite series, functions of a complex variable, differential equations, Fourier series and integral, etc. Prerequisites: 370 or instructor's consent.

**468—Thermodynamics and Statistical Mechanics (3).** Thermodynamics as applied in physics, chemistry; laws of distribution; statistical methods of study matter, radiation. Prerequisite: 471 or concurrently.

**471—Quantum Mechanics I (3).** Non-relativistic quantum theory in Hilbert space. States and self-adjoint observables, unitary time evolution in various pictures, the path-integral, identical particles, Fock space, angular momentum and some pertubation theory. Prerequisites: 461.

**472—Quantum Mechanics II (3).** More perturbation theory, variational methods, semi-classical methods and application to radiation theory, linear response theory and rudiments of relativistic quantum mechanics including the Klein-Gordan equation and the Dirac equation. Prerequisites: 471.

**473—Quantum Mechanics III (3).** Properties of many-particle systems at low temperature. General Formalism for Fermi and Bose systems, theory of superconductivity and superfluidity, introduction to quantum spin model—Diagromatic formulation of quantum electrodynamics. Scattering of electrons and positions, introduction to radioactive corrections.

**478—Topics in Solid State Theory (3).** Selected topics in solid-state theory, including various elementary excitations in solids and their interactions. May be elected more than once. Prerequisite: instructor's consent.

**482—Relativity and Gravitation (3).** Special and general theories of relativity. Discussion of accelerated observers and the principles of equivalence. Einstein's gravitational field equations, black holes, gravitational waves and cosmology. Prerequisites: 461, 462.

**486—Theory of Elementary Particles (3).** Functional methods in field theory, renormalization group, symmetries in quantum fields, nonabelian gauge groups and the Yang-Mills equation, spontaneous broken symmetry, the GWS model for weak interactions, QCD, Gut models gravitational unification. Prerequisites: 420 and 473 or instructor's consent.

**490—Research (cr.arr.).** Research leading to Ph.D. dissertation. Prerequisite: Ph.D. candidacy has bee established. Graded on a S/U basis only.

### ASTRONOMY

**1—Introduction to Astronomy (4).** Survey of methods of astronomy; description of the solar system, stellar astronomy, structure of the galaxy and the universe. Prerequisites: one year each of high school algebra and plane geometry. Prerequisite: Mathematics 10 or equivalent.

**2—Introduction to Laboratory Astronomy (2).** Laboratory supplement to 1. Satisfies physical science laboratory requirement. Survey of astronomical methods, instruments, observations and measurement techniques. Prerequisite or Co-requisite: 1.

**201—Introduction to Modern Astrophysics (3).** (same as Physics 201). Elements of stellar, and galactic astrophysics. Interpretation of observations and physical conditions of various astronomical objects including stars, gaseous nubulea and , galaxies. Prerequisite: Physics 176.

**300—Problems (cr.arr.).** Special studies in astronomy; covers subjects not included in courses regularly offered. Prerequisite: instructor's consent.

**320—Observational Astronomy (3).** (same as Physics 320). Elements of astronomical observational techniques and procedures for reduction of astronomical data and theory of the photographic plate. Prerequisite: Astronomy 201 or equivalent.

**340—Extragalactic Astronomy (3).** (same as Physics 340). Observational properties of normal galaxies and clusters of galaxies; theory of structure and dynamics of galaxies; interacting galaxies, Seyfert and emission-line galaxies, quasi-stellar objects. Introduction to cosmology. Prerequisites: 201, 335 or instructor's consent.

**432—Topics in Astronomy and Astrophysics (3).** (same as Physics 432). Selected topics from solar system, stellar galactic and extragalactic astronomy and astrophysics. May be repeated to a maximum of 6 hours. Prerequisite: instructor's consent.

# Physiology

**School of Medicine**
**MA415 Medical Sciences (573) 882-4957**

*The School of Medicine does not offer an undergraduate degree in physiology, but some courses are available to undergraduate students.*

### COURSES

**201—Elements of Physiology (5).** Beginning course for upper-class and undergraduate students designed to cover the basic functional aspects of all systems of the body. Prerequisite: 5 hours biology or its equivalent, instructor's consent.

**300—Problems (1-3).** We have requests from undergraduate students for a problems course which will provide an opportunity to explore research in physiology. We expect these requests to increase upon implementation of a program to offer early acceptance into medical school to highly qualified undergraduate students. Individual studies, minor research problems. f,w,s.

**305—Mammalian Physiology (3-4).** Basic principles in the physiology of cells, membranes, muscle, and the central nervous system. Laboratory (1 hr). Grading by written exams. Prerequisite: instructor's consent.

**400—Problems (cr.arr.).** Guided study to strengthen knowledge in physiology. Prerequisite: instructor's consent.

**401—Topics (1-3).** Prerequisite: instructor's consent.

**405—Principles of Mammalian Physiology II (5-6).** Organ control in cardiovascular, respiratory, renal, gastrointestinal, and endocrine systems. Laboratory (1 hr.) - exploration in basic and advanced physiological concepts. Grading by written exams. Prerequisites: Physiology 305 or equivalent, instructor's consent.

**410—Seminar (1).** Presentation of subjects in physiology. f,w.

**415—Scientific Expression I (2).** Students study elements of expression, sentence and paragraph structure and the parts of a manuscript by revising poorly written examples. Design of figures tables and posters also is considered as is the form and content of research proposals.

**416—Scientific Expression II (2).** Students read and discuss papers assigned by faculty then complete writing assignments based on their readings. Extensive revision and rewriting of assignments before submission are expected. Writings are graded on both scientific content and quality of expression.

**420—Mammalian Membrane Physiology (3).** Advanced discussions of membrane transport behavior and electrical properties of excitable tissues. Conceptual aspects will be emphasized. Prerequisites: 305 and 405 or Veterinary Physiology 420, 421, or Cellular Physiology (Biological Sciences) 371 or equivalent and instructor's consent.

**430—Cardiovascular Physiology (3).** Important aspects of the cardiovascular system, are studied in depth with emphasis on recent developments. Prerequisite: Physiology 305 and 405 or Veterinary Physiology 420 and 421 or equivalent and instructor's consent.

**435—Microvascular Circulatory Function (3).** (Same as Veterinary Biomedical Sciences 425.) An in-depth study of microcirculatory structure and function in various tissues with emphasis on recent developments in the understanding of the mechanisms involved in nutrient supply, edema formation, lymphatic function and fluid balance. Prerequisite: Veterinary Physiology 420 and 421 or Physiology 305 and 405 or equivalent and instructor's consent.

**439—Renal Physiology (2).** Mechanisms in mammalian renal physiology presented with particular emphasis on current techniques and concepts. Prerequisites: Physiology 305 and 405, or Veterinary Physiology Physiology 420 and 421 (or equivalent) and instructor's consent.

**440—Control of Energy Metabolism (3).** This advanced elective is in a lecture/discussion format using primary literature to explore how cells organize and regulate metabolism to meet energy demands. Prerequisite: instructor's consent.

**450—Research (cr.arr.).** Opportunities for graduate research in physiology not leading to dissertation.

**490—Research (cr.arr.).** Research in physiology, leading to dissertation. Graded on a S/U basis only.

# Plant Pathology

**College of Agriculture, Food and Natural Resources**
**108 Waters Hall (573) 882-2418 or (573) 882-2643**

**UNIT LEADER** Marc J. Linit
**COORDINATOR** James English
**PROFESSORS** A. Chatterjee, A. Novacky, O. Sehgal, A. Wrather
**ASSOCIATE PROFESSORS** J. Bruhn, A. Karr, H. Krishnan, J. Mihail, T. Niblack, J. Schoelz
**ASSISTANT PROFESSORS** P. Donald, G. Smith, W. Shaffer, J. White
**PROFESSORS EMERITI** R. Goodman, E. Palm, T. Wyllie

**DEGREES** MS and PhD in plant pathology

Plant pathology is the study of the origin and essential nature of plant diseases, especially as they relate to functional and structural changes caused in plants. Control mechanisms use and exploit genetic, biochemical, physiological and biological features of host and pathogen as they relate to the environment. Control strategies integrate these features into biologically and economically sound programs. Employment opportunities include universities (research, teaching, service); industry (research and development); government (domestic and foreign) and private consulting.

Although plant pathology is primarily a graduate program, undergraduate students have the option of choosing plant pathology as an academic minor in partial fulfillment of the bachelor's degree. Departmental requirements for the minor include a minimum of 15 hours of courses offered by the Department of Plant Pathology and include the following as the minor core curriculum.

Plant Path 207: Biology of Fungi (3)

Plant Path 300: Problems (3)
Plant Path 305: Theory and Concepts of Plant Pathology (3)
Plant Path 306: Introductory Plant Pathology Laboratory (2)
Plant Path 361: Insects in Relation to Plant Disease (3)

Other course offerings may be selected in consultation with the academic adviser and director of graduate studies.

### COURSES

**205—Forest Pathology (3).** (same as Forestry, Fisheries & Wildlife 205). Provides basic understanding of biotic and abiotic agents which cause forest diseases, and current approaches to disease control. Prerequisite: minimum of 5 hours Biology or equivalent. w.

**207—Biology of Fungi (3).** (same as Biological Sciences 207). The diverse roles of fungi in the biosphere will be explored by considering fungi we eat, fungi which destroy our food, fungi in folklore and fungi as global nutrient recyclers. Prerequisites: Biology 10, 11, or 12 or equivalent. w.

**300—Problems (3).** Special problem in plant pathology designed for the minor program in Plant Pathology. Problems arranged on an individual student basis.

**305—Theory and Concepts of Plant Pathology (3).** (same as Forestry, Fisheries & Wildlife 305 and Pest Management 305). To provide information on disease development in plant populations; possible control strategies combined with training in retrieving and critically reviewing research information. Prerequisites: 5 hours Biology, junior, senior or graduate standing. f. cor.

**306—Introductory Plant Pathology Laboratory (2).** Complements 305 through laboratory study of pathogens, disease and life cycles, diagnosis, and method of disease control for agronomic, ornamental and woody plants. Prerequisites: 305 or concurrently. f.

**320—Environmental Microbiology (3).** Fundamental knowledge of selected microbial processes that are important in agriculture, environmental detoxification, and microbial biotechnology. Emphasis is on molecular, genrtic and physiological aspects of nitrogen metabolism, bioconversions, antibiosis and biocontrol.

**350—Readings in Plant Pathology (1-9).** Independent readings and discussion of recent research publications. Topics selected in consultation with supervisory faculty member. Prerequisite: instructor's consent. f,w.

**361—Insects in Relation to Plant Diseases (3).** (same as Entomology 361). Ecology, behavior, physiology and molecular biology of insect transmission of plant pathogens. Lectures and discussion. Prerequisites: Plant Pathology 305 or 405 and Entomology 208, or instructor's consent. w, odd.

**400—Problems (cr.arr.).** Advanced individual studies; minor research problems. Prerequisite: graduate standing.

**401—Topics (cr.arr.).** Specialized topics in advanced plant pathology not available through regularly offered courses.

**402—Plant Pathology Practicum (1-2).** Acquaints the student with diseases of important crop plants and with the inciting agents. Emphasis is placed on hands-on diagnosis in a Plant Disease Clinic environment. first half fall, last half winter, summer.

**405—Prokaryotic and Viral Plant Pathogens (4).** Detailed study of bacterial and viral plant pathogens; their biology, structure, morphology, and host-pathogen interactions. Prerequisites: 305 and three hours biology or the equivalent. w. even yrs.

**409—Eukaryotic Plant Pathogens (4).** Detailed study of diseases caused by plant parasitic fungi and nematodes. The biology, morphology, and pathology of these pathogens will be integrated into biologically and economically feasible control measures. Prerequisites: 305 and 306.

**410—Seminar (1).** Presentation, discussion of extension studies, literature. f,w.

**411—Biochemistry and Physiology of Plant Diseases (3).** Physiology of infectious plant diseases; physical/chemical plant surface interactions between host/pathogen in rhizosphere, metabolic alterations within host/pathogen. Prerequisites: Plant Pathology 305, 320; Biochemistry 270; Biological Science 313. w, even years.

**412—Advanced Research Experimentation (4).** In-depth laboratory experience designed to familiarize the the student with contemporary research techniques in plant pathology. Prerequisites: Plant Pathology 305, 306, 320, and instructor's consent. w, odd years.

**416—Transport and Metabolism of Plant Nutrients (3).** (same as Plant Science 416). Current concepts in ion transport across plant membranes and translocation of nutrients in the plant; nitrogen fixation and the function of plant nutrients; and stress caused by imbalance of mineral elements and/or pathogens. Prerequisites: Biological Sciences 313 or Agronomy 315 and Biochemistry 270 and 272. alt. f. odd yrs.

**423—Quantitative Ecology of Plant Disease (3).** Introduction to the ecological concepts and quantitative tools necessary to examine plant disease epidemics as dynamic systems. Prerequisite: Plant Pathology 305,306,307. alt years w.

**435—Genetics of Plant-Microorganism Interaction (3).** Molecular and general genetics of the interactions between plants and pathogenic or symbiotic microorganisms. Prerequisites: Plant Pathology 305 and 306, one course each in Biochemistry and Genetics. w, even years.

**450—Research (cr.arr.).** Research not expected to terminate in dissertation.

**452—Cell and Molecular Electron Microscopy (4).** (same as Veterinary Pathobiology 452). Provides extensive exposure to principles of TEM, instrumentation, and techniques employed in biological research. Prerequisites: graduate standing and instructor's consent. w.

**453—Scanning Electron Microscopy (3).** (same as Veterinary Pathobiology 453). Provides basic principles and extensive exposure to instrumentation and procedure for scanning microscopy of biological materials. Prerequisites: graduate standing and instructor's consent. f.

**490—Research (cr.arr.).** Independent investigation in field of plant pathology to be presented as a thesis. Graded on a S/U basis only

# Plant Science

**College of Agriculture, Food and Natural Resources**
**1-41 Agriculture Building (573) 882-3001**
**FAX: (573) 882-2699**
**UNIT LEADER** M.J. Linit
**PROFESSORS** R.P. Beuselinck, D.G. Blevins, E.H. Coe Jr., L.L. Darrah, J.H. Dunn, J.P. Gustafson, C.J. Nelson, R.E. Sharp, D.A. Sleper
**ASSOCIATE PROFESSORS** P.R. Arelli, R.J. Kremer, R.L. McGraw, A.L. McKendry, M.D. McMullen, H.C. Minor, M.A. Polacco, C.A. Roberts, L.C. Snyder Jr., C.J. Starbuck, D.H. Trinklein, M.R. Warmund
**ASSISTANT PROFESSORS** G. Davis, J.R. Gerrish, L.W. Jett, G.S. Johal, W.G. Johnson, R.L. Kallenbach, J.A. Kendig, N.R. Kitchen, J.A. Lowry, M.V. Nathan, B.J. Phipps, R.J. Smeda, W.E. Stevens
**INSTRUCTOR** M.A. Gowdy

**DEGREES** BS plant science (MS and PhD in agronomy and horticulture)

The plant science degree encompasses the fields of agronomy and horticulture. Agronomy is the study of plant and soil sciences as they apply to the growth of plants for human use. Horticulture includes the production, use and scientific improvement of plants suitable for direct use as food or for ornamental purposes to improve quality of life.

Students of plant science may focus on improvement of plants through studies of genetics; breeding and physiology; weed management; production of crop plants; production and marketing of fruits and vegetables for food; the development and management of turf grasses for lawns, athletic fields and golf courses; the production, management and marketing of shade trees, flowering trees, shrubs and ground covers for landscapes, as well as the design and maintenance of landscapes; the production of flowers for use as cut flowers, for potted plants or for gardens.

Graduates in plant science have a wide array of employment opportunities in the following areas:

- Agribusiness (marketing, management, public relations, research, sales and technical representative positions with banks, consulting, fertilizer, pesticide and seed companies)
- Production and management (farm management, consultant, technical representative)
- Flower crop production and marketing, nursery production and garden center operation, landscape design and maintenance, fruit and vegetable production and marketing, and turf production and management
- State and federal agencies (the United States Department of Agriculture, state departments of agriculture, conservation and natural resources, marketing and reporting agencies)
- Extension, research and teaching with educational institutions both within the United States and in international programs

Students in plant science receive a broad education in agriculture, the basic sciences and business, which is supplemented with a selection of departmental courses to suit the student's individual needs. Plant science students pursuing careers in management and business will select more business-related courses. Production-oriented students will focus on management and production courses. Those interested in research or graduate school will take more basic science courses.

### PROFESSIONAL OPTION

**General Requirements**

- Nine hours are required in communications courses. These courses must include Eng 20: Exposition and Argumentation (3) and Speech 75: Introduction to Speech Communication (3). Students can choose between the following electives: English 161 (3); Theatre 44 (3); Agricultural Journalism 125, 130, 210 (3); Communication 171, 272, or 276 (3); Foreign Language or Rural Sociology 225 (3).
- 22 hours are required in natural science and math. In addition to taking Bio 12: General Botany (5), students must enroll in three-hour courses in statistics and math (must be Math 10 or above) and eight hours of any chemistry or biochemistry (excluding Chemistry 15). Students must enroll in a three-hour course in

either genetics or plant breeding.
- Nine hours are required in social and behavioral sciences. Students must complete an approved social and behavioral science cluster to meet this requirement. Certain courses in this cluster may also satisfy part of the business and economic requirement.
- Nine hours are required in humanistic studies and fine arts. This requirement may include courses in art, art history, classics, foreign language, literature, music, philosophy, religious studies and theatre.
- Three hours of American history or constitutional government are required by state law. Students may choose from History 3 or 4, or Political Science 1 or 11.

## DEPARTMENTAL REQUIREMENTS

(total of 51 hours)
- 15 hours of core courses
  Plant Sci 10: Orientation to Plant Science (1)
  Plant Sci 100: Introduction to Soils (3)
  Nat Res 106: Soil Sci Lab (2)
  Plant Sci 110: Plant Growth and Culture (3)
  Plant Sci 120: Plant Science Laboratory (1)
  Plant Sci 130: Undergraduate Seminar (1)
  Any computer science course (3)
- Six to seven hours; select two of the following: Ent 208: General Entomology (2) and 209: Entomology Lab (1); Plant Path 207 or 305: Plant Pathology (3); Plant Sci 209: Principles of Weed Science (4)
- 15 hours of additional courses in plant science, plant pathology, or entomology are required for an area of concentration within the Plant Science Unit. At least three hours must be numbered 300 or greater (excluding problems courses).
- Twelve hours of business and economics are required. Included in these 12 must be a course in macro- and microeconomics. Additionally, students may choose from courses in accounting, agricultural economics, consumer and family economics, economics, finance, management or marketing.
- Within their last 45 hours, students must complete a capstone experience. This requirement may be met by enrolling in Plant Science 290, 354, or 390.
- Eight to nine hours of support courses are required. Choose from business and economics, natural science, or math.
- 23-24 hours of free electives

## SCIENCE OPTION

### General Requirements
- Nine hours are required in communications courses:
  Eng 20: Exposition & Argumentation (3), Comm 75: Introduction to Speech Communication (3) and Eng 162: Professional Writing (3)
- 37 hours are required in natural science and math. Required are eight hours of statistics and math (Math 80 or above); the following chemistry courses:
  Chem 31: General Chemistry I (2)
  Chem 32: General Chemistry II (3)
  Chem 33: General Chemistry III (3)
  Chem 133: Introduction to Synthesis and Analysis (Lab) (2)
  Chem 210: Organic Chem (3)
  Biochem 193: General Biochemistry (3); Bio 12: General Botany (5); Physics 21 & 22 (8)
- Nine hours are required in social and behavioral sciences. Students must complete an approved social and behavioral science cluster to meet this requirement. Certain courses in this cluster may also satisfy part of the business and economic requirement.
- Nine hours are required in humanistic studies and fine arts. This requirement may include courses in art, art history, classics, foreign language, literature, music, philosophy, religious studies and theatre.
- Three hours of American history or constitutional government are required by state law. Students may choose from History 3 or 4, or Political Science 1 or 11.

### DEPARTMENT REQUIREMENTS
- 29-30 hours of core courses
  Plant Sci 10: Orientation to Plant Science (1)
  Plant Sci 100: Introduction to Soils (3)
  Plant Sci 110: Plant Growth and Culture (3)
  Plant Sci 120: Plant Science Lab (1)
  SAS 106: Soil Science Laboratory (2)
  Plant Sci 130: Undergraduate Seminar (1)
  Plant Sci 225: Basic Plant Genetics or Bio 202: General Genetics (3-4)
  Ent 208, 209: Entomology and Lab (3)
  Plant Path 305: Plant Pathology (3)
  Plant Path 306: Introductory Plant Path Lab (2)
  Plant Sci 315: Crop Physiology (3) or Bio 313: Plant Physiology (with or without lab) (3)
  Any computer science course (3)
- Nine hours of support courses are required. Choose from agricultural engineering, animal science, atmospheric science, forestry, geology, natural resources, and/or biological science.
- Twelve hours of business and economics are required. Included in these 12 must be a course in macro- and microeconomics. Additionally, students may choose from courses in accounting, agricultural economics, consumer and family economics, economics, finance, management or marketing.
- Within their last 45 hours, students must complete a capstone experience. This requirement may be met by enrolling in Plant Science 290, 354, or 390.
- 12-13 hours of additional support courses from the College of Agriculture, Food and Natural Resources, and/or any foreign language courses (Any excess hours from natural science and math may also apply).
- Eight-nine hours of free electives

## COURSES

**10—Plant Science Orientation (1).** Introduction to perspectives, comprehensiveness, and current issues in the plant sciences. Involves independent learning, faculty interviews, and oral and written communication about astronomy, horticulture, entomology, and plant pathology.

**20—World Food and You (3).** (same as Food Science 20). Basic scientific principles involved in production agriculture, food processing, marketing and consumption. Evaluation and understanding of current agriculture issues that affect human foods and required nutrients. f,w.

**75—Home Horticulture (3).** Introductory course which provides fundamental understanding of home horticultural practices. Graded on A/F basis only. f.

**100—Introduction to Soils (3).** (same as Soils 100).

**101—Topics In Plant Science (1-4).** Initial offering of a course(s) in a specific subject matter area. Offered when proposed by a faculty member in that area of expertise.

**110—Plant Growth and Culture (3).** Principles of plant growth with emphasis on anatomy, morphology, physiology, and environmental factors. Culture of major crop and horticultural species. w.

**120—Plant Science Laboratory (2).** Laboratory course emphasizing "hands on" skills in plant and seed identification, quality assessment, and experimentation covering such topics as seed germination, crop plant identification, weed identification, and plant mineral nutrition among others. Prerequisite: concurrent enrollment or previous completion of 110. w.

**130—Undergraduate Seminar (1).** Discussion of assigned or selected topics in Plant Science. Prerequisite: junior or senior standing. w.

**150—Micro-Environmental Design (3).** Interprets natural environments into the design, construction and maintenance of miniature landscapes. w.

**151—Plants for Interior Design (2).** Identification, culture and uses of plants adaptable to or capable of becoming acclimated to interior environments. f, odd yrs.

**195—Grapes and Wines of the World (1).** (Same as Food Science 195). Reviews historical development of the wine industry and associated development of the grape industry, the wine making process, the various types of wine product, wine-producing regions of the world, various classification schemes and quality components. f,w.

**201—Topics in Plant Science (1-4).** Initial offering of a course(s) in a specific subject matter area. Offered when proposed by a faculty member in that area of expertise.

**205—Principles of Horticulture (3).** Introduction to various facets of horticulture. Emphasis placed on the growth, culture, and physiology of ornamentals, fruits, and vegetables. Prerequisites: Biological Scienes 12 or instructor's consent.

**209—Principles of Weed Science (4).** (same as Pest Management 209). Introduction to principles of weed growth, reproduction, and impact on human activities. Discussion of weed control techniques and technology, weed identification, and developing weed management strategies. Prerequisite: 110 or Bio Sci 12. f.

**211—Ornamental Woody Plants I (3).** Identifies and evalautes trees and shrubs for landscape use. Prerequisite: Biological Sciences 1 or 12. f.

**212—Ornamental Herbaceous Plants (3).** Annuals, biennials, perennials, ground covers, and bulbs; their identification, nomenclature classification, culture and use. Prerequisite: Biological Sciences 1, 10, or 12. f.

**213—Genetics of Agricultural Plants and Animals (3).** (same as Animal Science 213). Concepts of molecular, transmission, and population and quantitative genetics. Special emphasis given to breeding and biotechnoligical applications in plant and animal agriculture. Prerequisites: Biological Sciences 1, 2 or 10, Mathematics 10. w.

**220—World Food and Plant Germplasm (3).** The role of plant germplasm in cultivar development, and its preservation for sustainable crop production through International Agricultural Research Centers. Genetic vulnerability of major crops. Prerequisite: Plant Science 110. w.

**225—Plant Breeding and Genetics (3).** Mendelian genetic principles and related genetic developments applicable in plant breeding. Discussion of established and new plant breeding procedures applicable to cultivar development. Prerequisite: 110 or equivalent.

**233—Plant Propagation (3).** Principles and practices of propagation of horticultural plants. Prerequisites: Biological Sciences 1 or 12. f.

**234—Plant Environments (3).** Effects of water, light, temperature, and gases upon growth and physiology of plants; their control in plant production. Prerequisites: Biological Sciences 1 or 12 and Chemistry 15 or 31. w.

**250—Landscape Graphics (3).** Techniques of perspective and tools for man-inhabited spatial design. f.

**254—Landscape Design (3).** Historical overview of the human and environmental relationships with respect to design on the land. Prerequisite: sophomore standing. f.

**257—Landscape Maintenance (3).** Effective management of commercial, public, and home landscape plantings, including topics on landscape renovation, planting, pruning, fertili-

zation, irrigation, and pest management. w.

**266—Greenhouse Management (4).** Greenhouse design, environmental control and equipment. Practices associated with plant nutrition management, greenhouse pest control, postproduction handling and marketing of greenhouse crops, and greenhouse management are also covered. Prerequisites: 234 and f, even yrs.

**273—Forage Crops (3).** Principle forage crops, pasture production, forage preservation and utilization. Prerequisite: 110. f.

**274—Grain Crops (3).** Lecture and discussion covering production and utilization, plus growth and development, of a wide range of grain crops, includeing Missouri crops. Problem solving tasks include agronomics, economics and environmental factors. Prerequisite: 110. f.

**290—Undergraduate Research (1-3).** Capstone experience consisting of investigations in Plant Science in support of an undergraduate thesis or special project portfolio. Prerequisites: senior standing in Plant Science Degree Program. f,w,s.

**300—Problems in Plant Science (1-4).** Not accepted as a substitute for any regularly scheduled course. Problems arranged with individual faculty member in specific matter area. Prerequisite: consent required. f,w,s.

**301—Topics in Plant Science (1-4).** Initial offering of a course(s) in a specific subject matter area. Offered when proposed by a faculty member in that area of expertise.

**307—Soil Physics (5).** (same as Soils 307).

**313—Soil Fertility and Plant Nutrition (3).** (same as Soil Science 313). Explanation of principles of delivery of plant nutrients to plants, discussion of the role of each essential nutrient in crop plants and introduction to the management of soil ammendments. Prerequisites: Soil Science 100 or instructor's consent. w.

**314—Soil Fertility and Plant Nutrition Laboratory (2).** (same as Soil Science 314). The application of elementary analytical procedures to the evaluation of the nutrient status of soils and crop plants. Prerequisite: concurrent enrollment or previous completion of 313. w.

**315—Crop Physiology (3).** Basic course on crop growth and development. Emphasis is on physiological processes and morphology of crop plants, and their application to crop breeding and management decisions. Prerequisites: 110 and Biochemistry 110 or equivalent.

**317—Plant Physiology (3-5).** (Same as Biological Sciences 317.) Modern physiology of higher plants using common cultivated plants as examples. May be taken with or without laboratory. Prerequisite: Biological Sciences 10 or 12 and five hours of chemistry.

**325—Field Crop Breeding (3).** Plant Science 325 will introduce students to the application of genetics and the plant sciences to the breeding and improvement of self-pollinated field crops. Classical, current and innovative plant breeding techniques will be addressed. Prerequisite: 110 and 225. f.

**330—Plant Breeding Theory (3).** Designed to provide a logical application of genetic concepts to mating and selection theory in general improvement of cross pollinated crops. Prerequisite: 225 or equivalent. w.

**350—Special Readings in Plant Science (1-3).** Individual study of assigned topics. Prerequisite: instructor's consent. f,w,s.

**354—Advanced Landscape Design (4).** Development of project presentation techniques by analysis of the social, cultural, historical and ecological aspects of landscape design. Prerequisites: 254, instructor's consent. w.

**355—Turf (3).** Characteristics of turf materials, principles of establishment and maintenance. Prerequisites: 100 and 234 or instructor's consent. w.

**357—Nursery Crop Production and Management (4).** Operations, methods used by wholesale, retail, landscape nurseries. Field problems, observational trips. Prerequisites: 233 and 234. w. even years.

**362—Greenhouse Crops Production (4).** Production management decision and commercial culture of the major floriculture crops. Prerequisite: 266 or instructor's consent. w, odd years.

**370—Small Fruit and Vegetable Production (3).** Emphasizes production, management and marketing practices for small fruit and vegetable crops. Prerequisites: 100, 233, and 234. w, odd yrs

**390—Internship in Plant Science (1-3).** Combines study, observation, and employment with an industry or government agency in area of agronomy or horticulture. Written and oral reports and faculty evaluation. Prerequisites: 60 hours including two courses in department and instructor's consent.

**400—Problems in Plant Science (1-3).** Advanced studies not expected to terminate in thesis. Problems arranged with individual faculty member in specific matter area. Prerequisite: instructor's consent. f,w,s.

**401—Topics in Plant Science (1-4).** Instruction in specific subject matter areas in agronomy or horticulture. Prerequisite: graduate standing and instructor's consent. f,w,s.

**409—Advanced Weed Science (3).** Discussion of herbicide physiology and fate in the environment, current development in weed science theory and methodology, and application of analytical procedures in weed research. Prerequisite: 209 and graduate standing. alt. f, odd yrs.

**410—Seminar (1).** In-depth development of advanced aspects of agronomy and horticulture through reviews of results of research in progress and current scientific publications. Graded on A/F or S/U basis dependent on section.

**415—Advanced Plant Physiology (3).** Advanced course in the physiology of plant growth and development. Discussion of current and classical studies in plant physiology with emphasis on responses to environmental variation. Prerequisite: 315 or 317 or equivalent. alt. w, even years.

**416—Transport and Metabolism of Plant Nutrients (3).** (same as Plant Pathology 416). Current and classical concepts in (1) transport of nutrients across plant root membranes and translocation of nutrients in the plant, (2) metabolism and function of plant nutrients and (3) stress caused by mineral imbalances and/or pathogens. Prerequisites: 315 or 317, and 313, and Biochemistry 270 or equivalent. alt. f, odd years

**425—Advanced Plant Breeding (3).** Plant Science 425 will explore theoretical and applied topics in plant breeding through an examination of classical and current literature. The course will integrate convetional breeding concepts and methodology with current biotechnical approaches to plant improvement. Prerequisite: 225, 325, 330 and Statistics 395. alt. w, odd years.

**440—Applied Quantitative and Statistical Genetics (3).** Estimation of genetic effects using means and variances, diallel analysis, environmental stability responses, index selection, and gain from selection. Prerequisite: 330, Statistics 385, 395, Animal Science/Biological Sciences 423, or equivalent. alt. w, even years.

**450—Nonthesis Research (1-9).**

**490—Thesis Research (1-10).** Original investigations in agronomy and horticulture in support of thesis for master's and doctoral canidates. Graded on a S/U basis only.

# Political Science

**College of Arts and Science**
**113 Professional Building (573) 882-2843**
**CHAIR** J. Petrocik
**PROFESSORS** P. James, K. Morrison, P. Peritore, J. Petrocik, D. Shin, H. Tillema, P. Wallace
**ASSOCIATE PROFESSORS** G. Casey, J. Dow, J. Endersby, R. Hardy, D. Webber, S. Wright
**ASSISTANT PROFESSORS** C. Francis, V. Heitshusen, J. Hewitt, C. Holland, L. Keiser, J. Krieckhaus, L. Moosbruger, G. Young
**ADJUNCT PROFESSORS** T. George, D. Granberg, C. Sampson, B. Winfield



**DEGREES** AB, MA and PhD in political science

Political science is concerned with government, politics and public policies. In political science courses, students learn how government operates and how to analyze and evaluate public policies and political ideas. This training can help students be more effective as active citizens, as political leaders and as government administrators. Approximately 100 students graduate in political science each year.

Many political science graduates attend law school or graduate school in political science, public administration, business administration, the social sciences and other subjects. Others are employed in governmental or political jobs as legislative assistants, military officers, or lobbyists, and more go into business or private employment. Many public officials and government administrators have political science degrees.

**HONORS PROGRAM** Students with a 3.5 grade point average may enter the department honors program. Students who successfully complete a senior honors paper with a letter grade in the B range or better will have the phrase "with Honors in Political Science" added to their diplomas. Each year many of the political science honors students are selected for Phi Beta Kappa, Mortar Board, Golden Key and other scholastic honoraries.

**PREPARATION FOR GRADUATE SCHOOL** Students who plan to enter graduate school are encouraged to enter the honors program and to speak with a faculty member early in their academic career. Some areas of graduate study require significant preparation in language, statistics and methodology.

**PREREQUISITES FOR DECLARING AN AREA OF CONCENTRATION IN POLITICAL SCIENCE** Students complete an area of concentration form, usually at the end of the sophomore year or beginning of the junior year. They should prepare for political science courses by completing basic skills and general education requirements and finishing the following classes with letter grades in the C range or better:

- Political Science 1 or 11
- English 20 or an equivalent course and at least one writing-intensive course
- A math or statistics course that requires Math 10 as a prerequisite (Stat 25 will not count)
- A three-hour course in history, geography or foreign civilizations devoted to international affairs

**INTERNSHIPS** The political science department offers an active internship program in a variety of governmental settings including work with state legislators, administrative agencies, political candidates, lobbyists, members of congress, statewide elected officials and state political parties. Seniors in good standing with a GPA of 2.67 and juniors in good standing with a GPA

of 3.0 who have completed appropriate course work and experience are eligible to apply.

**EARNING A DEGREE IN POLITICAL SCIENCE** At least one class must be taken in the fields of comparative government (150, 151, 351, 354, 371, 372, 374, 375, 376, 377), international affairs (55, 303, 304, 314, 385, 386, 387) and political theory/methodology (160, 261, 265, 362, 363, 364, 365, 366/324, 326, 327); and two classes from the American politics/public policy field (102, 120, 305, 306, 310, 311, 317, 319, 320, 321, 325, 328, 329, 331, 340).

Suggestions for a course of study are available from the academic adviser if a student wants to concentrate on a specific area of emphasis such as:

- government service—for students who want to become government administrators
- public information and reporting—for students who plan to be governmental press secretaries, public information specialists, interest group lobbyists, or government reporters
- international relations—for students who want to work for multinational corporations or international agencies
- graduate school preparation
- law school preparation

Courses in political science help the student learn to think critically, analyze complex material and to communicate effectively. Political science classes require extensive writing assignments and majors are given many opportunities to hone their writing skills.

To get practical experience, political science majors work in political campaigns or party activities, join organizations such as College Democrats or Republicans, Mock Trial, Mock UN, etc., complete internships and find part-time or summer jobs to meet their interests, such as secretarial work in a law office or campaigning.

Many students start to think about what they will do after graduation early in their college careers. By doing this, they can have a more meaningful and personalized program of study and complete extra-curricular experiences that will build their resumes. Political science majors go on to a wide variety of jobs including law, positions in bureaucracies, business positions, political campaigners and politicians, professors and teachers, public relations and radio/TV reporters and anchors.

**POLITICAL SCIENCE MINOR** To receive a minor in political science, students must take Pol Sc 1: American Government (3-5) or Pol Sc 11: Introduction to Political Science (3) and additional political science courses totaling 12 semester hours with at least six semester hours at the 200 level or above. No more than three semester hours of internship credit may be included in the 12 hours, and internship hours may not be included in the 200- or 300-level credit. Nine hours must be in residence including six hours of 200- or 300-level credit.

## COURSES

**1—American Government (3).** Topics covered include Constitution, federalism, civil liberties, political attitudes, interest groups, political parties, nominations, elections, and campaigns, voting behavior, Congress, Presidency, bureaucracy, and judiciary. Meets state law requirement. cor.

**11—Introduction to Political Science (3).** Introduces scope and content of politics: theory and operation of democratic and undemocratic governments. Meets state law constitutional requirement. Students taking this course may not take 1, and vice versa. cor.

**55—International Relations (3).** Contemporary international affairs including family of nations, control of national foreign policies, competition and cooperation in legal, political, economic, social fields.

**101—Topics (1-3).** Organized study of selected topics. Subjects and earnable credit may vary from semester to semester. Prerequisite: departmental consent for repetition.

**102—State Government (3).** Government and politics at the state level, with emphasis on Missouri. Meets state law constitutional requirement. cor.

**110—Quantitative Applications in Political Science (3).** Introduction to the ways in which social scientists use data analysis for understanding social and political phenomena. Provides "hands-on" experience in using computers and various analytical techniques for answering substantive questions. Prerequisites: 1 or 11, instructor's consent. f.

**120—The Judicial Process (3).** Analysis of roles played by American judges and courts in democratic policy formation.

**150—Comparative Political Systems (3).** Analysis of major political systems selected from Europe, Asia, Africa, and Latin America, emphasizing basic concepts of comparative political study. Prerequisites: 1 or 11.

**151—Politics and the Military (3).** (same as Peace Studies 151). Comparative study of post-cold war civil-military relations; military as an interest group, change agent, policy instrument and competitor of civilian politicians.

**160—Introduction to Political Theory (3).** Selected great political theorists and their contemporary relevance. How to think critically about political ideas and ideologies. Prerequisite: sophomore standing.

**181—Asian Civilizations (3).** (same as History 181, South Asia Studies 181). Introductory survey of civilizations of India, China and Japan.

**201—Topics (1-3).** Organized study of selected topics. Subjects and earnable credit may vary from semester to semester. Prerequisite: departmental consent for repetition.

**250—Black Women in American Politics (3).** (same as Black Studies 250). Analyzes the role that Black Women have played in American politics from the Reconstruction era's civil rights and women's movements, and bids for elective official. Prerequisites: Political Science 1 or 11 and sophomore standing.

**260—Black Political Thought (3).** (same as Black Studies 260). Analyzes the major political theories and their proponents from the Reconstruction era to the present. Prerequisite: Political Science 1 or 11 and sophomore standing.

**261—American Political Thought (3).** Examines major themes that shaped three centuries of American political thought, including slavery, religion, and the tension between unity and difference. Readings are drawn from primary sources (Jefferson, Adams, Mason, Tocqueville, Calhoun, Lincoln, Stowe, Baldwin) as well as contemporary analytic commentary on those sources (Bercovitch, Hartz, Wolin, Guinier, Morrison). Prerequisite: sophomore standing.

**265—Liberal Thought and the Ownership of the Self (3).** (same as Women Studies 265). Introduces students to foundational premises of liberal political thought through examination of the dispute between Locke and Filmer. Analyzes subsequent rethinking of that debate in works by Rousseau, Wollstonecraft, nineteenth-century American slaves, contemporary feminists, and communitarians. Prerequisite: sophomore standing.

**286—Race, Ethics, and Gender in International Relations (3).** (same as Peace Studies 286). Explores topics often neglected in the study of international relations, including racism, the laws and ethics of warfare, human rights, and gender. Prerequisite: Political Science 55 or Peace Studies 50, or instructor's consent.

**298—Honors (1-6).** Special readings, reports in the several fields of political science. For political science Honors students.

**300—Special Problems (cr.arr.).** Independent investigation to meet needs of the individual student. Prerequisite: instructor's consent.

**301—Topics (cr.arr.).** Organized study of selected topics. Subjects and earnable credit vary from semester to semester. Prerequisite: junior standing and instructor's consent. Departmental consent for repetition.

**302—Computing Methods (1).** Develops computer-based skills with political science data. SAS, and other packages used in mainframe and PC environments. Prerequisite: concurrent enrollment in 326. S/U graded only.

**303—Politics and War (3).** (same as Peace Studies 303). Why do wars occur? The functions of force and uses of a threat of force. Problems of national security strategy and arms control.

**304—Politics of International Economic Relations (3).** Study of reciprocal interaction between global politics and economics. Includes politics of north/south relations, multinational non-state actors, arms transfers and dependency. Prerequisites: Economics 5 and junior standing.

**305—Political Parties and Election Campaigns (3).** Development, organization, functions, activities of major and minor political parties; principles and procedures of managing campaigns; campaign finance; election administration. Prerequisites: 1 or 11, junior standing.

**306—Local Government (3).** Politics and government of urban and rural areas in Missouri and other states. Includes municipalities, counties, and special districts; political organization and urban problems. Prerequisites: 1 or 11, junior standing.

**309—African-American Politics (3).** (same as Black Studies 309). Surveys political partcipation of African-Americans in American politics. Analyzes their public lives in the context of elections, behavior of political organizations, social movements, parties, and level of government. Prerequisites: 1 or 11 and junior standing.

**310—Introduction to Public Administration (3).** Surveys recurring themes, conceptual problems, and substantive findings in the literature of public administration with particular attention to U.S. public bureaucracies.

**311—Politics of Regulatory Policy (3).** Role of administrative agencies, Congress, the President and the courts in the development of regulatory policy in the United States. Prerequisite: junior standing.

**312—Issues in Public Bureaucracy (3).** Investigates selected political and administrative problems affecting public bureaucratic units. Context varies.

**314—American Foreign Policies (3).** Bases, formulation, evaluation of current American foreign policies. Prerequisite: junior standing.

**316—Congress and Legislative Policy (3).** Study of national and state legislative systems and legislative policy making, with emphasis on Congress. Prerequisites: 1 or 11.

**317—Public Policy (3).** Introduction to the study of public policy in the United States. Analyzes public policy choices at the national, state and local level and the variety of forces which serve to shape policy decisions. Prerequisite: junior standing.

**318—Comparative State Politics (3).** Analyzes similarities and differences of state politics and the ways in which such politics are shaped by political and socioeconomic environments of the states.

**319—Policy Analysis (3).** Approaches to designing public policies including cost-benefit accounting, decision theory, and programming. Investigation of formulation of policy objectives with special emphasis on problems of collective choice and rationales for market intervention.

**320—The American Constitution (3).** Leading American constitutional principles as they have evolved through important decisions of the United States Supreme Court. Prerequisites: 1 or 11; junior standing. cor.

**321—The Constitution and Civil Rights (3).** Civil rights in the American constitutional context emphasizing citizenship, voting rights, purposeful and structural discrimination (age, race, sex, physical), and legal remedies (equal opportunity, affirmative action). Prerequisites: junior standing; Political Science 1 or 11.

**324—Survey Research Methods (3).** Selection of survey research topics, questionnaire development, sampling, interviewing, coding and preparation of data for computer analysis. Emphasis on practical participation.

**325—Interest Groups (3).** Development, organization, functions, activities, internal politics of special interest groups such as business, labor, agricultural and public interest groups; lobbying and techniques for influencing public policy in the American political system. Prerequisite: 1 or 11, junior standing.

**326—Introductory Statistics for Political Science (3).** Basic course in applied statistics and inference using extensive examples from voting behavior, congressional behavior, international relations and public policy. Topics included nonparametric measures, probability, and rudimentary hypothesis testing; computer applications with political data using SAS. Prerequisites: Math 10 or equivalent, concurrent enrollment in PS 302.

**327—Formal Political Analysis (3).** Introductory course in formal mathematical models of political behavior and political institutions. Topics includes electoral rules, agenda control, measures of power, collective action, constitutions. Prerequisites: Math 10 or equivalent.

**328—Political Behavior (3).** Economic, psychological, and social dimensions of political behavior; participation, leadership and elites; political attitudes; voting behavior and decision-making processes. Prerequisites: 1 or 11; junior standing.

**329—Constitution and Civil Liberties (3).** Civil liberties in the American constitutional context emphasizing freedom of expression (religion, speech, press, assembly), rights of accused and right to privacy. Prerequisites: junior standing; Policital Science 1 or 11.

**331—Issues in Public Policy (3).** Investigates selected public policies on an intensive basis. Policy issues vary. Prerequisites: junior standing.

**336—Political Science Internship (3-6).** Work experience in a public or private organization that is relevant to the political science major coordinated by a faculty member. Prerquisites: junior standing with a 3.0 GPA; or senior standing with 2.67 GPA. Must be in good standing. Graded on a A/F basis only.

**340—The American Presidency (3).** Evolution of the presidency; particular emphasis on constitutional and political roles played by chief executive in shaping public policy. Prerequisites: 1 or 11; junior standing.

**341—Women and the Law (3).** (same as Women Studies 341). Focus on legal issues which are relevant to women such as divorce, domestic violence, employment discrimination, pregnancy discrimination, rape, sexual harassment, and others. In addition, students will gain preparation for graduate or law study by analyzing cases, concepts and terms. Requires an extensive amount of reading and writing. Prerequisite: 1 or 11 and junior standing.

**350—Special Readings (cr.arr.).** Independent readings selected in consultation with supervisory faculty member. Prerequisite: instructor's consent.

**351—Latin American Governments (3).** Development, present status of political institutions in South America; emphasizes current political problems. Prerequisites: 1 or 11; junior standing.

**353—Germany and European Security (3).** Focuses on the factors, both internal and external to Germany, that are likely to shape the policies and goals which Germany will advance in the foreseeable future as a major participant in European affairs. Prerequisite: 1 or 11 and junior standing.

**354—Western European Political Systems (3).** Comparison of political cultures, institutions, and processes of Britain, France, West Germany, and selected smaller countries in Western Europe. Prerequisite: junior standing.

**355—Western European Foreign Policy (3).** (same as Peace Studies 355). Comparison of foreign policies of the major Western European countries; their roles within the European community. Study of institutions and functioning of the European community and its potential as an emerging world power. Prerequisite: junior standing.

**356—Post Communist Europe (3).** Investigates causes and consequences of the revolution of 1989-90 for Post-Cold War Communist East Central Europe. Emphasis on the clash between demands for national self- determination and the imperatives of economic reforms. Prerequisite: junior standing.

**358—Russian Foreign Policy (3).** Principles, problems, and evolution of foreign policy of post-Soviet Russia towards other Soviet successor states, Western nations, East Central Europe, Asia, and the developing world. Prerequisite: junior standing.

**362—Classical Political Theory (3).** Great Greek, Roman, and Medieval political theorists on the relation of psychology, ethics, politics, and the best form of government. Prerequisite: junior standing or instructor's consent.

**363—Modern Political Theory (3).** Great political theorists from Machiaveilli through Marx on the nation state, capitalism, liberalism, conservatism, and Marxism. Prerequisite: junior standing or instructor's consent.

**364—Contemporary Political Theory (3).** Great contemporary thinkers on Western vs. Eastern Marxism, existentialism, critical theory, political theologies, postmodernism, feminism, environmentalist ideologies, biological approaches to politics. Prerequisite: junior standing

**365—Environmental Theory and Politics (3).** Introduction to ecology and human impacts/extinction, climate change, pollution. Responses to the crisis in terms of environmental economics, comparative regulatory policy and law, postmodern environmentalist ideologies, and international treaty regimes. Prerequisite: junior standing or instructor's consent.

**366—Feminist Political Thought (3).** (same as Women Studies 366). This course examines the deployment of sexual difference in selected canonical works of the western political tradition, and it introduces students to important debates within contemporary feminist thought about the relationship between feminism and politics. Prerequisite: junior standing.

**371—Third World Politics (3).** (same as Black Studies 371). Comparative, interdisciplinary analysis of the politics of selected states in Southeast Asia, Africa, and Latin America. Special attention given to the problems of political and socioeconomic development. Prerequisites: junior standing or instructor's consent.

**372—African Politics (3).** (same as Black Studies 372). A general comparative course focusing on post-independent Africa. Theories and concepts related to decolonization, nationalism, democratization, and ethnicity; also institutional forms and organizations: political parties, parliaments, and executives. Prerequisite: 1 or 11 and junior standing.

**374—Politics in India and South Asia (3).** (same as South Asia Studies 374). Contemporary political and governmental patterns of India, Pakistan, Sri Lanka, Nepal, and Bangladesh.

**375—The Politics of Modernization: East Asia (3).** Comparative study of the evolution of national governments and policies, primarily in Japan and Korea, sometimes China. Prerequisite: junior standing.

**376—Contemporary Chinese Politics (3).** Comparative study of the evolution of national governments and policies in China and Taiwan.

**377—Terrorism: Religious, Ethnic and Ideological Politics (3).** Terrorism as political violence extending beyond the acts themselves. Examines major modern movements, e.g. Northern Ireland, Basques (Spain), Germany, Algeria, Arab-Israeli, Iran, India, Sri Lanka, Peru, Argentina, Uruguay. Prerequisite: junior standing.

**385—International Organization (3).** Forms and functions of governmental (United Nations, European Union, NATO) and nongovernmental international organizations. Prerequisites: junior standing; 1 or 11.

**386—Theories of International Relations (3).** Surveys Theories of International Relations. Analyzes conceptions of decision-making, foreign policy behavior and international society. Prerequisite: junior standing

**387—The European Union in the Global System (3).** Provides an understanding of the European Union from the perspective of international relations and comparative politics. Topics covered pertain to the institutions, politics and policies of the European Union and its member states. Prerequisites: 1 or 11 or 55 and junior standing.

# Political Science

**390—Political Science Capstone (3).** Readings and discussions in selected areas of political science (comparative, American, international affairs, public administration/policy or theory). Subject depends on instructor. Prerequisites: political science major, senior standing.

**400—Problems (cr.arr.).** For graduate students with necessary prerequisite courses. Topics in one of the fields of political science for individual study.

**401—Topics (cr.arr.).** Organized study of selected topics. Subjects and earnable credit vary from semester to semester. Prerequisites: instructor's consent, departmental consent for repetition.

**402—Readings in International Relations (3).** Analysis, evaluation of some basic theories which attempt to explain international affairs.

**404—Seminar in International Politics (3).** Intensive study of foreign policy formulation and implementation; special emphasis on American foreign policies.

**405—Quantitative Approaches in International Relations (3).** Research seminar emphasizing quantitative analysis of large data sets on international politics, especially international conflict. Topics include conflict escalation, correlates of war, deterrence, alliance behavior and the democratic peace.

**406—International Political Economy (3).** Theories of political economy and current problems such as North-South relations, international trade, monetary relations, aid regimes, and international divisions of labor.

**410—American Political Behavior (3).** Critical examination of literature on political behavior in the United States. Topics include voting and elections, public opinion, parties and interest groups, political psychology, communication, elites, and collective action.

**411—American Political Institutions (3).** Critical examination of literature on political institutions in the United States. Topics include Congress, the Presidency, courts, the bureaucracy, political organizations, federalism, and institutional dynamics.

**412—Voting and Elections (3).** Research seminar on political participation, voter choice, campaigns, and elections, primarily in the United States. Covers theories, approaches and research on electoral behavior.

**413—Public Opinion (3).** Intensive study of public opinion theory and analysis.

**414—Political Parties (3).** Research seminar on the organization and activities of political parties, primarily in the United States. Attention to historical development, nature of party change, functions, elites, membership, political finance, and policy formulation.

**415—Interest Groups (3).** Research seminar on nonpartisan organizations seeking to influence the public policy agenda. Includes problems of collective action, mobilization and organization of interest groups, strategies and tactics, lobbying, political movements, theories and research.

**416—Legislative Institutions (3).** Research seminar on the U.S. Congress and legislative institutions generally. Topics include the legislative process, policy change, committees, political parties, leadership, representation, and relations with other branches of government.

**417—Executive Politics (3).** Research seminar on the U.S. Presidency, executive decision-making and influence. Topics include presidential leadership, historical development of the presidency, presidential power, agenda-setting, gover-

nors, mayors, and influences on opinion and other branches of government.

**418—Federalism and Intergovernmental Relations (3).** Analyzes relationships among American governmental units emphasizing national-state relations and metropolitan area problems. Prerequisite: instructor's consent.

**419—Research in American Politics (3).** Directed research into one or more specific aspects of American Politics, behavior, and institutions.

**420—Judicial Behavior (3).** Critical examination, both conceptual and methodological, and behavioral literature in public law. Emphasizes impact of judicial decisions and relations of judiciaries to their environments.

**421—Civil Rights and Civil Liberties (3).** Research seminar on the U.S. Constitution, civil liberties, and civil rights. Topics include the First Amendment and freedom of expression and of belief, due process, the rights of the accused, privacy, equal protection, and consititutional interpretation.

**422—Constitutional Law: Institutions and Powers (3).** Research seminar on powers and constraints on government found in the U.S. Constitution. Topics include separation of powers, federalism, legislative and presidential power, the commerce clause, taxing and spending.

**429—Research in Public Law (3).** Research seminar on the judicial process in the United States.

**430—Seminar in Public Policy (3).** Covers the basic theory, approaches, problems and issues relating to the scope, development and implementation of public policy.

**431—Administrative Politics (3).** Critical examination of literature relating to selected topics in public bureaucracies.

**432—Public Administration Research (3).** Directed research in public administration, bureaucracy, public management, and policy evaluation.

**433—Urban Politics (3).** Research seminar on local politics and governance, particularly of urban areas. Topics include political machines and reform, national policy and the cities, political conflict, and leadership.

**439—Research in Public Administration and Public Policy (3).** Directed research in Public Administration or Public Policy. Inquire as to the emphasis for any given semester.

**440—Research Design and Analysis (3).** Research design, social measurement and statistical analysis for study of political phenomena.

**441—Inference and Political Statistics (3).** Point and interval estimation and statistical hypothesis testing with applications to political research. Data and examples drawn mostly from electoral behavior, conflict theory, international relations and public policy. Primarily for political science students. Prerequisite: 326 or equivalent with instructor's consent.

**442—Linear Models in Politics (3).** Linear and non-linear multivariate estimation techniques with applications to political science research. Prerequisite: 326 or equivalent with instructor's consent.

**443—Advanced Political Methodology (3).** Analytic strategies and statistical models applicable to social science research. Emphasis on modeling political phenomena. Topics vary, include linear and nonlinear models, multidimensional scaling. Prerequisites: 441, 442 or equivalent.

**444—Introduction to Formal Political Theory (3).** Formal and mathematical models of political institutions and behavior. Topics may include social choice, game theory, spatial models, coalition formation. Prerequisite: 326 or equivalent with instructor's consent.

**448—Scope and Methods (3).** Examines the major fields in the discipline, assumptions underlying empirical social science and theoretical issues in the study of politics. Primarily for doctoral candidates in political science. Prerequisite: instructor's consent.

**449—Leadership in Civic Education (3).** Intensive workshop for Missouri secondary social studies teachers. Includes instructional materials on U.S. and Missouri governments, lectures by leading scholars, breakout sessions, and interactions with government practitioners.

**450—Research (cr.arr.).** Independent research not leading to thesis. Graded on S/U basis only.

**451—Latin American Politics (3).** Research seminar on politics and government in Central and South America. Topics include modernization and dependency theories, civil-military relations, economics adjustment, democratic transitions, and area and country studies.

**452—Research in the Politics of Industrial Societies (3).** Comparative analysis of public policy in Western democracies. Emphasis on economic policy and related policy areas. Comparisons of Western European countries with United States, Japan, Russia when appropriate.

**453—Democratization (3).** Research seminar on the third wave of democratization. Classical and contemporary conceptions of democracy, measurement, theories, trends, and influences on democratization across the globe.

**454—Comparative Political Economy (3).** Interdisciplinary, comparative analysis of political aspects of political economy, rural development, and related issues.

**455—European Union Politics (3).** Research seminar on the politics of the European Union. Topics include historical development of European integration, EU institutional structure, enlargement, and EU economic, social and foreign policies.

**456—Seminar in Comparative Politics (3).** Comparative study of selected aspects of political systems. Variable content. May be repeated for credit.

**457—Seminar in East Asian Politics (3).** Intensive study of selected topics in the internal and external politics of China, Japan and Korea. Prerequisites: graduate standing or instructor's consent.

**458—Seminar in African Politics (3).** Research seminar on comparative African politics. Theory and research on sub-Saharan post-independence governance on the African continent.

**459—Readings in Comparative Politics (3).** Study of theories and approaches to comparative politics in Europe, Asia and/or Latin America.

**460—Seminar in Classical Political Theory (3).** Intensive analysis of great classical and medieval thinkers: Pre-Socratics through the Two Swords controversy. Course covers primary sources, critical works, sociohistorical background of the ideas, their contemporary relevance.

**461—Seminar in Modern Political Theory (3).** Intensive analysis of great modern theorists from Machiavelli to Mill. Course covers classical texts, criticism, sociohistorical background, and contemporary relevance of ideas.

**462—Seminar in Contemporary Politcal Theory (3).** Twentieth-century Marxism, existentialism, critical theory, postmodernism, environmental thought, liberation theology, biological approaches. Primary readings and critical literature.

**463—Selected Themes in Political Thought (3).** Intensive examination of selected themes and problems in political thought. Themes may include: feminist political thought, perspectives on politics and violence, nationalism and post-colonial thought, or political theory and political culture.

**464—American Political Thought (3).** Overview of central problems in American political thought, with particular attention to the Founding and Constitutional eras. Readings include primary texts, classic interpretations, and contemporary critical debates about the American tradition.

**480—Independent Readings for Ph.D. Comprehensive Examinations (1-9).** Graded on S/U basis only.

**490—Research (cr.arr.).** Independent research leading to thesis. Graded on a S/U basis only.

# Portuguese

*See Romance Languages*

# Practical Arts and Vocational-Technical Education

*See Curriculum and Instruction*

# Psychological Sciences

**College of Arts and Science**
**100B McAlester Hall (573) 882-6860**
**http://www.missouri.edu/~psywww**

**CHAIR** H. Cooper

**PROFESSORS** C. Borduin, H. Cooper, L. Cooper, N. Cowan, D. Geary, J. LoPiccolo, D. McDonald, L. Peterson-Homer, T. Schachtman, K. Sher, T. Trull

**ASSOCIATE PROFESSORS** D. Bell-Dolan, A. Bettencourt, D. DuBois, S. Hackley, L. King, M. Stadler, P. Wood,

**ASSISTANT PROFESSORS** J. Arndt, A. Bardon-Cone, K. Buss, A. Hafdahl, J. Iverson, J. King, J. Krull, T. Piasecki, C. Robert, A. Rose, J. Rouder, K. Sheldon, W. Slutske, B. Smith

**PROFESSORS EMERITI** W. Anderson, D. Anger, B. Biddle, J. Chance, R. Daniel, R. Dolliver, R. Geen, A. Goldstein, D. Kausler, M. Marx, M. Thelen, J. Thorpe, D. Wright

**DEGREES** AB, MA, PhD in psychology

The undergraduate AB degree program in the psychology department stresses the scientific and experimental foundations of psychology. Information is available from the department student-services office on the requirements for majors and recommended programs of study for students desiring a strong liberal education; for those seeking a background for people-oriented careers (personnel work, child development); and for students who plan to pursue graduate work in psychology (such as cognition, developmental, neuroscience, quantitative, experimental, clinical, social) or other fields (medicine or law). A handout describing the courses offered in psychology is available for examination in the department student-services office.

Material describing career opportunities is available at the student-services office as well as through the Career Planning and Placement Center.

**The minimum requirement for an area of concentration in psychology is 30 hours including**:

Psych 1: General Psychology (3)
Stat 31: Elementary Statistics (3)
Psych 215: Research Methods in Psychology (3)
Psych 216: Research Methods in Psychology (3)

One course must be a laboratory course. Courses must be distributed among the five subfields of psychology: learning/cognition; biopsychology/comparative; social/personality; developmental/abnormal and cultural/diversity (one course in four of the five areas).

Six hours of elective psychology courses number 100-level or higher are required.

Students must receive a grade of "C" or better in all courses required for the major. A grade of "C-" will not be accepted.

In addition, students either take eight hours of related course work or pursue an approved minor of 15 hours in a related arts and science department.

Typically, a student selects additional courses in psychology (up to 40 hours maximum) in order to prepare for a specific career, or for graduate or professional school.

Students may use no more than nine hours of Special Problems courses (Psych 200 and 300) towards graduation.

The department offers a minor in psychological sciences which requires an introductory course, and three additional "regularly scheduled" courses, at least two of which must be numbered above 200. All courses in the department are counted as "regularly scheduled" except: Special Problems (200 & 300), Readings (350) and the Honors Proseminar (398/399). A minimum of 15 credit hours in Psychological Sciences is required for the minor. No more than six hours of transfer and/or independent-study course credit may be counted towards this minimum.

## COURSES

**1—General Psychology (3).** Survey of facts, principles, methods in study of human behavior. cor.

**30—Applied Psychology (3).** Surveys wide range of applications of psychology. Topics include social issues (prejudice and violence), applications to fields such as business and law, applications for personal improvement (improving memory), ond others (sports, health, environment). Prerequisite: Psychology 1.

**101—Topics (cr.arr.).** Organized study of selected topics in psychology. Particualr topics and earnable credit may vary from semester to semester. Prerequisites: 1, departmental consent for repetition.

**113—Mind, Brain, and Behavior (3).** Introduction to the structures and processes of the mind and the nervous system, including the psychobiology of eating, sleeping, emotion, stress and learning. Prerequisite: 1. No credit if taken after 313.

**120—Human Sexuality (3).** Surveys of research on sexual behavior including sex norms, gender identity, sexual dysfunctions, sexual deviation, homosexuality, and legal aspects of sexual behavior. May include guest lectures and attendance at small group discussions may be required at the option of the instructor. Prerequisite: 1.

**130—Drugs and Behavior (3).** Basic principles of drug action on the nervous system; the effects of important psychoactive drugs; drug use and society. Prerequisites: 1.

**170—Child Psychology (3).** Origins and development of child behavior, emphasizing basic physical, cognitive, affective and social processes, and theory theory and research rather than application or guidance. Prerequisite: 1. Cannot receive credit for more than one of the following: Psychology 170, HDFS 250, E&CPSY A207. cor.

**180—Fundamentals of Abnormal Psychology (3).** Basic survey of maladaptive human behavior and experience, including character disorder, alcohol and drug abuse, neurosis, and psychosis. Students may not receive credit for both 180 and 345. Prerequisite: 1. cor.

**190—Social Psychology (3).** An introduction to how people's thoughts, feelings and behaviors are influenced by the actual or imagined thoughts, feelings and behaviors of others. Prerequisite: 1. cor.

**200—Special Problems (cr.arr.).** Research apprenticeship with a faculty member, assisting a faculty member in the development and execution of research. May be repeated to 6 hours maximum. Prerequisite: instructor's consent.

**201—Topics (cr.arr.).** Organized study of selected topics in psychology. Particular topics and earnable credit may vary from semester to semester. Prerequisite: 1, sophomore standing, and instructor's consent.

**202—Normal Language Development (3).** (same as Communicative Science & Disorders 202). Language development in preschool and school-age children. Specific attention to congnition and language, developmental sequences, language learning processes, language sample analysis, and the relationship between spoken and written language. Prerequisite: Linguistics 340 (preferred) or instructor's consent.

**205—Environmental Psychology (3).** Survey of the effects of environmental variables (e.g., temperature, noise, crowding, etc.) on behavior. Some coverage of techniques for modifying behavior to preserve the environment. Prerequisites: 1.

**211—Theories of Learning (3).** This course discusses classical issues and theories in learning and conditioning, and considers them in contemporary form. Prerequisite: 5 hours of Psychology (exclusive of Psychology 200).

**212—Human Learning (3).** Factors affecting human learning, retention; basic principles of learning, forgetting. Prereq-uisite: 1. cor.

**215—Research Methods in Psychology (3).** Rationale of scientific research; role of the experiment and other forms of information gathering in psychology; survey of research methods. Prerequisites: 1 and Statistics 31 (Statistics 31 can be taken concurrently).

**216—Research Methods in Psychology II (3).** Continuation of Psychology 215 and required for all further labs in psychology. Prerequisite: 1 and 215 with grade of C or better and Statistics 31 with a grade of C or better.

**230—Individual Differences (3).** Surveys individual, group differences. Contributions of various factors to variations in behavior. Prerequisite: Statistics 31 with grade of C or better.

**240—Cognitive Psychology (3).** A survey of psychological theory and research on human cognition. Prerequisite: 1.

**250—Health Psychology (3).** A hands-on approach to the study of health psychology including research on a topic of current relevance to the field. Cross listed with Honors 210GH. Prerequisite: Psychology 1 and one other psychology course.

**279—Human Memory (3).** This undergradute survey course introduces research on verbal and nonverbal human memory. The course will include a review of amnesia and life-span memory development, with emphasis on a cognitive neuroscience perspective. Prerequisite: 216 or instructor's consent.

**293—Perception & Thought (3).** Covers research on various aspects of mental life: language, problem-solving, decision-making, sensory perception, memory, attention, and consciousness. Behavioral and neurophysiological evidence. Prerequisite: 1 and 215.

**296—Human Aggression (3).** This course examines human aggression from a social psychological perspective. Topics include cognitive, affective, developmental, and biological aspects. The effects of media violence and other societal factors are also examined. Prerequisite: 216 and 190 (or Sociology 260).

**300—Special Problems (cr.arr.).** Independent investigation leading to a project or paper. Repeatable upon consent of department. Prerequisite: instructor's consent.

**301—Topics (cr.arr.).** Organized study of selected topics in psychology. Particular topic and earnable credit may vary from semester to semester. Repeatable upon consent of department. Prerequisites: junior standing & instructor's consent.

**302—Theories of Personality (3).** A survey of human personality theories. Prerequistie: 1.

**303—Community Psychology (3).** This course examines the theory and practice of community psychology. Topics covered include prevention, self-help/ mutual help, empowerment, consultation, and program evaluation. Prerequisites: junior standing and instructor's consent.

**304—Industrial/Organizational Psychology (3).** Survey of basic and applied personnel and organizational psychology. Focus on the human relations field, job satisfaction, leadership, group dynamics and formal organizational structures within the realm of industry. Prerequisite: 215.

**306—Behavior Genetics (3).** The study of genetic influences on behavioral traits such as mood, personality, intelligence, mental health, or activity level. Prerequisite: Psychology 215.

**308—Ethical Issues in Psychology (3).** Issues and problems in research, service, and public policy: privacy, confidentiality, consent, deception, coercion, exploitation, value convlicts. Extensive writing required. Prerequisite: junior or senior instructor's consent. Letter grading. f.

**313—Physiological Psychology (3).** Survey of basics of intercellular communication and findings in behavioral neuroscience that apply to topics such as drugs and reward, emotions and stress psychoimmunology, psychopathology, nervous system development and repair, learning and memory. Prerequisite: junior standing.

**321—Seminar in Health Psychology (3).** A broad overview of health psychology, with special emphasis on psychological theories, methods, and thier applications to health behavior. Prerequisite: 216 and instructor's consent, or graduate standing.

**330—Animal Behavior (3).** Animal behavior focus combining disciplines of behavior ecology and psychology including topics such as habitat selection, feeding, parenting, mating, communication, learning. Prerequisite: Psychology 1 plus 8 hours of Psychology (exclusive of Psychology 200) or Biology. w. cor.

**340—Human Inference and Social Judgement (3).** This seminar focuses on social and cognitive research on various judgements under uncertainty. Both person-centered judgements (e.g., attributions) and nonperson-centered judgements (e.g., covariation detection) are included. Prerequisites: 190 and 212 or graduate standing.

**344—Group Dynamics and Role Theory (3).** (same as Sociology 344). Detailed investigation of one or more theoretical and experimental areas in social psychology. Prerequisites: 190 or instructor's consent.

**345—Advanced Abnormal Psychology (3).** Intensive survey and evaluation of the psychological literature on abnormal behavior, emphasizes experimental and explanatory approaches. Students may not receive credit for both 180 and 345. Prerequisites: 9 hours of psychology or graduate standing.

**347—Emotional Disorders in Childhood and Adolescence (3).** Surveys disturbed behavioral development during childhood and adolescence, emphasizing factors that produce deviation from normal developmental patterns. Prerequisites: 170 or equivalent

**350—Special Readings (cr.arr.).** Independent readings selected in consultation with supervisory faculty member. Repeatable upon consent of department. Prerequisite: instructor's consent.

**351—Psychology of Women (3).** Overview of current theories and research relating to the psychology of women. Topics include gender stereotyping, psychological sex differences, achievement motivation in women, and women and mental health. Prerequisite: 1 and junior standing.

**361—The History of Psychology (3).** Historical foundations of contemporary psychology. Prerequisites: senior standing and 9 hours Psychology.

**365—Introduction to Clinical Psychology (3).** Comprehensive survey of the field's historical roots, research methods, concepts of abnormality, assessment and intervention methods: also specialities that constitute clinical psychology. Prerequisites: junior or senior psychology major or graduate standing in related fields.

**367—Clinical Psychophysiology (3).** Examines electrophysiological approaches to the diagnosis of neurological and psychiatric disorders (e.g., epilepsy, sleep disorders). Prerequisite: junior standing and one previous neuroscience-related course.

**371—Attitude Change (3).** (same as Sociology 371). Methods, theories, experimental findings in social attitude research. Prerequisite: 1 or 2 and junior standing.

**376—Psychological Tests and Measurements (3).** Survey of theories and methods of psychological test construction, focusing on measures of intelligence and personality. Lab component involves experimental training in test construction and test evaluation. Prerequisite: 215.

**378—Animal Learning Laboratory (3).** Survey of principles of animal behavior and animal learning and congnition. The course includes laboratory projects on research in animal

behavior and animal learning. Prerequisites: 216 and either 211, 313, or 330.

**379—Human Cognition Laboratory (3).** Students review, evaluate and conduct research on various aspects of human cognition. Prerequisite: 216 and senior standing.

**380—The Human Senses Laboratory (3).** Psychophysical data, sense organs, psychological attributes, and theories for vision, hearing, and the vestibular (motion) senses. Elementary aspects of psychophysics. Prerequisite: 216.

**385—Experimental Social Psychology (3).** Experimental studies of attitudes, social interaction, person perception, and other topics of contemporary social psychology. Prerequisites: 216 and 190.

**387—Psychology of Aging (3).** Surveys psychological processes in aging during middle/late adulthood. Emphasizes sensory, perceptual, physiological, memory, cognitive processes, and methodological issues in gerontological research. Prerequisites: 1 and 170 recommended.

**390—Cognitive Neuroscience (3).** The neural basis of human information processing. Memory, attention, perception, imagery, movement, language, dreams. Prerequisites: 216.

**393—Perception (3).** Data and contemporary theories of perception in all of the senses, with emphasis on visual and auditory perception. Prerequisite: 216. cor.

**398—Honors Research Seminar I (cr.arr.).** Individual honors thesis on a topic selected with a faculty advisor. Students projects are carried out over the course of two semesters (399 in winter semester). Students should plan on enrollment of both 398 and 399. Weekly class discussions of research topics, strategies and of current issues. Prerequisites: 215 and 216, junior or senior standing, overall and Psychology GPA 3.3 and instructor's consent. Successful completion of thesis and maintenance of 3.3 GPA leads to degree with honors in Psychology.

**399—Honors Research Seminar II (cr.arr.).** Prerequisite: 398. w.

**400—Problems (cr.arr.).** Advanced studies to meet needs of individual student. Prerequisites: instructor's consent, departmental consent for repetition. Graded on S/U basis only.

**401—Topics (cr.arr.).** Organized study of selected topics in psychology. Particular topic and earnable credit may vary from semester to semester. Prerequisites: instructor's consent, departmental consent for repetition.

**402—Functional Neuroscience (3).** Basic techniques, data and theory in the neurosciences applied to the study of psychopathology, psychopharmacology, neural development, brain damage, memory and other areas of "behavior." Prerequisites: graduate standing or instructor's consent. f.

**403—Teaching of Psychology Practicum (cr.arr.).** Focuses on development and enhancement of teaching skills for graduate students in psychology who are primary instructors of undergraduate psychology courses. Prerequisite: instructor's consent. Graded on a S/U basis only.

**404—The Literature Review (3).** The course focuses on methods for gathering, summarizing, integrating and interpreting research on the same topic. Topics include search the literature, evaluating research quality and synthesizing statistical results across separate studies. Prerequisite: 419.

**405—Survey of Social Psychology (3).** Survey of historical and contemporary theory and research in affiliation, attribution, social comparison, attitude change and group dynamics. Prerequisite: graduate standing.

**406—Psychology of Development (3).** Principles, theories, research in normal human development. Prerequisite: graduate standing or instructor's consent.

**407—Developmental Psychopathology (3).** Etiology, diagnosis, and treatment of disordered behavior from infancy through adolescence. Emphasizes contrasting theories and research issues. Prerequisite: graduate standing and instructor's consent.

**408—Adult Psychopathology (3).** Problems of etiology, diagnosis, treatment in psychopathology. Considers theory, research, case histories. Prerequisite: graduate standing and instructor's consent.

**409—Experimental Psychopathology (3).** Critical examination of current theories, with special emphasis on empirical studies in psychopathology including such topics as alcoholism, enuresis, sexual deviancy, drug addiction, mental retardation. Prerequisite: graduate standing and instructor's consent.

**411—Studies in Professional Problems (2-3).** Sources for psychological literature research, techniques of scientific reporting, problems of professionalism. f.

**412—Ethical and Professional Issues in Psychology (3).** Comprehensive coverage of ethical codes and issues in psychological research and service: confidentiality, consent, deception, parentalism, voluntariness-coercion, exploitation, dual relationships, value conflicts and imposition. Prerequisite: graduate standing and instructor's consent.

**413—Psychometrics (3).** Introduction to concepts and issues essential to psychological assessment including psychometrics, test construction, controversies in psychological testing, behavioral assessment, and structured interviewing.

**414—Orientations to Clinical Assessment (3).** Topics include psychometric principles, intelligence testing, objective and projective personality testing and behavioral assessment. Prerequisite: 418 (Psychometrics).

**418—Studies in Clinical Psychology (cr.arr.).** Contemporary research and theory for advanced graduate students in clinical psychology. Prerequisite: departmental consent for repetition.

**419—Advanced Psychological Statistics I (3).** Theory of testing statistical hypotheses, estimation techniques, nonparametric statistics. Prerequisite: undergraduate course in Statistics. f.

**420—Advanced Psychological Statistics II (3).** Complex analysis of variance; experimental design. Prerequisite: 419 or equivalent. w.

**421—Advanced Techniques in Psychological Statistics (3).** Multivariate statistic methods, including multivariate analysis of variance, discriminate analysis, principal component analysis, and elements of matrix algebra, as applied to problems in psychology. Prerequisite: 419 and 420.

**422—Studies in Experimental Psychology (cr.arr.).** Critical consideration of selected experimental work in psychology of learning and memory. Prerequisites: 378 or 379; departmental consent for repetition. w.

**423—Statistical Reasoning (cr.arr.).** Covers the design and analysis of experimental research. Emphasis on students' own research projects. Prerequisites: instructor's consent. Graded on a S/U basis only.

**424—Studies in Physiological Psychology (cr.arr.).** Critical consideration of recent experimental, theoretical work. Prerequisites: 313, departmental consent for repetition. w.

**425—Orientations in Psychotherapy (3).** Broad survey of orientation to psychological treatment, emphasizing integration of personality theory, techniques of personality and behavior change, and research findings in the area. Prerequisite: graduate standing and instructor's consent.

**431—Latent Variable Models in Statistical Analysis (3).** Covers Matrix Algebra fundamentals, Factor Rotation, Communality Estimation techniques, High Order and Dynamic Factor Models, Path Analysis, Use of computer programs. Prerequisite: Psychology 420

**432—Social and Cultural Identity Development (3).** Examines the theories of and research on racial, ethnic, and social group identity development throughout the lifespan. Prerequisite: instructor's consent.

**433—Seminar in Social Psychology I (3).** (same as Sociology 433). Intensive review of concepts and theories of social psychology; emphasizes readings from primary sources. Ph.D. candidates only. Required for all Ph.D. candidates in social psychology program. Prerequisite: instructor's consent. f.

**434—Theories of Social Psychology I (3).** Intensive review of classic concepts and theories of social psychology; emphasizes readings from primary sources. PhD candidates only. Required for all PhD candidates in social psychology. Prerequisite: instructor's consent.

**435—Theories of Social Psychology II (3).** continuance of 434. Intensive review of contemporary concepts and theories of social psychology; PhD candidates only. Required for all PhD candidates in social psychology program. Prerequisite: instructor's consent.

**437—Studies in Developmental Psychology (cr.arr.).** Intensive coverage of major theories of learning and evaluation of them in the context of the contemporary field of psychology. Prerequisite: graduate standing or instructor's consent.

**439—Human Sexuality for Psychotherapists (3).** Background information for and methods and techniques of dealing with a variety of sexual problems that clients bring to therapists. Sexual dysfunction, homosexuality, sexual abberrations and sex crimes covered. Prerequisite: graduate standing and instructor's consent.

**440—Use of Computers in Psychology (3).** Surveys uses of digital computing systems in psychology and other behavioral sciences. Topics include structuring data bases, language processing, simulation of mental/social processes, online facilities in research.

**441—Behavior Therapy (3).** Surveys principles and research finds relative to treatment of abnormal behavior through the utilization of learning principles. Prerequisites: advanced graduate standing in Psychology & instructor's consent. w.

**442—Community Psychology (3).** Lectures, discussion, readings, and field experiences to familiarize students with the philosophy, techniques, and theory of community psychology. Prerequisite: instructor's consent.

**443—Studies in Social Psychology (cr.arr.).** Critical coverage of selected research and theory in social psychology. Prerequisites: instructor's consent, departmental consent for repetition.

**444—Data Management and Analysis and Psychology (1).** Computer implementation of data management and statistical analysis. Covers elementary computer operations, data entry, data quality control, and computer implementation of statistical models covered in Psychology 419 and 420. Prerequisite: instructor's consent.

**445—Clinical Practicum (cr.arr.).** Intensive supervised training in use and interpretation of psychological techniques and in psychotherapy. Graded on S/U basis only. Prerequisite: graduate standing, instructor's consent and professional liability insurance.

**446—Clinical Child Assessment (3).** Introduction to clinical instruments, techniques and problems in the psychological assessment of children. Prerequisite: graduate standing and instructor's consent.

**447—Clinical Intervention with Children (3).** Introduction to theory, research and practice in the area of behavior change with children and adolescents. Prerequisite: graduate standing and instructor's consent.

**449—Structured Groups (3).** Intended to train students to develop and run structured groups for: 1. Life skills, e.g. anxiety management, effective parenting: 2. Life Theme, e.g. self-esteem, women's awareness: 3. Life Transition, e.g. divorce, personal loss. Prerequisite: instructor's consent.

**450—Research (cr.arr.).** Experimental investigations not leading to thesis.

**452—Motivation (3).** Survey of contemporary theories and models of human motivation. Major emphasis is on theories of action control and integration of motivational, cognitive and affective processes in behavior. Prerequisite: graduate standing or instructor's consent.

**453—Law and Behavioral Sciences (2).** (same as Law 609L). Examines the history of and current interfaces between law and psychology to increase the understanding and value of behavioral science research findings and expertise in assisting the courts in rendering informed and just decisions.

**454—Psychopharmacology for Psychologists (3).** Basic principles of drug action on the nervous system, the theory and clinical use of the various psychotherapeutic drugs, drug abuse and its treatment. Prerequisite: graduate standing or instructor's consent.

**455—Small Sample Size Design and Analysis (3).** Intro-

duction to the design and analysis of studies involving single subjects and other small samples. Prerequisite: one graduate level statistics course.

**460—Human Learning and Memory (3).** Current theory and research in the area of human learning and memory will be investigated. A major component of the course will involve the critical review of existing literature in this area. Prerequisite: graduate standing or instructor's approval.

**461—Advanced History of Psychology (3).** Advanced course in history of psychology designed to show how general philosophical models of mind and behavior have been linked to doctrines of mental health and pathology and to theories of social behavior. Prerequisite: instructor's consent.

**462—Family and Group Process (3).** Conceptual approaches to family and group interaction considered; contemporary research and treatment. Prerequisite: graduate standing and instructor's consent.

**463—Conditioning and Learning (3).** Basic principle of operant and Pavlovian learning, motivation, extinction, inhibition, avoidance, etc., and their application to human behavior and its modification. Prerequisite: graduate standing or instructor's consent.

**485—Social Psychology Methodology (3).** Advanced study of experimental methods in social psychological research. Prerequisites: 343 and instructor's consent. w.

**486—Applied Research Methodology (3).** Advanced study of methods and methodological issues associated with psychological research conducted in field or nonexperimental settings. Topics include measurement of change, structural modeling, time series, quantitative literature reviewing. Prerequisite: instructor's consent.

**490—Research (cr.arr.).** Investigations in psychology; leads to thesis. Graded on a S/U basis only.

**494—Cognitive Psychology (3).** The course focuses on basic research on human perception, memory, attention and thought. This course is part of the core curriculum required for graduate studies in psychology. Prerequisites: graduate standing or approval of instructor.

# Radiologic Sciences

**School of Health Professions**
**605 Lewis Hall (573) 882-8405**

**DIAGNOSTIC MEDICAL ULTRASOUND DIRECTOR** M. Hdeib (573) 884-2994
**NUCLEAR MEDICINE DIRECTOR** J. Galen (573) 884-7843
**RADIOLOGY DIRECTOR** M. Sebacher (573) 882-8405
**ASSISTANT PROFESSOR** M. Sebacher
**CLINICAL INSTRUCTORS** J. Galen, M. Hdeib, P. Situ, P. Tew

**DEGREE** BHS in radiologic sciences

There are two active emphasis areas in the radiologic sciences: radiography and nuclear medicine.

The Diagnostic Medical Ultrasound (DMU) Program offers multiple educational options of variable certificates in Diagnostic Medical Ultrasound.

Students planning a major in one of these emphasis areas should correspond with a representative of the program to determine eligibility for admission.

**RADIOGRAPHY** Radiographers are highly skilled health professionals who work closely with physicians specializing in the use of X-rays. They provide patient services using a variety of imaging modalities. In addition to conventional X-ray procedures, the radiographer also works with computerized axial tomography, magnetic resonance imaging and ultrasound. The radiographer must apply the principles of radiation protection, be competent in the use and maintenance of delicate and complicated equipment and must often deal with patients who are under stress.

**COURSE REQUIREMENTS** The following are MU courses. Students transferring from other institutions need to be familiar with the program to select appropriate prerequisite courses to meet qualifications for admission.

HRP 22: Introduction to the Health Related Professions (1)
Comm 75: Intro to Speech Comm (3)
Bio 1 (3) and 2 (3) or 42 (5) General Biol
Physics 21: Elementary College Physics (4)
Chem 31: General Chemistry I (2)
Chem 32: General Chemistry II (3)
Physio 201: Elements of Physiology (5)
Anat 201 and 203: Elementary Anatomy (5)
PAVTE F114 (1) and F314 (2) Microcomputer
HRP 199: Medical Terminology (2)

**PROFESSIONAL CERTIFICATION** Upon completion of the program, students are eligible to sit for the national certifying test given by the American Registry of Radiologic Technologists.

**ACCREDITATION** Accreditation of the program is granted by the Joint Review Committee on Education in Radiologic Technology.

**NUCLEAR MEDICINE** The nuclear medicine technologist is a specialized health-care professional concerned with the use of radioactivity for patient diagnosis, monitoring of treatment and in some cases the treatment itself.

The nuclear medicine technologist uses radioactive compounds to perform body function studies, collect images of internal organs and analyze biological specimens. Specific responsibilities of the technologist include the following: preparation and administration of radioactive chemical compounds known as radiopharmaceuticals, patient imaging procedures using sophisticated radiation detection instruments, computer processing and image enhancement, analyzing biologic specimens and providing images, data analysis and patient information to the physician for diagnostic interpretation.

The curriculum incorporates the fundamentals needed for further specialization of the nuclear medicine professional. The curriculum is designed to enhance the professional marketability of the graduate.

**COURSE REQUIREMENTS** The following are MU courses. Students transferring from other institutions need to contact the program director to select appropriate prerequisite courses to meet qualifications for admission.

Math 108: Calculus for Social and Natural Sciences I (3)
Chem 31, 32 and 33: General Chemistry I, II, III (8)
Physics 21 and 22: College Physics (8)
Stat 31: Elementary Statistics (3)
CECS 75: Introduction to Computer Science (3)
Physio 201: Elements of Physiology (5)
Anat 201 and 203: Elementary Anatomy (5)
Chem 210: Organic Chemistry or 221: Quantitative Instrumental Analysis (4)
Chem 361: Radiochemistry (3)
Radiol 328: Introduction to Radiation Biology (3)



Bio 1 (3) and 2 (3) or 42 (5) General Biology
RS 303: Radiation Safety (3)
HRP 199: Medical Terminology (2)

**PROFESSIONAL CERTIFICATION** Upon completion of the program, students are eligible to take the national certifying examinations given by the American Registry of Radiologic Technologists and the Nuclear Medicine Technology Certification Board.

**ACCREDITATION** Accreditation of the program is granted by the Commission on Accreditation of Allied Health Education Programs (CAAHEP).

**DIAGNOSTIC MEDICAL ULTRASOUND** The diagnostic medical sonographer uses high-frequency sound waves to perform a wide variety of diagnostic examinations. The sonographer performs a key role in the process of data gathering and synthesis required to reach a diagnosis. Proper creation and interpretation of this information aids in the diagnosis and treatment of disease. Ultrasound is a profession requiring a high degree of independence, skill, judgment and knowledge.

Sonographers work in hospitals, clinics, private physician offices and other medical facilities performing examinations in their areas of specialization.

The diagnostic medical sonographer works directly with patients, physicians and other medical personnel on a daily basis. To work successfully, the sonographer must be a sensitive, caring individual dedicated to helping others.

**COURSE REQUIREMENTS**
In addition to MU's general education requirements, the following courses are needed:

HRP 199: Medical Terminology (2)
Chem 15: Atoms and Molecules (3)
Physics 21: Elementary College Physics (4)
ANAT 201 and 203: Elementary Anatomy (5)
Physiol 201: Elements of Physiology (5)
Comm 75: Intro to Speech Comm (3)
Computer Science 3, Social Science or Psychology, College algebra

**PROFESSIONAL CERTIFICATION** Upon successfully completing the requirements of the program, graduates will be eligible to apply to the American Registry of Diagnostic Medical Sonographers (ARDMS) for examinations in Physics, Vascular Physics, Cardiac Physics, Abdomen, Obstetrics and Gynecology, Vascular Technology, Echocardiography and Neurosonography. Passing this examination denotes entry into the field and allows sonographers to work anywhere nationally and internationally.

**ACCREDITATION** The DMU program is in the process of getting accredited for all specialties by the Commission on Accreditation of Allied Health Education Programs (CAAHEP) during the charter class of the DMU certificate

program. The DMU program is working to establish a degree program.

## COURSES

**22—Introduction to Radiography (1).** Overview of radiography through small group discussions and onsite visitations in radiology departments. S/U graded only.

**201US—Introduction to Diagnostic Medical Ultrasound (3).** Principles and history of ultrasound, ultrasound equipment, sonographic techniques, aspects of patient care. Prerequisites: departmental consent.

**234US—Clinical Pathophysiology (3).** (same as Physical Therapy 234). Abnormal function of organ systems in the presence of disease; clinical manifestations and medical management.

**250NM—Orientation to Nuclear Medicine Technology (1).**

**253RS—Principles of Radiographic Exposure I (3).** Theory and principles of X-ray technique; correlation of factors with application.

**254RS—Radiographic Positioning I (2).** Instruction in radiographic positioning of the chest, upper extremity, shoulder girdle, and lower extremity.

**255RS—Fundamentals of Radiography (3).** Orientation to radiology department, ethics, basic nursing procedures, medical legal considerations and radiation safety procedures.

**256NM—Clinical Nuclear Medicine I (2).** Introductory clinical course for senior level students. Introduces instrumentation, administration, procedures, and laboratory techniques. Includes supervised clinical participation.

**256RS—Basic Radiographic Skills (2).** An introduction to radiographic processing techniques, intensifying screens, sensitometry and silver reclamation procedures.

**260NM—Techniques of Saturation Analysis in Nuclear Medicine (3).** Introduces theory and application of saturation analysis, including radioimmunoassays. Presents quality assurance concepts within the laboratory. Includes laboratory exercises.

**260RS—Radiologic Pharmacology (3).** Introductory study of drugs commonly used in medical imaging with emphsis on pharmacokinetics and pharmacodynamics. Designed for allied health students and personnel in the medical imaging sciences.

**261RS—Radiologic Physics (3).** Fundamentals of physics of electricity and radiant energy; principles of generation of electromagnetic radiations and applicable equipment.

**262RS—Imaging Modalities (2).** A presentation of various recording media emphasizes fluoroscopy, image intensification, computed tomography, digital, xeroradiography, thermography, ultrasound, magnetic resonance imaging; automatic exposure devices; and a brief introduction to nuclear medicine and radiation therapy.

**263NM—Morphological Correlations in Nuclear Medicine (3).** Anatomy, physiology and pathology of the human body as it relates to nuclear medicine studies.

**263RS—Radiographic Positioning II (2).** Instruction in radiographic positioning of the pelvic girdle, vertebral column, bony thorax, cranium, gastroitestinal system, and urinary system.

**264RS—Clinical Education I (3).** Supervised clinical rotations in basic areas of radiography. Must complete: mandatory exams from one category competency; two elective exams; and must be competency-tested in chest and abdomen.

**265NM—Clinical Education in Nuclear Medicine in Vivo (5).** Practical experience in the clinical setting with imaging procedures performed in nuclear medicine.

**265RS—Clinical Education II (3).** Supervised clinical rotations in basic areas of radiography and in special procedures. Must complete: mandatory exams from one category competency; one neurological exam; three elective exams; two exams from miscellaneous category; and three periodical exams.

**266NM—Clinical Education in Nuclear Medicine in Vitro (6).** Practical experience in the clinical setting with radioassay procedures performed in nuclear medicine. Includes lectures describing clinical applications.

**267NM—Advanced Nuclear Medicine Procedures (3).** Practical experience gained in advanced technical nuclear medicine procedures, computer image manipulation techniques, and quality assurance in the imaging laboratory.

**267RS—Radiographic Positioning III (3).** Advanced positioning techniques; emphsizes trauma radiography, vascular studies, mammography, and other procedures. w.

**268NM—Clinical Nuclear Medicine II (2).** Continuation of clinical series taught in conjunction with 256NM and 266NM. Addresses advanced therapeutic and diagnostic procedures, computer applications, and quality assurance procedures.

**269NM—Clinical Nuclear Medicine III (2).** Final course in clinical series. Seminar discussion of the areas of professional ethics, current medical-legal considerations, and future nuclear medicine applications.

**300—Problems in Medical Imaging (1-3).** Supervise investigation in an aspect of medical imaging science usually culminating in a written report. Prerequisite: instructor's consent.

**300NM—Problems in Nuclear Medicine Technology (1-3).** Supervised investigation in an aspect of nuclear medicine technology, usually culminating in a written report.

**302—Sectional Anatomy (3).** (same as Diagnostic Medical Ultrasound 302). A study of human anatomy using the sectional approach; anatomical structures will be related to modern medical imaging techniques. Prerequisite: instructor's consent.

**302US—Sectional Anatomy (3).** (same as Radiological Science 302). A study of human anatomy using the sectional approach; anatomical structures will be related to modern medical imaging techniques. Prerequisite: instructor's consent.

**303—Radiation Safety (3).** Types and origins of radiation; radiation detection and measurement; radiation interactions; shielding; dose calculations; federal, state and local regulations; and procedures for safe uses of radiation. Laboratory experiments in radiation measurements and protection.

**303US—Ultrasound Physics (3).** Principles of diagnostic ultrasound physics. Sound wave characteristics, tissue interaction, power intensity, and Doppler physics. Prerequisites: Mathematics 10, Chemistry 32, Physics 21, and departmental consent.

**305US—Ultrasound Instrumentation (3).** Integration of ultrasound physics and instrumentation components in a laboratory setting. Practice in modes of operation and safety. Prerequisite: 201US; instructor's consent.

**309US—Normal Ultrasound Clinical (5).** Integration of ultrasound instrumentation and clinical practice in a laboratory setting. Interaction between the sonographer, equipment and patient. Prerequisites: 302, 303 and 305; instructor's consent.

**311US—Pathological Images Ultrasound (3).** Disease presentation in ultrasound imaging. Practical aspects of ultrasound scanning techniques in pathology. Prerequisites: 201US, 302US and 305US; instructor's consent.

**314US—Abdominal Ultrasound (5).** Differentiation between normal and pathological ultrasound studies of the abdomen. Differential diagnosis of pathological states. Prerequisites: 302US, 309US and 311US; instructor's consent.

**316US—Ultrasound Clinical I (7).** Application of medical ultrasound in supervised clinical settings. Decisions regarding diagnosis, patient handling and imaging. Prerequisites: 302US, 309US and 311US and instructor's consent.

**318US—Gynecology Ultrasound (3).** Study of normal and abnormal gynecological ultrasound anatomy. Distinction between normal and pathological states and ultrasound differential diagnosis. Prerequisites: 302US, 309US and 311US.

**320US—Obstetrics Ultrasound (3).** Study of normal and abnormal obstetrical ultrasound anatomy. Distinction between normal and pathological OB ultrasound studies with emphasis on differential diagnosis. Prerequisites: 302US, 309US and 311US; instructor's consent.

**322US—Superficial Organs Ultrasound (3).** Ultrasound evaluation and diagnosis of normal and abnormal superficial organs; thyroid gland, testes, breasts, soft tissues and musculoskeletal. Prerequisites: 302US, 309US and 311US; instructor's consent.

**324US—Ultrasound Clinical II (8).** Application of medical ultrasound in supervised clinical settings with practice and decision making related to ultrasound diagnosis, patient handling and image processing. Prerequisite: 316US; instructor's consent.

**326US—Vascular Ultrasound Physics, Instrumentation and Hemodynamics (3).** Study of vascular principles and fundamentals including physics and instrumentation. Emphasis on ultrasound wave characteristics, Doppler prinicples, tissue interaction and hemodynamics. Prerequisites: 303US and 305US; instructor's consent.

**327—Nuclear Medicine Instrumentation (3).** (same as Medical Physics 327). Radionuclide imaging systems and the use of computers. Topics include Anger camera systems, emission tomography, ultrasound, nuclear magnetic resonance, and bone absorptionmetry. Prerequisites: Chemistry 361 or equivalent and instructor's consent.

**328US—Ultrasound Clinical III (6).** Final clinical application of general medical ultrasound practicum in supervised clinical settings. Further enhancement of practice, decision making, patient handling, image processing and case studies. Prerequisite: 324US and instructor's consent.

**329—Radiopharmaceuticals in Nuclear Medicine (3).** Introduces concepts of radiopharmacy, generator systems, labeling of materials, quality control procedures and FDA regulations concerning radiopharmaceuticals. Prerequisites: Chemistry 361 or equivalent and instructor's consent.

**330US—Vascular Ultrasound Lab (3).** Vasucular ultrasound scanning techniques, protocols, measurements, film/video critique, and Plethysmography in a clinical lab setting. Prerequisite: 302US, and 326US; instructor's consent.

**332US—Vascular Ultrasound (4).** Vascular ultrasound for normal and pathological processes: study of disease, correlation of patients' clinical data and ultrasound findings used in differential diagnosis. Prerequisites: 302US, 311US, 322US, and 326US or instructor's consent.

**336US—Vascular Ultrasound Clinical IV (7).** Application of diagnostic vascular ultrasound in supervised clinical settings: practice, decision making, patient handling and image processing. Prerequisite: 326US and instructor's consent.

**337RS—Introduction to Research (2).** (same as Respiratory Therapy 337RT). An interdisciplinary course designed to promote undergraduate allied health research. Includes identifying and designing research problems through formulating relevant questions, learning to systematically search for answers, and methods for searching the literature.

**338US—Cardiac Ultrasound Physics, Instrumentation and Hemodynamics (3).** Study of principles and fundamentals of cardiac ultrasound including physics and instrumentation: ultrasound wave characteristics, M-mode, Doppler principles and cardiac hemodynamics. Prerequisites: 303US and 305US and instructor's consent.

**340US—Cardiac Ultrasound Clinical V (6).** Application of diagnostic cardiac ultrasound in supervised clinical settings: practice and decision making regarding echocardiography, patient handling and image processing. Prerequisites: 303US and 305US and instructor's consent.

**342US—Adult Cardiac Ultrasound (5).** Study of adult cardiac ultrasound for normal and pathologial processes. Differential diagnosis of cardiac disease through corrrelation of patients' clinical data and ultrasound findings. Prerequisties: 302US, 303US and 305US and instructor's consent.

**344RS—Organization and Administration (3).** (same as Respiratory Therapy 344RT). Examines design and operation of allied health service departments and educational programs, including facilities, personnel procedures, record systems, ethics, medical-legal aspects, interdepartmental relations and curriculum development.

**344US—Cardiac Ultrasound Clinical VI (6).** Further enhancement of diagnostic cardiac ultrasound in supervised clinical settings: practice and decision making regarding echocardiography, patient handling and image processing.

Prerequisite: 340US.

**346US—Pediatric Cardiac Ultrasound (4).** Study of pediatric cardiac ultrasound for normal and pathological processes. Differential diagnosis of cardiac disease through correlation of patients' clinical data and ultrasound findings. Prerequisite: 342US and instructor's consent.

**348US—Cardiac Ultrasound Clinical VII (8).** Final clinical application of cardiac ultrasound in supervised clinical settings: practice, decision making, patient handling, and image processing. Prerequisite: 344US and instructor's consent.

**360—Cardovascular and Pulmonary Diagnostic Applications I (3).** (same as Respiratory Therapy 360). Problem-based study of cardiopulmonary anatomy and physiology using current imaging methods. Emphasis given to assessment of the acutely distressed cardiac or pulmonary subject, emergency pulmonary support and vascular access techniques.

**361—Cardiovasular and Pulmonary Diagnostic Applications II (3).** (same as Respiratory Therapy 361). Advanced study of cardiac dysrhythmias, hypertrophy, and infarction, emphasizing aspects of treatment employed during Advanced Cardiac Life Support. Prerequisite: 360.

**365NM—Clinical Education in Nuclear Medicine In-Vivo II (5).** Practical experience in clinical setting with advanced imaging techniques and instrument quality control. Prerequisite: 265NM. Restricted to undergraduate students.

**371RS—Clinical Education III (3).** Progression from basic to more advanced rotations. Must complete: mandatory exams from one category competency; one neurological exam; three elective exams; three exams from miscellaneous category; and three periodical exams.

**381RS—Clinical Education IV (3).** Advanced clinical rotations. Experience with Equipment Quality Control. Must complete: mandatory exams from one category; one neurological exam; three elective exams; three exams from miscellaneous category; and three periodical exams.

**382RS—Imaging Pathology (3).** Etiology and processes of disease. Emphasis on pathology of body systems and the manifestation of pathology through imaging.

**383—Magnetic Resonance Imaging: Instrumentation and Physics (3).** Introduction to magnetic resonance as an imaging modality, fundamentals and application of computerized imaging, and instrumentation and physical principles in magnetic resonance. imaging. Prerequisite: instructor's consent.

**384—Magnetic Resonance Imaging: Procedures and Protocols (3).** Fundamentals of magnetic resonance imaging including positioning, scanning protocols, contrast imaging, anatomy review, and pathological considerations. Prerequisite: instructor's consent.

**384RS—Teaching Practicum (3).** Designed to strengthen teaching competence. Supervised educational projects, exercises and teaching experiences.

**385RS—Clinical Education V (3).** Advanced clinical rotation at one of three clinical centers to include an evening and a night rotation; must complete final competency.

**386RS—Radiography Overview (3).** A comprehensive overview of all aspects of diagnostic radiology with emphasis on procedures, technique, radiation protection, positioning, radiographic anatomy and patient care.

**387—Computed Tomography: Instrumentation and Physics (3).** Introduction to computed tomography as an imaging modality, fundamentals and applications of computerized imaging, and instrumentation and physical principles in computed tomography.

**388—Computed Tomography: Procedures and Protocols (3).** Fundamentals of computed tomography imaging including positioning, scanning protocols, contrast imaging, anatomy review, and pathological considerations. Prerequisite: instructor's consent.

**389—Advanced Medical Imaging Externship (1-3).** Supervised clinical experience in a medical imaging speciality with emphasis on patient care and technical practice. Prerequisite: instructor's consent.

# Radiology

**School of Medicine**
**M210 Medical Sciences Building (573) 882-1026**
*The School of Medicine does not offer an undergraduate degree in radiology, but some courses are available to undergraduate students.*

## COURSES

**227—Radioisotopes in Medicine and Biology (4).** Survey of radiotracer applications in nuclear medicine, including basic principles of radioactive decay and radiation detection equipment used in nuclear medicine. Prerequisites: Chemistry 11 and Physics 11 and instructor's consent. f.

**328—Introductory Radiation Biology (3).** (same as Biological Sciences 328, Nuclear Engineering 328, Veterinary Medicine & Surgery 328). Concepts of ionizing radiations, their actions on matter through effects on simple chemical systems, biological molecules, cell, organisms, man. Prerequisite: junior standing Sciences/Engineering; one course in Biological Sciences & Physics/Chemistry; or instructor's consent.

**400—Problems in Radiological Science (1-3).** Supervised investigation in an aspect of radiological science usually culminating in a written report.

**410—Seminar (1).** Reports and discussion of recent investigations pertinent to radiological science.

# Religious Studies

**College of Arts and Science**
**405 General Classroom Building (573) 882-4769**
**E-mail rsinfo@missouri.edu**
**CHAIR** S. Friesen
**PROFESSOR** S. Welch
**ASSOCIATE PROFESSOR** S. Friesen
**ASSISTANT PROFESSORS** P. Beckman, P. Clart, S. Cohen, P. Johnson
**LECTURERS** S. Crowley, Y. Feintuch, B. Flanagan
**PROFESSOR EMERITA** J. Raitt

**DEGREE** AB, MA in religious studies

Religious studies seeks to understand the role of religion in human life and culture. The department's field of study includes religious expression from all cultures and in every period of history. Systematic study of this rich world of expression employs the widest range of academic tools and competencies, from the skills of the literary critic and historian to the analytic abilities of the social scientist and anthropologist. Because of this broad base, study in the department promotes fundamental academic skills and critical judgment in their use and provides deeper understanding of national and international culture. Thus, the religious studies major provides students with a foundation to pursue careers in business, government, counseling, law, medicine and journalism, as well as advanced professional study in religion.

**The major in religious studies requires the following:**

Rel St 1: Introduction to Religion (3) or Rel St 130: Major World Religions (3)
Rel St 311: Modern Perspectives in the Study of Religion (3)
Rel St 399: Seminar for Senior Majors (3)
18 additional hours (broken down into at least one course in each of five areas)
A minimum of eight hours in a related field

Students must earn a minimum GPA of 2.0 or higher in order to have the credit applied to their area of concentration or related fields. Students are encouraged to pursue dual majors that combine religion with another interest. *(If a double major is declared, the other major serves as the related field for the Religious Studies major.)*

**A minor in religious studies is also available with the following requirements:**

Minimum of 15 hours, (broken down into at least one course in each of five areas), including 6 hours in courses numbered 100 or above. A minimum 2.0 MU GPA is required in all courses toward the minor.

## COURSES

**1—Introduction to Religion (3).** Engages students in reflection on the religious questions which human existence poses, and introduces them to conceptual tools for understanding and evaluating answers which have emerged in human history.

**50—Religion and Culture (3).** The study of religion as expressed in art, literature, music, dance, drama, architecture.

**101—Topics (3).** Organized study of selected topics which vary by semester and are announced at time of registration. Prerequisite: sophomore standing or instructor's consent.

**104—Contemporary Religious Thought (3).** Explores issues within contemporary Christian theology that cut across denominational lines such as: the nature and existence of God; secularization, relativism, and humanism; the authority of the Bible; attitudes toward other religions; the moral integrity of Christianity; and the purpose of human existence.

**120—Judaism (3).** A comprehensive introduction to Judaism: an overview of Jewish philosophy and theology, rituals and customs. Prerequisite: sophomore standing or instructor's consent.

**124—The Torah: A Liberal View (3).** Unlike others, liberal Jews view the Torah as a book authored by God-searching people, not God. The Torah purposely leaves us with parallel and ever contradictory ideas; their significance and relevance are explored. Prerequisite: sophomore standing or instructor's consent.

**126—The Holocaust and Reflections on Genocide (3).** Examines the nature of genocide as an historical phenomenon using the Holocaust as the primary case study. Prerequisite: sophomore standing or instructor's consent.

**130—Major World Religions (3).** Explores the differing ways in which Asian and Western religions interpret life and reality. Includes study of Hinduism, Buddhism, Chinese and Japanese religions, Judaism, Christianity, and Islam. Prerequisite: sophomore standing or instructor's consent.

**131—Indigenous Religions (3).** (same as Anthropology 131). Explores the central aspects of religious life in indigenous communities. Focusing on specific native communities, it considers individual and group identity and the meaning of the sacred. Prerequisite: sophomore standing or instructor's consent.

**136—Islam (3).** Examines the historical development of Islamic traditions, noting the manner in which various sects & factions understand religion, humanity and God. Prerequisite: sophomore standing or instructor's consent.

**138—Myth and Religious Symbolism (3).** Emphasizes the comparison of one theme; e.g., a divine figure (Trickster, High God), memory and forgetting, creation, fertility, origins of death, etc. Prerequisite: sophomore standing and instructor's consent.

**139—Studies in Ritual (3).** Exploration of particular themes of religious expression in seasonal, calendric and life-cycle rituals

and in personal and public ceremonies. Includes comparisons of indigenous communities and modern society. Prerequisite: sophomore standing or instructor's consent.

**141—Introduction to Hebrew Bible/Old Testament (3).** An introduction to the literature, history, institutions, and thought contained in the Hebrew Bible and to the methods and principles necessary for the scholarly study of scripture. Prerequisite: sophomore standing or instructor's consent.

**142—Introduction to the New Testament (3).** An introduction to the literature of the New Testament and the methods and principles guiding its interpretation, with particular mention to its structure, thought, and historical setting. Prerequisite: sophomore standing or instructor's consent.

**150—Directed Readings in Religion (1-3).** Independent readings selected in consultation with supervisory faculty member. May not be repeated. Prerequisite: instructor's consent.

**152—Asian Humanities (3).** This course is an introduction to the literature and visual arts of Asia through selected master works. It focuses principally on India and China and investigates the distinctive features of their cultures.

**160—Religion and Contemporary Social Issues (3).** Study of the social ethics of Jewish and Christian theologians and movements of the 19th and 20th centuries and an examination of selected social problems in light of these systems. Prerequisite: sophomore standing or instructor's consent.

**163—Images of Good and Evil (3).** Study of the symbols and myths which explore the nature and power of good and evil. Includes examiniation of the music, art and literature of both ancient and contemporary religions.

**171—Religion and Psychological Perspectives (3).** Examines how religion is understood from various psychological perspectives, and how psychological theories reflect religious presuppositions about the nature and purpose of human life. Prerequisite: sophomore standing or instructor's consent.

**173—Religion and Human Sexuality (3).** Examines attitudes within the Christian tradition toward sexuality, with particular reference to the alternatives of patriarchy and feminism, especially as they consider issues such as the meaning of bodiliness, masturbation, pornography, prostitution, homosexuality and sexual pluralism. Prerequisite: sophomore standing or instructor's consent.

**181—Religions of China and Japan (3).** Introduction to the religions of East Asia, focusing on both popular beliefs and institutionalized religion. Topics include: Buddhist, Confucian, and Daoist traditions of China; Buddhism and Shinto in Japan; self-cultivation practices; spirit mediumship; ritual; cosmology; religion and society; religion and the state. Prerequisite: sophomore standing.

**195—Service Learning in Religious Studies (1-3).** This course examines the role of religion within the wider society. It allows students an opportunity to apply classroom knowledge in a non-profit agency that provides service to the local community. The course further explores cultural diversity and social awareness. Graded on S/U basis only. Does not meet A&S general education requirements. Prerequisites: instructor's consent.

**201—Topics (3).** Organized study of selected topics which vary by semester and are announced at time of registration. Prerequisite: sophomore standing or instructor's consent.

**202—Early Christianity (3).** (same as History 225). History of Christian origins and of the patristic period of the church; study of the beliefs and practices of Christianity, as reflected in its literature, art, music, architecture. Prerequisite: sophomore standing.

**203—Medieval Christianity (3).** (same as History 226). Study of the doctrinal developments, major theologians and schools, institutional formation and dissolution, mysticism, and liturgical expression within the context of cultural and political history. Beginning with Augustine and concluding with the 15th century. Prerequisites: sophomore standing.

**204—History of Christianity, 1500-Present (3).** (same as History 227). Protestant and Catholic Christianity in age of European expansion; enlightenment; 19th- and 20th-century challenges and responses. Prerequisites: sophomore standing.

**215—Modern Religious Thought (3).** Examination of the theological systems of major Christian thinkers and movements of the 19th and 20th centuries in relation to historic religious traditions and modern cultural challenges. Prerequisite: sophomore standing.

**216—The Greek New Testament (3).** (same as Greek 216). Readings in the Greek New Testament and similar literature, e.g., the Septuagint. Prerequisite: Greek 210 or instructor's consent.

**217—History of Religion in America to the Civil War (3).** (same as History 217). Studies major American religious traditions from the Age of Discovery to the Civil War, especially the evolution of religious practices and institutions and their influence upon American social, intellectual and political developments. Prerequisite: sophomore standing.

**218—History of Religion in Post-Civil War America (3).** (same as History 218). Surveys major American religious traditions from 1865 to the present. Focuses on the evaluation of religious practices and institutions and their interaction with and influence upon American social, intellectual and political developments. Prerequisite: Religious Studies/History 217 or instructor's consent.

**219—Religion and Oppression/Faith and Freedom (3).** This course will explore the existence of various social groups and demonstrate how religion historically has functioned both as a tool for their liberation and oppression. Prerequisite: sophomore standing or instructor's consent.

**220—Origins of Rabbinic Judaism (3).** Examination of the sources of Rabbinic Judaism and its doctrines of God, humanity, Israel and Torah. Prerequisites: 120 or instructor's consent.

**222—Judaism in the Middle Ages through the Enlightenment (3).** Social, economic, politcial and religious life of Jews in the medieval period; Jews in Islamic lands; Jewish mysticism; Jewish-Christian polemics; Hasidism; Enlightenment and Emancipation. Prerequisite: 120 or sophomore standing.

**223—Second Temple Judaism: The Persian, Hellenistic, & Roman Periods (3).** This course is an introduction to the origin and development of Judaism from the time of the destruction of the first Jerusalem temple (587 BCE) to the Bar Kochba revolt (132-135 CE). Prerequisite: any 100 level Religious Studies course or instructor's consent.

**224—Rabbinic Judaism: Perspective and Literature (3).** Overview of the Jewish oral tradition during the Rabbinic era. The information covered in this course will focus upon the vast literature created during the Mishnaic and Talmudic periods and the emerging new styles and directions of Jewish religious thought. Prerequisite: sophomore standing or instructor's consent.

**225—Religion and Film (3).** Addresses issues of interpretation and analysis in the convergence of religion and film. Addresses three areas under this broad rubric: 1) film representations of established religions; 2) film and the construction of social values; 3) film as contemporary "myth". Treating films as social texts, we will ask what such representations of ourselves to ourselves suggest about culture in general. Prerequisite: sophomore standing or instructor's consent.

**232—Hinduism (3).** (same as South Asia Studies 232). Origin and development of central themes of traditional Hinduism from earliest times to the modern period. Topics include: the Vedic tradition, rituals and practice, varieties of yoga, and meditation, Indian religious thought, and devotional Hinduism.

**233—Buddhism of South and Southeast Asia (3).** (same as South Asian Studies 233). Examines the origins of Buddhism in India, the narratives of the life of the Buddha, the development of early Buddist schools, the extension of Buddhism into Central and Southeast Asia, and the current practice of Buddhism in South and Southest Asia. Prerequisites: sophomore standing or instructor's consent.

**234—Buddhism in East Asia (3).** This course will trace the transmission of Buddhism from the Indian subcontinent to China, and from there to Korea and Japan. We will examine the historical development of East Asian forms of Buddhism, deal with key issues of Buddhist thought and practice, and look at the role of Buddhism in modern East Asian societies. Prerequisites: 130, or 152, or 181, or 233, or instructor's consent.

**237—Native American Religions (3).** (same as Anthropology 237). Investigation of religious lives of the native peoples of the Americas through cultural contact with modernity. Perspectives based on historical, anthropological and native texts. Prerequisite: 131 or sophomore standing.

**239—Spirituality (3).** Comparative investigation of selected mystical writings from Western religious traditions; consideration of contemporary psychological, philosophical, and Phenomenological interpretations of mystical experience. Prerequisite: sophomore standing or instructor's consent.

**241—The Prophets (3).** Study of the prophetic writings of the Hebrew Scriptures, with consideration of the origin and nature of Israelite prophecy. Includes the narratives of the period of prophetic activity and study of the classical prophets. Prerequisites: 141 or sophomore standing.

**242—The Psalms and Wisdom Literature (3).** Detailed interpretation of the Psalms, Proverbs and related writings of the broad wisdom tradition, with critical attention to the literary style and structure of the writings. Prerequisites: 141 or sophomore standing.

**243—The Gospels of Matthew, Mark, and Luke (3).** Examination of the Gospels of Matthew, Mark, and Luke as single works and as literarily related compositions. Interpretation focuses on the literary form of passages and the theological and ethical themes expressed. Prerequisite: sophomore standing.

**244—Life and Letters of Paul (3).** Reconstruction of the life and letters of the Apostle Paul; examination of his thought in relation to Jesus of Nazareth and to earliest Christianity. Prerequisite: 142 or equivalent.

**246—Revelation and Apocalyptic Literature (3).** A study of Jewish and Christian apocalyptic literature with an emphasis on the Revelation to St. John. Prerequisite: sophomore standing.

**250—Directed Readings in Religion (3).** Independent readings selected in consultation with supervisory faculty member. May not be repeated. Prerequisite: instructor's consent.

**259—Greek and Roman Literature (3).** (same as Classic Civilization 260). Survey of religious development among the Greeks and Romans. Prerequisite: sophomore standing and Classical Civilization 60 or Art History and Archaeology 10 or History 102.

**263—Women and Religion (3).** (same as Women Studies 263). A rediscovery of the wealth of religious activity which women have created and enacted. Investigates women's roles and rituals in large-scale and local religions, including ancient Goddess religions, Hinduism, Buddhism, Judaism, Christianity, Islam, and African, South American, and native American groups. Prerequisite: sophomore standing.

**271—Modern Literature and the Quest for Values (3).** This course is an interdisciplinary study of the religious and ethical questions, quests, and solutions in the literary works of selected modern writers: Beckett, Eliot, Camus, Kazantzakis, O'Connor, Updike, Wiesel, Percy and Morrison. Prerequisite: sophomore standing.

**272—Biblical Themes in American Literature (3).** A study of the sources in the Hebrew Scriptures and the New Testament and their reinterpretation in classic American texts. Such a study, initially textual, results in a history of American ideas. Authors studied include MacLeish, Baldwin, O'Connor, Updike, Percy and Morrison. Prerequisite: sophomore standing.

**274—Jewish-Christian Relations (3).** Explores historical and contemporary relations between Christians and Jews, and the transformations in Christian thought and practice resulting from awareness of Christianity's role in the Holocaust and from post-Holocaust dialogues between Jews and Christians. Prerequisite: sophomore standing or instructor's consent.

**275—Reality of God (3).** Will explore the meaning of "the loss of God" (Tillich) and various 20th-century attempts to reaffirm the reality of God. Prerequisite: sophomore standing.

**284—Chinese Popular Religion (3).** Starting with a consideration of conceptual issues ("what is 'popular religion'?"), the course will give a survey of the beliefs and practices of Chinese popular religion, including ancestor worship, territorial cults, spirit-mediumism, divination, and popular sects. Prerequisite: sophomore standing.

**301—Topics (3).** Organized study of selected topics which vary by semester and are announced at time of registration. Prerequisite: junior standing or instructor's consent.

**310—The Catholic Intellectual Tradition (3).** Students will read the great thinkers of the Catholic church such as Augustine, Abelard, Bernard of Clairvaux, Aquinas, Bonaventure, Nicholas of Cusa, Pascal, Newman, Maritain, Rahner, Johnson, Tracy. The theme examined may vary from year to year. Prerequisite: junior standing or instructor's consent.

**311—Modern Perspectives in the Study of Religion (3).** The course investigates the history of the study of religions, and methods used in scholarship; phenomenological, psychological, anthropological, sociological, form-critical and feminist perspectives on rituals of initiation are reviewed. Limited to majors and minors in Religious Studies. Prerequisite: Junior standing and Religious Studies major or minor or instructor's consent.

**312—Major Religious Thinkers (3).** Concentrated study of one or more selected theologians, such as Augustine, Aquinas, Luther, Calvin, Buber, Tillich, and Rahner. Prerequisites: junior standing.

**325—Survey of West African and US Slave Religion (3).** Explores traditional African religions and African Islam prior to the slave trade. Also, will examine the Christianity of African American slaves. Prerequisite: junior standing or instructor's consent.

**326—African-American Religion (3).** Examines the organization of major African American Christian denominations, Islam and religious movements. Twentieth century issues will be discussed, including sexism, classism and homophobia in church communities. Prerequisite: junior standing or instructor's consent.

**330—Religious Narratives of South Asia (3).** (same as South Asian Studies 330). Study of major narratives of India and their interpretation in literature and art. Topics include: Vedic and Epic mythology, stories of Krishna, myths and images of Shiva, and forms of the Goddess. Prerequisite: 130, or 232, or 233, or junior standing or instructor's consent.

**342—The Historical Jesus (3).** This course examines theory, method, and conclusions in recent Jesus scholarship. Attention is also paid to the historical and cultural context in which Jesus research becomes prominent. Prerequisites: 142 or instructor's cosnent.

**348—Religion Reporting and Writing (3).** (same as Journalism 348). Advanced seminar in religion reporting and writing. Examines the role of religion journalism in faith, public life, and culture. Prerequisite: Journalism 306 or its equivalent in professional writing experience and instructor's consent.

**350—Directed Readings in Religion (1-6).** Independent readings selected in consultation with supervisory faculty member. May be repeated up to 6 hrs. Prerequisite: instructor's consent.

**355—Elementary Biblical Hebrew I (3).** This course will introduce students to the basic vocabulary, morphology, and syntax of Biblical Hebrew so they will be able to work with Biblical texts in the original language. Prerequisite: graduate standing or advanced undergraduate with instructor's consent.

**356—Elementary Biblical Hebrew II (3).** A continuation of Religious Studies 355, this course will include a research paper that will give students practical experience in using the resources. Prerequisite: graduate students or advanced undergraduate with instructor's consent.

**363—Women, Religion and Culture (3).** (same as Women Studies 364). An advanced study of the role of women in religion, focusing on the methods of determining the significance of gender in religious life, sacred texts, symbols, rituals and/or beliefs. Traditions studied include Christianity, Islam, contemporary pagan communities, and Native American traditions. Prerequisite: Religious Studies/Women Studies 263 or instructor's consent.

**383—The Confucian Tradition: Past and Present (3).** Investigates Confucianism as the dominant religio-philosophical tradition of China and its impact on Korea and Japan. We will study basic Confucian canonical texts, follow its historical development, look at its interactions with other religions, and discuss the continuing relevance of the Confucian tradition in modern East Asia. Prerequisite: junior standing.

**385—Introduction to Daoism (3).** An introduction to the Daoist religious tradition, beginning with its background in earlier forms of philosophy, ritual, and belief. We will follow the development of the various Daoist schools and movements over the centuries and examine key aspects of their belief and practice, both historical and contemporary. Prerequisite: junior standing or instructor's consent.

**399—Senior Seminar (3).** A seminar in which Religious Studies majors use methods of understanding and comparing religions by focusing on times and places of significant contact among peoples of different religions. Prerequisite: 311 and Religious Studies Major.

**401—Topics (3).** Organized study of selected topics which vary by semester and are announced at time of registration. Prerequisite: graduate level or instructor's consent.

**421—Religious Texts and Interpretation: The Veda (3).** (same as South Asian Studies 421). This course examines the Veda, the foundational scripture of Hinduism. It includes close study of Vedic texts and rituals and the influence, interpretation, and application of the Veda in the later Hinduism. Prerequisite: graduate status or instructor's permission.

**432—Religious History: Christian Interpretative Communities (3).** This course compares notions of religious authority in the sixteenth century: the Roman Catholic Church's Scripture and tradition and the Protestant principle of sola scriptura. The focus is the doctrine of the Eucharistic disputes carried on throughout the sixteenth century. Prerequisite: graduate standing or instructor's consent.

**450—Independent Readings (3).** Independent readings and research selected in consultation with supervisory faculty. Prerequisite: graduate standing.

**475—Studies in Folklore (3).** (same as Anthropology 484 and English 485). Focus on the roots of folklore scholarship and methodology and their evolution in modern approaches to the study of oral, traditional verbal genres and their performance in natural folk groups. Graduate standing or permission of instructor.

**481—Comparative Studies in Spirit Possession (3).** This course will investigate four distinct Afro-Latin religious traditions of the Americas, including traditions from Haiti, Cuba, Brazil and Honduras, as well as comparative examples from South Asia, Europe and North Africa. We will read and discuss such issues as 1) spirit possession and narrativity; 2) spirit possession as "history"; 3) possession as dramatic performance; 4) the relationship between sacrifice and possession trance. Through careful exploration of their histories and contemporary practice, the class will attempt general comparisons between the religion as well as the critical review of comparative methods employed. Prerequisite: graduate standing or instructor's consent.

**482—Comparative Religion: Popular Religion (3).** Popular religion is the lived religion of the common people which takes shape in contact with and distinction from the religion(s) of the elite(s) of a society. This course introduces concepts and theories of popular religion, and investigates its role in various traditions, including Hinduism, Buddhism, Christianity, and Chinese religions. Prerequisite: graduate standing or instructor's consent.

**490—Research and Thesis (1-6).** Research and writing for master's thesis. Graded on S/U basis only.



# Respiratory Therapy

**School of Health Professions**
**605 Lewis Hall (573) 882-8034**
**DIRECTOR** M. Prewitt
**ASSISTANT PROFESSOR** M. Prewitt
**CLINICAL INSTRUCTORS** T. Dobey, R. Hogan, B. Kist, K. Moss, L. Weber-Hardy

**DEGREE** BHS in respiratory therapy

Respiratory care is a diverse, growing, allied-health medical specialty with extensive patient contact, often with the critically ill. Respiratory therapists administer prescribed respiratory care and life support to patients with deficiencies and abnormalities of the cardiopulmonary system.

Respiratory therapists work in many settings where they are required to exercise a considerable degree of independent clinical judgment in the respiratory care of patients under the direct or indirect supervision of a physician.

While the majority of respiratory therapy practitioners are employed in hospitals, they may also work in home care, private practice, health maintenance organizations and skilled nursing facilities.

The two-year, professional phase of the program begins the fall semester of the junior year. Students complete lecture and laboratory courses designed to develop knowledge and skills necessary for application to the clinical settings. Required courses in administration, research, respiratory physiology and pharmacology, pathology and cardiology are integrated with the respiratory therapy curriculum. The final semester of the program consists entirely of clinical externships. Students may select an affiliated hospital outside the Columbia area for this clinical experience or remain on campus at University Health Care.

**COURSE REQUIREMENTS** The following are MU courses. Students transferring from other institutions need to be in contact with the program director to select appropriate courses to meet the requirements for admission.

Bio 1 (3) and 2 (2) or Bio 42 (5)
Chem 31/32: General Chemistry I, II (5)
Physics 21: College Physics (4)
Anat 201 and 203: Elementary Anatomy (5)
Physio 201: Elements of Physiology (5)
Microb 205: Fundamentals of Medical and Public Health Microbiology (4)
HRP 199: Medical Terminology (2)
E & CPSY A354: Educational Statistics (3)
C & I F114 (1) and F314 (2) or CECS 75 (3)

**PROFESSIONAL CERTIFICATION** After graduation, students will be eligible to take the Registry Examination, given by the National Board for Respiratory Care (NBRC), for registration as a therapist.

**ACCREDITATION** Accreditation of the program is granted by the Committee on

Accreditation for Respiratory Care (CoARC) in collaboration with Commission on Accreditation of Allied Health Programs (CAAHEP).

### COURSES

**22—Introduction to Respiratory Therapy (1).** Introductory course to assist students acquiring information about the respiratory therapy profession. Students observe therapists in hospitals and participate in lectures on credentialing, program requirements, placement and future trends in the profession. S/U graded only.

**211RT—Equipment and Techniques I (5).** History, development and organization of respiratory therapy. Manufacture, supply, storage and piping of gases; pressure regulation, flow control, humidification. Cleaning, sterilizing, maintenance, safety. Equipment for pressure breathing, oxygen, aerosol therapy.

**213RT—Clinical Practice I (3).** To be taken concurrently with 211RT for which it serves as an extension of the laboratory time and an opportunity for structured clinical experience exposures.

**218RT—Cardiopulmonary Pharmacology I (1).** General principles of cardiopulmonary drug dosage, absorption, action and excretion. Specific attention to autonomic nervous system, sympathomimetics, parasympatholytics, methylxanthines, glucocorticoid, anti-allergic and mucokinetic therapy.

**222RT—Equipment and Techniques II (5).** Continuation of 211RT. Course covers the functional aspects of natural and artificial ventilation; examines representative classes and types of mechanical ventilators; physiologic monitoring devices, pulmonary function testing.

**224RT—Clinical Practice II (3).** To be taken concurrently with 222RT, for which it serves as an extension of the laboratory time, and an opportunity for structured clinical experience exposures.

**228RT—Cardiopulmonary Pharmacology II (1).** General principles of cardiopulmonary drug dosage, absorption, action and excretion. Specific attention to neuromuscular blocking agents, central nervous system depressants and stimulants, cardiovascular agents, diaretics, aerosolized antivirals and antibiotics, and select respiratory disease agents.

**230RT—Clinical Practicum III (3).** Clinical practicum in respiratory therapy in which the student practices the basic art of respiratory therapy learned during the junior year. Patients are assigned each week for case history studies. Graded on S/U basis only.

**234RT—Perinatal/Neonatal Respiratory Care (3).** Evaluation and management of perinatal/neonatal pulmonary, medical and surgical conditions which require respiratory care. Emphasis on resuscitation, pathophysiology, evaluation, blood gas and x-ray interpretation, treatment and mechanical ventilation.

**315RT—Respiratory Pathophysiology (5).** Clinical pulmonary disease, organized around the gross structural components of the lung, airways, alveoli and pulmonary vasculature. Impact of disease on normal structure- function; clinical, roentgenographic, and physiologic manifestations are described.

**331RT—Clinical Practice IV (3).** Structured and supervised clinical experience based on work completed in 211RT, 213RT, 222RT and 224RT, which are prerequisites. S/U graded only.

**332RT—Pediatric Respiratory Care (2).** Evaluation and management of pulmonary, medical and surgical pediatric conditions which require respiratory care. Emphasis will be on pediatric resuscitation, pathophysiology, blood gas and x-ray interpretation, treatment, mechanical ventilation and home health care.

**333RT—Clinical Respiratory Therapy I (3).** Rounds, case studies and extended clinical practice. Specific applications of respiratory therapy in emergency medicine, surgery, obstetrics, pediatrics, etc.

**337RT—Introduction to Research (2).** (same as Radiological Science 337RS). An interdisciplinary course designed to promote undergraduate allied health research. Includes identifying and designing research problems through formulating relevant questions, learning to systematically search for answers, and methods for searching the literature.

**340RT—Clinical Practice V (5).** An extension of the supervised practicum begun in 331RT. Emphasis in adult critical care and special procedures including brochoscopies, cardiac catherization and chest tube placement.

**341RT—Clinical Practice VI (5).** An extension of the supervised practicum begun in 331 RT. Emphasis in perinatal and pediatric critical care including pediatric pulmonary function testing and airway management.

**343RT—Clincal Practice VII (5).** An extension of the supervised practicum begun in 331 RT. Emphasis in rehabilitation and home care, inservice education, and management. Students will participate in on-going research projects and community service activities.

**344RT—Organization and Administration (3).** (same as Radiological Science 344RS). Examines design and operation of allied health service departments and educational programs, including facilities, personnel procedures, record systems, ethics, medical-legal aspects, interdepartmental relations and curriculum development.

**346RT—Research (2-6).** Selected research projects guided by a senior staff member.

**360—Cardiovascular and Pulmonary Diagnostic Applications I (3).** (same as Radiological Sciences 360). Problem-based study of cardiopulmonary anatomy and physiology using current imaging methods. Emphasis given to assessment of the acutely distressed cardiac or pulmonary subject, emergency pulmonary support and vascular access techniques.

**361—Cardiovasular and Pulmonary Diagnostic Applications II (3).** (same as Radiological Sciences 361). Advanced study of Cardiac dysrhythmias, hypertrophy, and infarction, emphasizing aspects of treatment employed during Advanced Cardiac Life Support. Prerequisite: 360.

# Romance Languages

**College of Arts and Science**
**143 Arts and Science Building (573) 882-4874**
**Fax 884-8171**

**CHAIR** M.J. Muratore

**PROFESSORS** M. Lewis, E. Mullen, M.J. Muratore, G. Pierce, P. Sommers, O. Thiher, M. Ugarte

**ASSOCIATE PROFESSORS** J. Cordones-Cook, R. Gallimore, M. Garcia-Pinto, A. Rueda, D. Scroggins, J. Zemke, F. Zephir

**ASSISTANT PROFESSORS** R. Cavigioli, P. Fox, J. Iverson, V. Kaussen, E. Oliveira, M. Olsen, C. Presberg, M. Ruiz-Garcia, P. Schroeder

**PROFESSORS EMERITI** A. Brent, E. de-Lima, D. Gulstad, B. Mitchell, M. Peden, V. Williamson

**ASSOCIATE PROFESSORS EMERITI** B. Honeycutt, J. Wallace

**ASSISTANT PROFESSORS EMERITI** R. Dixon, F. Maupin

**DEGREES** AB, MA in French and Spanish, MA in foreign language teaching, PhD in romance languages

Few fields of study respond to more varied interests, encourage greater diversity or motivate more self-expression than the study of a foreign language. It allows for the development and refinement of communication, listening and speaking skills and endows students with a concern for world affairs and an appreciation and respect for individual differences.

The Department of Romance Languages offers language and literature courses in French, Italian, Portuguese and Spanish. Students may elect an area of concentration in French or Spanish. A minor is also available in French , Spanish, Italian studies, Romance literatures in translation or Afro-Romance literatures in translation.

Since it is now possible to graduate with a double major or dual degree, an increasing number of students choose French or Spanish as one of their majors. Double majors within the College of Arts and Science can easily be arranged; if the second degree is identified early, dual-degree programs outside the college pose no special problems. Combined programs with journalism and political science are popular; combinations with agriculture, education and business are among the other possibilities.

Students will find further information on language programs and career opportunities at MU in a brochure available from the department.

### AREA OF CONCENTRATION

**French** A student must normally take a minimum of 30 hours of course work in the target language beyond the courses used to satisfy the basic skills requirement in foreign languages.

**The following courses or their equivalents must be included (prerequisites are in brackets).**

Fr 106: Intermediate French Composition and Conversation (3)
Fr 206: Advanced French Composition and Conversation [106] (3) or 208: Business French [106] (3)
FR 230: Introduction to Literary Analysis [106] (3)
Fr 231: Introduction to French Literature I [106, 206 and 230] (3)
Fr 232: Introduction to French Literature II [106, 206 and 230] (3)
Fr 356: Stylistics [206 or 208, 231 or 232] (3)
Four 300-level courses chosen with the consent of the adviser [231 or 232]

**Spanish** A student must normally take a minimum of 30 hours of course work in the language beyond those courses used to satisfy the basic skills requirement in foreign languages.

**The following courses or their equivalents must be included (prerequisites are in brackets).**

Span 106: Intermediate Spanish Composition and Conversation [3] (3)
Span 205: Advanced Conversation (3) or 260: Phonetics [106] (3)
Span 206: Advanced Composition [106] (3) or
Span 208: Commercial Spanish [106] (3)
Span 231: Introduction to Hispanic Literature I (3) [206]
Span 232: Introduction to Hispanic Literature II (3) [206]
Five 300-level courses chosen with the consent of the adviser are required. One course must be in peninsular Spanish literature, one in Spanish American literature and one in linguistics.

The Department of Romance Languages also offers a minor in French or Spanish. To obtain a minor in either language, students must complete a minimum of 15 hours beyond the language requirement, of which at least six hours must be in literature courses and nine hours must be in residence. Information on the other minors is available in the department.

## COURSES

### FRENCH

**1—Elementary French I (5).** cor.

**2—Elementary French II (5).** Continuation of 1. Prerequisite: grade of C or better in 1 or its equivalent. cor.

**3—Elementary French III (3).** A multi-skill course following II, centering on cultural/ literary reading, and including a grammar review, practice the spoken language, as well as some practice in written expression. Prerequisite: grade of C or better in 2 or its equivalent course.

**101—Undergraduate Topics in French (1).** Organized study of selected topics. Subjects may vary from semester to semester. May be repeated with consent of department. Prerequisite: French 2 with a grade of C or better.

**106—Intermediate French Composition and Conversation (3).** A course designed to develop the ability to speak, read, and write in French via the reading of French short stories and/or a short novel. Grammar review. Prerequisite: French 3.

**110—French Civilization (3).** Open to any student interested. No knowledge of French required. May not be included in area of concentration in French. Prerequisite: sophomore standing.

**111—French Literature and Thought in English Translation I (3).** This course examines how the masterworks of French literature, from the Middle Ages to the eighteenth century, have influenced Western literary, cultural and philosophical traditions. Prerequisite: sophomore standing or instructor's consent.

**112—French Literature in Translation II (3).** This course examines how the masterworks of French literature of the nineteenth and twentieth centuries have influenced Western literary, cultural and philosophical traditions. Prerequisite: sophomore standing or instructor's consent.

**113—Sub-Saharan Francophone Literature in Translation (3).** This course surveys the major texts written by Francophone writers of sub-Saharan Africa. Writers include Ken Bogul, C. Beyala, C. Laye, J.M. Adiaffi, M. Ba and F. Oyomo. Prerequisite: English 20.

**114—New World Francophone Literature in Translation (3).** A survey of literature written by Caribbean writers of French expression. Writers include M. Conde, P. Chamoiseau, A. Cesaire, E. Glissant, S. Bart-Schwartz, R. Depestre and G. Etienne. Prerequisite: English 20.

**195—Service Learning in French (1).** (same as Romance Languages 195). Course offers our majors and advanced minors the opportunity to use their language skills in real-life community settings. Graded on S/U basis only. Does not meet A&S general education requirements. May be repeated once for credit. Prerequisites: junior or senior standings and departmental consent.

**201—Topics (cr.arr.).** Organized study of selected topics. Subjects and earnable credit may vary from semester to semester. Prerequisites: sophomore standing, departmental consent for repetition.

**206—Advanced French Composition and Conversation I (3).** Development of more sophisticated skills of written and oral expression. Prerequisites: 106 or equivalent.

**207—Intensive Beginning French (3).** Rapid acquisition of a reading knowledge of French. Cannot be taken to fulfill undergraduate language requirement. Prerequisites: graduate standing or instructor's consent.

**208—Commercial French (3).** Composition and Conversation course based on materials related to the French business world. Acquisition of business-related vocabulary. Introduction to French business operations and correspondence. Prerequisites: 106 or equivalent.

**230—Introduction to Literary Analysis (3).** Will acquaint students with vocabulary required for analysis of literary texts. Along with the traditional French method of poetry explication, students will learn to analyze the major literary genres (poetry, theatre, prose). Prerequisite: French 106.

**231—Introduction to French Literature I (3).** Study of selected masterpieces of French literature from the Middle Ages through the 18th century. Prerequisites: 206, and 230 or equivalent.

**232—Introduction to French Literature II (3).** Study of selected masterpieces of French literature of the 19th and 20th centuries. Prerequisites: 206 and 230.

**252—Survey of Minority & Creole Languages of the U.S. & the Caribbean (3).** (same as Spanish 252 and Linguistics 252) Analysis of the state of the minority languages of the U.S. and the Creole languages of the Caribbean with particular attention to the social status of these languages and speakers' attitudes toward them in the context of ethnic, cultural and national identity (taught in Eng.). Prerequisite: sophomore standing.

**260—French Phonetics (3).** A comparison of French and English phonetic features with specific application to French pronunciation. Prerequisite: 106 or equivalent.

**296—Honors Reading in French (1).** Directed readings in area of honors thesis. Prerequisite: admission to departmental Honors program.

**297—Honors Thesis in French (3).** Required of Honors candidates.

**301—Topics (cr.arr.).** Organized study of selected topics. Subjects and earnable credit may vary from semester to semester. Prerequisites: junior standing, departmental consent for repetition.

**307—Advanced oral French for Teachers (cr.arr.).** Advanced speaking practice primarily for teachers with emphasis on pronunciation, syntactical accuracy and vocabulary expansion. Prerequisite: 206 or equivalent. May not be used toward A & S Major. May be repeated for a maximum of 12 hours credit.

**311—History of the French Language (3).** (same as Linguistics 311). Required of M.A. candidates Prerequisites: 231 and 232.

**312—French Medieval Literature (3).** Prerequisites: 231, 232.

**316—French Renaissance (3).** Prerequisites: 231, 232.

**317—Seventeenth-Century French Literature (3).** Prerequisites: 231, 232.

**318—Eighteenth-Century French Literature (3).** Prerequisites: 231, 232.

**319—Nineteenth-Century French Literature (3).** Prerequisites: 231, 232.

**320—Twentieth-Century French Novel (3).** Prerequisites: 231, 232.

**321—Introduction to the Contemporary French Theatre (3).** Prerequisites: 231, 232.

**323—Introduction to Modern French Poetry (3).** Introduction to major currents of Frech poetry from beginning of the 19th century to the present. Students will write explications of poems, present oral analyses and will be tested on poetic terms and poetic content/styles of various poems and poets. Prerequisite: 231 or 232.

**329—Nineteenth-Century French Novel (3).** Prerequisite: 231, 232.

**330—African Francophone Literature (3).** Course introduces contemporary African Literature to students via readings and detailed analysis of literary texts by Francophone African writers. Prerequisite: French 231, 232.

**350—Special Readings (1-3).** Undergraduates must have permission of department chair. Independent study through readings, conferences, reports. Prerequisites: 231, 232.

**352—Foreign Language Teaching Methodology (3).** (same as Spanish 352). Theory and techniques of current foreign language methodology and their application in the classroom. Presentation of instructional projects, classroom observations, and strategies for classroom management. Prerequisite: graduate standing or approval by department. May not be used toward Arts & Science major.

**353—Readings in French (2-3).** Subject varies according to instructor. Prerequisites: 231, 232.

**356—Stylistics (3).** A technical study of French as a means of communication and of self-expression, involving levels of meaning, rhetorical structure, and textual analysis. Prerequisites: 206 or 208; 231 or 232.

**378—Structure of Modern French (3).** (same as Linguistics 378). An introductory presentation of the phonological and syntactic systems of contemporary standard French. Prerequisites: 206 or equivalent or instructor's consent.

**393—The Capstone Experience (3).** This course is required of all majors. Topics vary but all courses synthesize and review essential components of the major: speaking, writing, reading in French, and the ability to think critically and analytically.

**400—Problems (cr.arr.).** Prerequisite: graduate standing.

**402—Bilingualism and Language Contact (3).** (same as Spanish 402). Global analysis of the study of Bilingualism from a combined sociocultural, sociolinguistic and psycholinguistic perspective based on current research and examination of various phenomena of language contact (taught in Eng.). Prerequisite: graduate standing.

**410—Seminar (2-3).** Subject varies according to instructor. Prerequisite: graduate standing.

**411—Old French (3).** Recommended: 311 and some knowledge of Latin.

**412—Studies in French Medieval Literature (3).** Recommended: 312. Prerequisite: graduate standing.

**416—Studies in the French Renaissance (3).** Prerequisite: graduate standing. Recommended: 316.

**417—Studies in Seventeenth-Century French Literature (3).** Prerequisite: graduate standing. Recommended: 317.

**418—Studies in Eighteenth-Century French Literature (3).** Prerequisite: graduate standing. Recommended: 318.

**419—Studies in Nineteenth-Century French Literature (3).** Prerequisite: graduate standing. Recommended: 319 or 329.

**420—Studies in Twentieth-Century French Literature (3).** Prerequisite: graduate standing. Recommended: 320, 321, or 323.

**480—Readings (3-6).** Independent readings in preparation for the Ph.D. comprehensive examination in French. Prerequisite: graduate standing.

**490—Research (cr.arr.).** Prerequisite: graduate standing. Graded on a S/U basis only.

### ITALIAN

**1—Elementary Italian I (6).** Elementary Italian I is designed to give students an overview of the grammar and syntax of Italian. Emphasis is on oral and listening skills with some reading and writing. cor.

**2—Elementary Italian II (6).** Elementary Italian II is designed to give students an overview of the grammar and syntax of Italian. Emphasis is on oral and listening skills with some reading and writing. Prerequisite: grade of C- or better in 1 or its equivalent.

**101—Undergraduate Topics in Italian (1-3).** Organized study of selected topics. Subjects and credits may vary from semester to semester. Prerequisite: departmental consent for repetition.

**106—Intermediate Composition and Conversation (3).** Reviews main grammar components of Italian. Emphasis is on acquiring the communicative and compositional skills required to study and discuss Italian literature. Prerequisite: Italian 2.

**110—Italian Civilization (3).** Open to any student interested. No knowledge of Italian required. Prerequisite: sophomore standing.

**112—Italian Cinema (3).** A course which concentrates on the development of Italian Cinema, primarily since the Post-WWII era, and the ways in which it reflects major economic, social and political events occurring in Italy. No knowledge of Italian required. Prerequisite: sophomore standing.

**196—Honors Reading in Italian (1).** Directed readings in area of Honors thesis. Prerequisites: minor in Italian &

admission to departmental Honors program.

**201—Topics (cr.arr.).** Organized study of selected topics. Subjects and earnable credit may vary from semester to semester. Prerequisite: departmental consent for repetition. No knowledge of Italian required.

**205—Advanced Italian Conversation (3).** This course will develop the student's ability to speak and understand the oral expression of Italian. Focus will be on learning new idiomatic expressions and an acquisition of new vocabulary. Prerequisite: Italian 106.

**206—Advanced Italian Composition (3).** An advanced grammar course that endeavors to a) develop writing skills in connection with a variety to text types; b) refine study skills; and c) improve style through the study of contemporary Italian culture. Prerequisite: Italian 106.

**207—Intensive Beginning Italian (3).** Designed for rapid acquisition of a reading knowledge of Italian. Cannot be taken to fulfill undergraduate language requirement. Prerequisites: graduate standing or instructor's consent. cor.

**214—The Films of Pier Paolo Pasolini (3).** Studies the films of Pier Paolo Pasolini, Italian director, author and intellect. This course will trace the development of the artist (post semiotics and gramscian socialism to nihilism) across his films. A selection of his written works will be considered as background to the intellectual content of his films. Prerequisite: 112 and English 91 or 92, or permission of instructor)

**220—20th Century Italian Fiction in Translation (3).** This course is designed to present American students with a selection of Italian novels aimed at introducing them to some key issues in the historical, social, and literary developments of Italian life from the turn of the century to the 1960s. Prerequisite: sophomore standing or English 20.

**231—Introduction to Italian Literature (3).** This course introduces students to the literacy terminology that will enable them to study Italian literature. Prerequisite: Italian 205 and 206.

**232—Survey of Italian Literature (3).** Designed to expose students to the rich variety of Italian letters. Emphasis will be placed on textual analysis as well as on authors, themes and stylistic features. Prerequisite: Italian 231.

**297—Honors Thesis in Italian (3).** Required of Honors candidates. Prerequisite: minor in Italian.

**350—Special Readings (1-3).** Independent study through readings, conferences, reports. Prerequisite: 3 or equivalent. f,w.

## PORTUGUESE

**1—Elementary Portuguese I (6).** Elementary Portuguese I is designed to give students an overview of the grammar and syntax of Portuguese. Emphasis is on oral and listening skills with some reading and writing.

**2—Elementary Portuguese II (6).** Elementary Portuguese II is designed to give students an overview of the grammar and syntax of Portuguese. Emphasis is on oral and listening skills with some reading and writing.

**101—Topics in Portuguese (1-3).** Organized study of selected topics. Subject may vary from semester to semester. May be repeated with consent of instructor.

**106—Intermediate Portuguese (3).** Review of grammar through Brazilian culture. Designed for students who have taken either Portuguese 2 or Portuguese 207 and wish to continue studying the language. Prerequisite: 2 or 207. f.

**109—Portuguese Conversation (3).** Prerequisite: 3 or equivalent.

**113—Brazilian Civilization (3).** Survey of Brazilian history, arts and culture. Open to any student interested. No knowledge of Portuguese required. Prerequisite: sophomore standing.

**201—Topics (cr.arr.).** Organized study of selected topics. Subjects and earnable credit may vary from semester to semester. Prerequisites: sophomore standing, departmental consent for repetition.

**206—Advanced Portuguese Composition and Conversation (3).** Prerequisite: 106 or 109.

**207—Intensive Beginning Portuguese (3).** Designed for rapid acquisition of a reading knowledge of Portuguese. Cannot be taken to fulfill undergraduate language requirement. Prerequisites: graduate standing or instructor's consent.

**311—Survey of Portuguese Literature (3).** Masterpieces of continental Portuguese literature from its origins to present. Prerequisites: 206 or equivalent.

**350—Special Readings (1-3).** Independent study through readings, conferences, reports. Prerequisite: 3 or equivalent.

**353—Readings in Portuguese (2-3).** Subjects either in Brazilian or Portuguese literature. Varies according to instructor. Prerequisites: sophomore standing or instructor's consent.

**400—Problems (cr.arr.).** Prerequisite: graduate standing.

## SPANISH

**1—Elementary Spanish I (5).** cor.

**2—Elementary Spanish II (5).** Continuation of 1. Prerequisite: grade of C or better in 1 or its equivalent. cor.

**3—Elementary Spanish III (3).** A multi-skill course following II, centering on cultural/ literary readings, and including a grammar review, practice in the spoken language, as well as some practice in written expression. Prerequisite: grade of C or better in 2 or its equivalent course. cor.

**101—Undergraduate Topics in Spanish (1-3).** Organized study of selected topics. Subjects may vary from semester to semester. May be repeated with consent of department. Prerequisite: Spanish 2 with a grade of "C" or better.

**106—Intermediate Spanish Composition and Conversation (3).** Prerequisite: 3 or equivalent.

**110—Spanish Civilization (3).** Survey of Spanish history, arts and culture. Open to any student interested. No knowledge of Spanish required. May not be included in area of concentration in Spanish.

**111—Spanish Literature in Translation (3).** May not be included in area of concentration in Spanish. Subject varies with instructor. Prerequisite: sophomore standing.

**112—Latin American Civilization (3).** Survey of Latin American history, arts and culture. Open to any student interested. No knowledge of Spanish required. May not be included in area of concentration in Spanish.

**113—Hispanic Minority Literature (3).** This course studies the literature of Hispanic minorities in the United States: Chicanos (Mexican American), Mainland Puerto Ricans, and Cuban exile writers. It explores the question of minority versus majority literatures and the creation of a Hispanic minority discourse. No knowledge of Spanish required. Prerequisite: English 20. f.

**114—Afro-Hispanic Literature (3).** This course studies texts from Spanish America that focus on the black experience, with an emphasis on critical issues concerning ethnicity and gender. It examines the implications of who writes in Spanish America and the question of authenticity. No knowledge of Spanish required. Prerequisite: English 20. f.

**115—Chicano Literature (3).** This course studies the literature of U.S. writers of Mexican descent. It focuses on basic characteristics and themes in Chicano literature such as, the interplay of Spanish and English in the texts and attitudes toward neocolonialism and dependency. No knowledge of Spanish required. Prerequisite: English 20. w.

**116—Puerto Rican Literature (3).** This course examines important Puerto Rican (Island) literary themes such as the status of Puerto Rico as a U.S. colony and the influence on the culture of racism, sexism and poverty. Works are analyzed as literature and as interpretations of reality. No knowledge of Spanish required. Prerequisite: English 20. w.

**117—Spanish American Women Writers (3).** This course studies the writing of women authors from Spanish America. It treats the works of both major and minor figures in an effort to analyze the development of female discourse within national and international contexts. No knowledge of Spanish required. Prerequisite: English 20. f.

**122—Latin American Women's Culture (3).** (same as Women Studies 122). Examines Latin American women across class, race, ethnicity and age, as producers of high and popular culture. We will be looking at how women have been seen in art, religion, popular and high culture and the ways in which women have seen themselves over time. No knowledge of Spanish required. May not be included in area of concentration in Spanish.

**195—Service Learning in Spanish (1).** (same as Romance Languages 195). Course offers our majors and advanced minors the opportunity to use thier language skills in real-life community settings. Graded on S/U basis only. Does not meet A&S general education requirements. May be repeated once for credit. Prerequisites: junior or senior standings and departmental consent.

**201—Topics (cr.arr.).** Organized study of selected topics. Subjects and earnable credit may vary from semester to semester. Prerequisite: sophomore standing. departmental consent for repetition.

**205—Advanced Spanish Conversation (3).** Prerequisite: 106 or equivalent.

**206—Advanced Spanish Composition (3).** Prerequisite: 106 or equivalent.

**207—Intensive Beginning Spanish (3).** Designed for rapid acquisition of a reading knowledge of Spanish. Cannot be taken to fulfill undergraduate language requirement. Prerequisite: Graduate standing or instructor's consent.

**208—Commercial Spanish (3).** Business terminology and forms. Translate and compose business letters and documents for advertising and promotion, trade and commerce, imports and exports, money and banking. Prerequisite: 106 or equivalent.

**223—Mexican Culture and Civilization (2-3).** Study of Mexican culture and civilization through field trips, excursions and selected readings in Mexican history and literature. No knowledge of Spanish required. Open only to participants in UMC's study programs in Mexico. Prerequisites: sophomore standing or instructor's consent.

**226—Latin American Women Writers (3).** (same as Women Studies 226). An introduction to major literary and theoretical texts by twentieth century Latin American women writers in translation. Readings and class work in English. Prerequisite: sophomore standing. w.

**231—Introduction to Hispanic Literature I (3).** Selected prose fiction and nonfiction prose of Spain and Spanish America. Prerequisite: 206 or equivalent.

**232—Introduction to Hispanic Literature II (3).** Selected plays and poetry of Spain and Spanish America. Prerequisite: 206 or equivalent.

**252—Survey of Minority & Creole Languages of the U.S. & the Caribbean (3).** (same as French 252 and Linguistics 252). Analysis of the state of the minority languages of the U.S. and the Creole languages of the Caribbean with particular attention to the social status of these languages and speakers' attitudes toward them in the context of ethnic, culture and national identity (taught in Eng.). Prerequisite: sophomore standing.

**260—Phonetics (3).** (same as Linguistics 260). (Spanish Language). Prerequisite: 106.

**296—Honors Readings in Spanish (1).** Directed readings in area of Honors thesis. Prerequisite: admission to departmental Honors program.

**297—Honors Thesis in Spanish (3).** Required of Honors candidates.

**301—Topics (cr.arr.).** Organized study of selected topics. Subjects and earnable credit may vary from semester to semester. Prerequisite: junior standing. departmental consent for repetition.

**309—Spanish Medieval Literature (3).** Prerequisites: 231 and 232

**310—Renaissance and Golden Age Poetry (3).** Prerequisites: 231 and 232.

**311—Renaissance and Golden Age Prose (3).** Prerequisites: 231 and 232.

**312—Spanish Theatre in the Golden Age (3).** Prerequisites: 231 and 232.

**313—Don Quijote (3).** Prerequisites: 231 and 232.

**317—Spanish Poetry in the Nineteenth and Twentieth Centuries (3).** Prerequisites: 231 and 232.

**318—Nineteenth-Century Spanish Drama (3).** Prerequi-

sites: 231 and 232.

**319—Nineteenth-Century Spanish Novel (3).** Prerequisites: 231 and 232.

**320—Twentieth-Century Spanish Drama (3).** Prerequisites: 231 and 232.

**321—Twentieth-Century Spanish Novel (3).** Prerequisites: 231 and 232.

**322—Advanced Contemporary Culture of Spain (3).** Study of Spanish culture and civilization through field trips, excursions, and selected readings in history, literature, and contemporary print media. Prerequisite: 205, 206, 260 or equivalent. Open only to participants in the UMC's summer study in Spain.

**324—Hispanic Literature of Resistance (3).** A study of the literature of commitment in the Hispanic world: literature in its historical and political contexts that makes a conscious to change to change social conditions. Prerequisites: 231 and 232.

**326—Advanced Contemporary Culture of Spanish America (3).** A study of Spanish-American culture and civilization through selected readings in history and literature, and the use of visual media. Prerequisites: Spanish 205 and 206. Graded on A/F basis only. w.

**327—Advanced Spanish Civilization (3).** A survey of Spanish culture and Spanish history from the Middle Ages to the present with special emphasis on contemporary culture. Students will be provided with knowledge of chronology, geography and contemporary issues from readings of journals, novels and Internet news. Prerequisites: 205 and 206.

**331—Survey of Spanish American Literature I (3).** From beginning to 1880. Prerequisites: 231 and 232

**332—Survey of Spanish American Literature II (3).** From 1880 to present. Prerequisites: 231 and 232.

**335—Mexican Literature (3).** Prerequisites: 231 and 232.

**339—Hispanic Oral Traditions (3).** This course proposes to examine the Hispanic Oral Tradition through a study of romances and related genres, the corrido, decima and folktale. Prerequisites: 231 and 232.

**341—Argentine Literature (3).** Prerequisites: 231 and 232.

**345—Modernista and Contemporary Poetry (3).** Prerequisites: 231 and 232.

**350—Special Readings (1-3).** Independent study through readings, conferences, reports. Prerequisites: 3 or equivalent. Undergraduates must have departmental chair consent.

**352—Foreign Language Teaching Methodology (3).** (same as French 352). Theory and techniques of current foreign language methodology and their application in the classroom. Presentation of instructional projects, classroom observations, and strategies for classroom management. Prerequisite: graduate standing or approval by department. May not be used towards Arts & Science major.

**353—Readings in Spanish (2-3).** Subject varies according to instructor. Prerequisites: 231 and 232.

**355—The Spanish American Theatre (3).** Prerequisites: 231 and 232.

**356—Stylistics (3).** Prerequisite: 206. Recommended: 231 and 232.

**357—Afro-Hispanic Literature (3).** A study of prose, poetry, and drama, in Spanish, written by authors of African descent in the Americas. Prerequisites: 231 and 232. f.

**361—History of the Spanish Language (3).** (same as Linguistics 361). Diachronic analysis of phonological, morphological, and syntactical systems of Spanish, from Vulgar Latin to contemporary dialects. Prerequisite: reading knowledge of Spanish. Recommended: 231 and 232.

**379—Structure of Modern Spanish (3).** (same as Linguistics 379). Synchronic analysis of phonology, morphology and syntax of spoken Spanish dialects. Prerequisites: 4 200-level courses in Spanish.

**392—Nobel Laureates in Spanish American Literature (3).** Analyzes the creative expression of five Nobel laureates from Spanish America. Selected works of Gabriela Mistral, Pablo Neruda, Miguel Angel Asturias, Octavio Paz and Gabriel Garcia Marquez are read in relation to contemporary theory. Prerequisites: Spanish 231 and 232.

**393—The Capstone Experience (3).** This course is required of all majors. Topics vary but all courses sysnthesize and review essential components of the major: speaking, writing, reading in Spanish, and the ability to think critically and analytically.

**400—Problems (cr.arr.).** Prerequisite: graduate standing.

**402—Bilingualism and Language Contact (3).** (same as French 402). Global analysis of the study of Bilingualism from a combined sociocultural, sociolinguistic and psycholinguistic perspective based on current research and examination of various phenomena of language contact (taught in Eng.). Prerequisite: graduate standing.

**410—Seminar (2-3).** Subject varies according to instructor. Prerequisite: graduate standing.

**412—Studies in Spanish Literature of the Medieval Period (3).** Prerequisite: graduate standing. Recommended 460.

**415—Studies in Spanish Literature of the Renaissance (3).** Prerequisite: graduate standing.

**416—Studies in Spanish Literature in the Golden Age (3).** Prerequisite: graduate standing.

**419—Studies in Nineteenth-Century Spanish Literature (3).** Prerequisite: graduate standing.

**420—Studies in Twentieth-Century Spanish Literature (3).** Prerequisite: graduate standing.

**427—Studies in Colonial Spanish American Literature (3).** Analysis of seminal literary and "Historical" texts interpreting the Encounter, Conquest and Colonization of Spanish America.

**430—Studies in Spanish-American Poetry (3).** Prerequisite: graduate standing.

**431—Studies in Spanish-American Fiction (3).** Prerequisite: graduate standing.

**433—Studies in the Spanish-American Theatre (3).** Prerequisite: graduate standing.

**460—Old Spanish—Phonology, Morphology and Syntax (3).** Prerequisite: knowledge of Latin, to be demonstrated by passing departmental written examination or by completing Latin 201 with grade of B or better.

**480—Readings (3-6).** Independent readings in preparation for Ph.D. comprehensive examination in Spanish. Prerequisite: graduate standing.

**490—Research (cr.arr.).** Prerequisite: graduate standing. Graded on a S/U basis only.

### ROMANCE LANGUAGES

**101—Undergraduate Topics in Romance Languages (1-3).** Organized study of selected topics. Subjects and credits may vary from semester to semester. Prerequisite: departmental consent for repetition.

**131—Writing About Film: Theory and Practice (3).** A course on how to describe and interpret films from a theoretical perspective. Students will learn the two literary genres for writing about film, the film review (for describing) and the film essay (for interpreting). Prerequisite: sophomore standing. f.

**132—Trends in World Cinema (3).** This course is a chronological overview of the major trends in world cinema. Emphasis is on film as art form, as industry, and as a reflection of 20th century upheavals. Prerequisite: sophomore standing. w.

**152—Literature of the African Diaspora (3).** A postcolonial analysis of selected literary texts interpreting the African diaspora in the Americas. Exemplary texts from the Caribbean (English, French, Spanish), South America and the United States are discussed in camparative perspective. No knowledge of Spanish required. Prerequisite: English 20.

**195—Service Learning in Romance Languages (1).** (same as Spanish 195 and French 195). Course offers our majors and advanced minors the opportunity to use thier language skills in real-life community settings. Graded on S/U basis only. Does not meet A&S general education requirements. May be repeated once for credit. Prerequisites: junior or senior standings and departmental consent.

**355—Literature of the African Diaspora (3).** A study, in English translation, of writings by authors of African descent in the Americas. Prerequisite: junior standing or instructor's consent. w.

**380—Linguistic Theory and Language Acquisition (3).** (same as Linguistics 380). The goal of this class is to study the implications of current linguistic theory for contemporary research on second language acquisition. In particular, the hypothesis that second language acquisition follows some of the same principles as first language acquisition is explored. Course is taught in English. Prerequisites: Spanish 379, French 378, English 340 or Linguistics 372.

**400—Problems (cr.arr.).** Prerequisites: 372 or equivalent and instructor's consent.

**410—Seminar: Topics in Literature & Languages of the African Diaspora (3).** One of two courses devoted to the theory and practice of African diaspora literary criticism. Beginning with the United States, we address the issues of developing appropriate theoretical models for black literatures in the Americas. Prerequisite: graduate standing.



# Rural Sociology

**College of Agriculture, Food and Natural Resources**
**102 Sociology Building (573) 882-6357**
**CHAIR** K. Pigg
**DIRECTOR OF GRADUATE STUDIES** J. Gilles
**UNDERGRADUATE ADVISOR** M. Grigsby
**PROFESSORS** R. Campbell, M. Nolan, D. O'Brien
**ASSOCIATE PROFESSORS** J. Gilles, K. Pigg, J.S. Rikoon
**ASSISTANT PROFESSORS** E. Barham, J. Davis, M. Grigsby, M. Hendrickson, K. Jamtgaard, S. Jeanetta, M. Simon Leuci, J. Reed-Adams, J. Scott
**PROFESSORS EMERITI** J. Hartman, E. Hassinger, W. Heffernan, D. Hobbs, J. Holik, J. Pinkerton, R. Powers, J. Wade
**ADJUNCT ASSISTANT PROFESSORS** D. Case, P. Miller

**DEGREES** MS, MPS, and PhD in rural sociology

The Department of Rural Sociology is a core partner in interdisciplinary certificate-granting programs in (1) Society and Ecosystems and (2) Conservation Biology.

### DEPARTMENTAL REQUIREMENTS

**Rural Sociology Undergraduate Minor:** 15 hours of rural sociology courses numbered 101 or higher. Nine hours must be numbered above 200. Specific combination of courses must be approved by a departmental adviser.

### COURSES

**1—Rural Sociology (3).** Introduction to the sociology of rural society and small towns: structure, functioning, trends, and interrelations with the larger society. (Students may not earn credit for both Rural Sociology 1 and Sociology 1). cor.

**101—Topics in Rural Sociology (1-3).** Organized study of selected topics. Subjects and earnable credit vary from semester to semester. May be repeated. Prerequisites: Rural Sociology 1 or Sociology 1.

**120—Population and Ecology (3).** (same as Sociology 120). Changes in the structure and characteristics of population groups and their relationship to both human and non-

human aspects of the biophysical environment. Prerequisites: Rural Sociology 1 or Sociology 1.

**150—The Amish Community (3).** (same as Peace Studies 150). Examines historical antecedents and contemporary culture and social structure of the Amish. Topics include cultural symbols, life ceremonies, the family, counter-cultural pressures, stresses, social change. Prerequisites: Rural Sociology 1, Sociology 1, or Anthropology 1.

**175—Ownership and Control of American Farms (3).** Examines current structures in agricultural production systems, forces for change and possible social consequences of alternative structures. Assumes a basic understanding of the food production/distribution system. Prerequisites: Rural Sociology 1 or Sociology 1.

**180—Social Research I (3).** (same as Sociology 180).

**185—Contemporary Rural Social Problems (3).** Social problems of major concern to rural society, including technological change, employment, health care, crime, environmental concerns, energy, poverty, and inequalities, education, and/or natural resources. Prerequisites: Rural Sociology 1 or Sociology 1.

**201—Topics in Rural Sociology (1-3).** Organized study of selected topics. Subjects and earnable credit vary from semester to semester. May be repeated. Prerequisites: Rural Sociology 1, Sociology 1 or Anthropology 1.

**205—Leadership in Today's World (3).** Examination of dynamics of group leadership, especially in local voluntary organizations; study of how leader's behavior is related to success or failure of organization's program. Prerequisites: Rural Sociology 1 or Sociology 1.

**214—The Family (3).** (same as Sociology 214).

**216—Urban Sociology (3).** (same as Sociology 216). Prerequisites: Rural Sociology 1 or equivalent; or Sociology 1 or 4.

**225—Social Processes of Communication and Diffusion (3).** Overview of the social process of effective interpersonal communication, mass media impact and strategies for implementing the acceptance of new ideas and practices within social systems or societal sectors. Prerequisites: Rural Sociology 1 or Sociology 1.

**238—Global Perspectives and Realities (3).** Presents the sociological theories and concepts needed to understand globalization and to live overseas. Helps prepare students for life abroad. Open only to students with definite plans to study, work or live abroad.

**270—The Sociology of Religion (3).** (same as Sociology 270, Religious Studies 270). Prerequisites: Rural Sociology 1 or Sociology 1 or 4.

**290—Practicum (3).** (same as Sociology 290). Independent research or professional experience under faculty supervision. Projects must be arranged by student and faculty member prior to registration. Prerequisites: junior standing, departmental consent.

**299—Recent Theories in Sociology (3).** (same as Sociology 299).

**300—Problems (cr.arr.).** Prerequisite: instructor's consent.

**301—Topics in Rural Sociology (2-3).** Organized study of selected topics. Subjects and earnable credit vary from semester to semester. May be repeated. Prerequisites: 6 hours Rural Sociology or Sociology, or junior standing.

**305—Social Demography (3).** (same as Sociology 305). Prerequisite: Rural Sociology 1 or Sociology 1 and junior standing.

**310—Sociology of Agriculture and Natural Resources (3).** Overview of current issues in the study of rural society. Emphasizes the relationships among social organization, agriculture, natural resources and the global economy.

**311—Sociology of Social Policy (3).** (same as Sociology 311). Sociological theories and methodologies focused on social policy; policy as process, contextual and critical policy analyses; assessing policy effects and consequences. Prerequisite: senior standing.

**335—Social Change and Trends (3).** (same as Sociology 335). Nature of social change. Emphasis on sociological theories and models of social change and their application in analysis and implementation of change in social structures. Prerequisites: Rural Sociology 1 or Sociology 1 and junior standing.

**341—Building Communities from the Grassroots (3).** Introduction and application of basic community development concepts, methods and practical skills for involving and empowering local citizens and leaders effectively in community-based efforts regardless of the issue. Prerequisite: graduate standing or instructor's consent.

**342—Empowering Communities for the Future (3).** Focuses on the professional practice and applications of community-based development including participatory action research, community economic development, organizational development, use of technology, citizen education and integration of practice. Graded on A/F basis only. f,w,s.

**343—Creating Capacity for Dynamic Communities (3).** Addresses community and citizen power; large group intervention processes for change; facilitating small group process; community organizing; community sustainability, dealing with poverty and disenfrachisement; community conflict resolution; ethics; and integration into practice. Graded on A/F basis only. f,w.

**370—Environment and Society (3).** An interdisciplinary examination of domestic and international environmental issues focusing on social, cultural, and policy dimensions. Perspectives of the social sciences and humanities are included. Prerequisites: junior, senior or graduate standing.

**375—Social Statistics (3).** (same as Sociology 375).

**376—Advanced Social Statistics (3).** (same as Sociology 376).

**400—Problems (cr.arr.).** Research for student capable of semi-independent work. Prerequisite: instructor's consent.

**402—Research Design for Social Intervention (3).** Study of techniques for systematic design and development of social programs intended to improve material conditions of target audience and/or solve social problems; methods to demonstrate generalizabilty or replicability of program design and impact. Prerequisite: 376 or equivalent, or instructor's consent. MPS core course.

**403—Program Development and Evaluation (3).** (same as Agricultural Education 470). Program development principles, teaching plans and evaluation principles applied to extension program development. Prerequisite: instructor's consent.

**406—Seminar in Social and Economic Development (3).** (same as Sociology 406).

**425—Social Processes of Information/Knowledge Utilization (3).** (same as Sociology 425). Factors conditioning communication and diffusion of ideas and practices; exercise of personal influence; role of change agents and agencies in the process of change. Prerequisites: graduate standing or instructor's consent.

**430—Research Methodology (3).** Basic methodological issues, design, and application in social science research. Qualitative and quantitative approaches examined. Student projects developed with data collection and computer application.

**431—Seminar in Multivariate Analysis Techniques (3).** (same as Sociology 431).

**432—Seminar in Qualitative Methods in Sociology (3).** (same as Sociology 432).

**437—Synthesis of Theory and Method in Sociology (3).** The purpose of the course is to provide the student with a critical understanding of the basic theoretical paradigms employed in the development of research projects in sociology. The course is designed for graduate students. Prerequisites: 376 and 430, or instructor's consent.

**444—Seminar on the Organization of Agriculture (3).** Various perspectives and theoretical orientations for examining the sociology of agriculture. Theoretical issues of social development as traced through the literature to contemporary research in the causes and consequences of change in agriculture.

**445—Smr. on Issues in the Sociology of Agriculture & Natural Resoures (3).** Issues in current research in the sociology of agriculture of developing and industrial nations. Links sociological theory with research in agriculture, examining contributions of applied research to sociological knowledge.

**446—Community Social Structure (3).** (same as Sociology 446). A compartative study of communities in different nations and in urban and rural areas. A primary focus of the course will be on social change in communities in response to changing economic, political, social, cultural, and ecological factors.

**447—Seminar on Contemporary Issues in Rural Sociology (cr.arr.).**

**450—Research (cr.arr.).** Research not expected to terminate in thesis or dissertation. Prerequisite: instructor's consent.

**480—Quantitative Applications in Community Research (3).** (same as Sociology 480). This course focuses on the application of social science research methods to the unique kinds of problems that arise in the study of whole communities. Prerequisite: Rural Sociology 430.

**490—Research (cr.arr.).** Research leading to dissertation. Graded on a S/U basis only.

# Russian

*See German and Russian Studies*

# Russian Area Studies

**INTERDEPARTMENTAL PROGRAM IN THE COLLEGE OF ARTS AND SCIENCE**
**451 General Classroom Building (573) 882-4328**

**DEGREE** AB in international studies

This interdisciplinary emphasis area under the AB program in international studies is designed to provide students with a comprehensive approach to Russian and Soviet studies. While providing an extensive background in Russian history, culture and ideology, sufficient concentration within a discipline is provided to serve as a foundation for specialized graduate study.

Since several required courses have prerequisites, students are encouraged to begin their program during the freshman year and, unless they consider formal course work in the language during the summer, they should begin their language courses no later than the sophomore year.

Students are urged to fulfill some of the requirements in an approved study abroad program if at all possible.

Student advisement is provided by a designated member of the faculty from the Department of German and Russian Studies, located in the General Classroom Building. Additional information on area and degree requirements may be obtained from the Department of German and Russian Studies, the dean's office in Lowry Hall, or the Office of Special Degree Programs, 19 Parker Hall.

# Social Work (SCHOOL)

**College of Human Environmental Sciences**
**724 Clark Hall (573) 882-6206**
**http://www.missouri.edu/~sswmain/**
*For additional information, see the School of Social Work in the front of the catalog.*

**DIRECTOR** C. Cowger

**PROFESSORS** C. Cowger, J.A. Davenport, M. Kelly

**ASSOCIATE PROFESSORS** J. Burke, L. Kreuger, M. Markward, J. Mermelstein, S. Moore, M. Sable, P. Sundet, W. Watt

**ASSISTANT PROFESSORS** E. Ballenger, F. Danis, G. Harris, J. Hodges, D. Oliver, C. Snively

**PROFESSORS EMERITI** T. Fulton, B. Levin
**ASSOCIATE PROFESSORS EMERITI** B. Dubansky, O. Kroeker, M. Maddux, D. Rieman, V. Southwood
**CLINICAL INSTRUCTORS** T. Freelin, D. Orton-Howard, J. Perry, R. Wingo, D. Word

**DEGREES** BSW and MSW

Social Work is a dynamic and growing human service profession that plays an increasingly important and visable role in our everyday lives. The major educational objective of the School of Social Work undergraduate program is to prepare students for competent and skillful first-level professional social work practice.

A myriad of social problems, rapid social change, the breakdown of community life and individual maladjustment beset contemporary society. Social Work addresses these conditions by assisting in the prevention of community breakdown, by facilitating the restoration of individuals to health and more fulfilling lives, and by developing resources to meet needs and improve social conditions.

More information about the social work profession and career opportunities can be found under Human Environmental Sciences in the front portion of this book.

**THE SOCIAL WORK MAJOR** Incoming students who declare a major in social work when admitted to the university are assigned to an adviser in the School of Social Work. Students are required to complete a range of courses in liberal arts as foundation to the BSW Professional Program and as electives. When students have completed at least 45 credit hours, they must apply for admission to the Bachelor of Social Work Professional Program if they wish to pursue a degree in social work. A total of 120 credit hours are required for graduation: liberal arts foundation courses, professional social work courses and electives.

The BSW Professional Program Social Work Core consists of 42 hours (inclusive of SW 220). Courses are offered only once each year in sequence, thus requiring three semesters to complete: fall, winter, fall. Students who have completed all other university and School of Social Work requirements may graduate in December of the senior year.

**THE BSW PROFESSIONAL PROGRAM** Admission to the BSW Professional Program is by application and is determined on a competitive basis.

Students who have completed at least 45 hours by the application deadline, February 1, and who will have completed a minimum of 55 hours prior to the beginning of the first semester of the BSW Professional Program Social Work Core are eligible to apply for admission.

BSW Professional Program applicants must have a GPA of 2.5 on all college-level course work and must have completed the liberal arts prerequisite courses (denoted by * below).

To apply for admission to the BSW Professional Program and to be eligible to take the Professional Program Social Work Core courses, students may obtain applications from the undergraduate secretary, 724 Clark Hall, or apply online. Students are encouraged to obtain applications no later than January of the year in which they wish to be considered for fall semester admission. The application submission deadline is 4 p.m. February 1 (or the first business day thereafter if February 1 is a weekend or university holiday).

**LIBERAL ARTS REQUIREMENTS FOR THE BSW DEGREE** The BSW Professional Program is based on a broad liberal arts foundation that covers seven areas. As a result, the School of Social Work was exempted from the General Education Cluster requirements effective Fall 1997.

Students with good scores on the ACT may elect to take the CLEP examinations to receive credit in sociology, biology, foreign language, fine arts and American and English literature. Student should check with their adviser to see if they qualify to take one or more of the CLEP tests.

Specific liberal arts requirements for graduation are (* denotes prerequisite course to the BSW Professional Program and must be completed prior to beginning Social Work Core courses):

**Communication Skills** (6 hours) Grades must be in the "C" range or better.
*English 20
*Communications 75

**Writing Intensive Classes** (6 hours) After completing English 20, two more courses in the student's program must be designated "Writing Intensive" by the university. They are listed in each semester's schedule of offered classes by the designation WI. These classes may be used to satisfy other requirement areas such as humanities, social science, etc., and are generally not extra hours.

**Humanities** (9 hours)
*Philosophy (1, 51, or 52 are recommended) with a minimum grade in the "C" range.

Plus six more hours of humanities. One course must be 100 level or above. Humanities include art and music history and appreciation classes, classical studies courses, foreign civilization courses, literature courses in English or other languages and religious studies courses. Applied art and music performance courses do not count toward the humanities requirement. Only three hours of foreign language will count as humanities credit. Students are urged to check with their adviser before selecting courses.

**Science** (9 hours)
*Biology 1 or another human biology course with a minimum grade in the "C" range.

All freshmen who begin college in 1996 or later must have nine hours of science including a physical science and a biological science. One of these must include a laboratory.

**Math and Math Reasoning Proficiency** (6 or more hours)
*Math 10, College Algebra, or a higher level math course with a minimum grade in the "C" range. It is possible to test out of Math 10 if you have a math ACT score above 26.
*After completing Math 10, all students must take an approved statistics course, which counts as the Math Reasoning Proficiency Requirement for social work students. The minimum grade must be in the "C" range. Currently, Education A354, Statistics 31 and Statistics 25 are approved for social work students.

**Social Science** (12 or more hours) Minimum grade for economics and government must be in the "C" range.
*Economics (micro or macroeconomics)
*Anthropology (student's choice)
History
Political Science

*Either the history or the political science course must meet the state government requirement. This may be satisfied by Political Science 1, 11 or 102; or History 3, 4, 20, 210, 342, 343, 344, 357 or 358. The other course is the student's choice.

**Behavioral Science** (15 hours) The minimum grade for Sociology 1 or Psychology 1 is in the "C" range.
*Sociology 1
*Psychology 1
Theories of personality course (SW 303 or Psych 302)
Sociology 260: Social Psychology
Social Work 220: Human Behavior and the Environment (WI except in summer session)

**Cultural, Ethnic & Racial Diversity** (6 hours) Two courses must be taken that reflect the cultural diversity of our society. Courses are often selected from certain offerings in social work, sociology, anthropology, peace studies, English, foreign civilizations, religious studies and human development and family studies. Often one of the cultural diversity courses will fulfill a writing intensive requirement also. These courses are selected in conjunction with an adviser.

**Computer and Information Competency** Freshmen students are required to demonstrate computer and information literacy to graduate. This may be done by specific course work or by examination. Check with your adviser for details.

**Electives** 120 credit hours are required to graduate with the BSW degree. In addition to the above liberal arts requirements and the 42-hour social work program (inclusive of SW 220), students select electives to reach the total credit hours requirement.

Social Work 25: Social Welfare and Social Work is strongly recommended.

Please note that no more than four hours may be taken from "skills"-type courses to count toward the required 120 hours. More skill classes may be taken, but will be in excess of the 120 hours. Examples of skills courses are applied art and music performance classes, computer skills, self-defense and first aid.

**BSW PROFESSIONAL PROGRAM SOCIAL WORK CORE COURSES** (42 hours)
**First Semester Professional Program-Fall**
SW 301-I: Research for Social Work I (3)
SW 310: Social Justice and Social Policy (3)
SW 330: Introduction to Social Work Practice (3)
SW 333: Interaction Skills Workshop (3)
SW 220: Human Behavior and the Environment (if not already completed) (3)
Plus other general education requirement and electives
**Second Semester Professional Program-Winter**
SW 320: Variations in Human Behavior (3)

SW 332: Introduction to Community & Organizational Processes (3)
SW 334: Theory and Practice of Social Group Work (3)
SW 340: Research Methods for Social Work (3)
Social Work elective (upper division) if not already taken (3)

**Third Semester Professional Program-Fall**

SW 331: Strategies of Direct Practice (3)
SW 390: Undergraduate Field Practicum (6)
SW 398: Senior Professional Seminar (3)
Plus other general education requirements and electives

**RESIDENCE REQUIREMENTS** Each student must complete a total of at least 45 hours in residence at the University of Missouri-Columbia.

**TRANSFER STUDENTS** Undergraduate students who have been admitted to the university after attending another college may request a social work major. Those who have completed more than 55 hours of college work need a GPA of 2.5 or higher on all college work attempted.

It may take juniors who transfer to MU as many as three to four semesters to meet all course requirements for graduation.

Students who want to apply directly to the BSW professional program should contact the undergraduate secretary for application procedures. The application submission deadline is February 1 (or the first business day thereafter if February 1 is a weekend or university holiday) by 4 p.m.

**GRADUATION REQUIREMENTS** An undergraduate must complete a minimum of 120 semester hours of approved college work and have a cumulative GPA of 2.5 to be recommended for the bachelor of social work degree. Social Work Core courses must be taken in sequence, with a minimum of three semesters required to complete the program. Students must have a grade of C or better in all required Social Work Core classes to qualify for the BSW degree.

All BSW Professional Program Social Work Core semesters require a minimum of four days on campus. In the third (fall) semester of the Social Work Core, each student spends three full days a week (Monday, Wednesday and Friday) in a social service agency for supervised field instruction.

**DOUBLE MAJOR** A double major is offered in Social Work and in Human Development and Family Studies. Students must be admitted to both programs and complete 133 credits. Contact the director of undergraduate studies of each unit for further details.

## COURSES

**10—Introduction to the Social Work Major (1).** Students examine their interest in social work and other human service professions; learn of career possibilities in their interest area; and develop an educational plan to reach their goal. Prerequisite: freshman or sophomore standing.

**25—Social Welfare and Social Work (3).** Survey course that examines the history and development of social welfare in the United States and the profession of social work, as well as contemporary issues. f,w.

**101—Topics in Social Work (1-3).** Special and emerging topics in social work and social welfare. Subject, content and credit varies depending on available faculty and student interest. For undergraduate students only.

**220—Human Behavior and the Environment (3).** The first of two required courses providing an introduction to selected theories, multidisciplinary knowledge, and perspectives into human development and behavior. Prerequiste: English 20 and Social Work 25 or sophomore standing. Graded on A/F basis only.

**225—Medical Social Problems (2).** Interrelations of biological, psychological, social factors in understanding people with common physical illnesses. Prerequisites: junior standing & instructor's consent.

**300—Problems in Social Work (1-3).** Research and independent study projects offered on a tutorial basis to undergraduate social work students. Prerequisites: consent required.

**301—Topics in Social Work (1-3).** Special and emerging topics in social work and social welfare. Subject, content and credit varies depending on available faculty and student interest. For undergraduate and graduate students. Prerequisite: consent required.

**302—Special Readings (1-3).** Extensive readings in selected area or intensive reading in a special field. Prerequisites: consent required.

**303—Understanding Personality in a Social Context (3).** This course is designed to augment the behavioral science content in the curriculum and is required of all undergraduate social work majors. The course introduces students to diverse personality theories including psychonalytic, neopsychanalytic, life-span, trait, humanistic, cognitive, behavioral, and social learning approaches. Each theory is presented in conjuction with the concepts proposed by the theorist who originated the approach or significantly contributed to it. We will examine background, key concepts, motivation, structure, development dymamics and applications in a social context. Critical assessment and discussion of evaluative comments about each theory are discussed in the context of the person-in-environment paradigm. Attention is given to comparative analysis of specific theories on particular problems or issues such as ethnic background, parenting, life transitions, etc.

**308—Comparative Social Policy (2-3).** A comparative study of social policy aspects in the framework of international development. Policy areas include South Asia, as well as other regions relevant to such study. Prerequisite: instructor's consent.

**310—Social Justice and Social Policy (3).** Based on the concepts of human need and social justice, an historical and analytical approach to social welfare policies and programs. Prerequisites: first semester professional program standing; consent required. f.

**315—Dynamics of Interviewing (3).** Analysis of interviewing techniques employed in communication for securing reliable, valid data to modify behavior in accordance with professional objectives. Prerequisites: junior standing & instructor's consent.

**319—Social Statistics (3).** No credit for graduate social work students. Descriptive, analytic techniques applied to qualitative and quantitative social data. Prerequisite: senior standing.

**320—Variations in Human Behavior (3).** Basic concepts and principles regarding psychological/social dynamics of deviance; implications for social welfare policy and social interventions. Prerequisites: second semester professional program standing; consent required. w.

**330—Introduction to Social Work Practice (3).** Introductory, generalist practice theory course promoting student's understanding of professional social work practice as holistic, identifiable, unique configuration of knowledge, values and skills. Prerequisite: first semester professional program standing; consent required. f.

**331—Strategies of Direct Practice (3).** Examines social structures, processes: underlying assumptions/concepts of social change, client constellation, organizational arrangements, role relationships by which social workers define professional intervention. Prerequisites: 330 and 333; third semester professional program standing; consent required. Co-requisite: 390 and 398. f.

**332—Introduction to Community and Organizational Processes (3).** Introduction to contextual framework of social work practice with particular emphasis on community and organization as social systems. Prerequisite: first semester professional program standing; consent required. f.

**333—Interaction Skills Workshop (3).** Interaction skills for generalist practice at individual, group and community levels. Group communication and social influence theories address generic and unique aspects of interaction across systems. Uses laboratory instruction. Prerequisites: second semester professional program standing; consent required. w.

**334—Theory and Practice of Social Group Work (3).** Focuses on small group dynamics and models of group work practice suitable in all social work fields. Emphasizes practice theory and skills. Prerequisite: second semester professional program standing; consent required. w.

**340—Research Methods for Social Work (3).** Survey of research methods germane to the development of the knowledge base of social work practice. Prerequisite: second semester professional program standing; consent required. w.

**345—Alcoholism: Treatment and Prevention (3).** Provides knowledge generic to social work and other disciplines in alcoholism treatment. Integrated services approach to alcoholism emphasized. Didactic and experiential methods employed; development of self-awareness is stressed.

**346—Rural Human Services (3).** A study of the effect of rural and small community environments on the planning and delivery of social and health services. Emphasis on policy and program analyses relevant to rural issues and concerns.

**347—Working with Minority Youth (3).** (same as Black Studies 347). Develops awareness and understanding of social/psychological and cognitive realities influencing the behavior of minority youth. Content draws upon theories, research and practice skills relevant to understanding and counseling minority youth.

**350—Introduction to Child Welfare Practice and Services (3).** Introductory course designed to develop the student's awareness, understanding and appreciation of the field of child welfare and specifically of its most critical function: child protection.

**351—Delinquency, Corrections & Social Treatment (3).** Focuses on problems and causative factors in developing and maintaining delinquent and criminal behavior and attitudes: addressing critical and comparative understanding of social change strategies employed in this field.

**380—Social Work Practice With Minorities: African-American Emphasis (3).** Provides students with an appreciation of the black experience in the United States on a knowledge and feeling level.

**385—Helping Strategies With Children and Adolescents (3).** Theory and practice of work with children. Focus on youth in transition, protective services and permanency planning, and special needs populations.

**390—Undergraduate Field Practicum (6).** Supervised social work practice in a school-approved agency focusing on development of direct practice skills. Fall semester, three days per week. Prerequisites: third semester professional program standing; 220, 310, 332, 330, 333, 334, and 320; consent required. Co-requisite: 331 and 398. Graded on S/U basis only.

**398—Senior Professional Seminar (3).** Integrative professional practice seminar for BSW students focusing on the principles of generic social work and its application to direct practice in diverse fields, career planning and responsibilities. Co-requisites: 331 and 390.

**400—Problems (1-6).** Intensive study of an area of social welfare related to special interest of student. Prerequisites: graduate standing, consent required.

**401—Topics in Social Work (1-3).** Special and emerging topics in social work and social welfare. Subject, content, and credit varies depending on available faculty and student interest. Prerequisite: graduate standing; consent required.

**403—Independent Study (1-6).** Intensive investigation of phenomena germane to area of concentration carried out with guidance of faculty. May include data collection and

leads to a writing report in publishable format. Prerequisite: 412 or equivalent and graduate standing required.

**404—Research (1-6).** Independently conducted research that includes concept development, data collection, statistical analysis and social policy implications prepared in a format suitable for publication. Prerequisite: 412 or equivalent and graduate standing; consent required. Graded on S/U basis only.

**410—Social Policy and Service Delivery in Social Work (3).** Covers historic and contemporary issues in social welfare policy. It focuses on relationships among social problems, public policies, private actions, proverty, racism, sexism and social work practice/values . Prerequsites: graduate standing; consent required. Letter grading only. f.

**411—Advanced Social Policy for Planning and Administration (3).** Focus on integration of cognitive and skill components of policy development, analysis and change with special emphasis on utility by social work administrators and planners. Prerequisite: 323; graduate standing; consent required.

**412—Family and Child Welfare Policies and Programs (3).** Graduate seminar on policies and programs relevant to social work practice in the family and child welfare field, including policies on aging. Prerequisite: completion of first year of graduate program; consent required.

**413—Mental Health Policies and Programs (3).** Focus is on knowledge of the content, context, history and current trends in mental health policymaking at federal and state levels, and skill building in policy analysis. Prerequisite: graduate standing: consent required. Letter grading only.

**414—Issues in Health Care Policy (3).** Graduate Seminar focusing on development of skills in social policy analysis. Emphasizes knowledge and analytical perspectives about social policies and health and impacts on various populations. Prerequisites: second year graduate standing; consent required. Letter grading only.

**420—Foundations of Human Behavior (3).** Substantive sources from behavioral sciences used in social work toward understanding the biosocial processes and constraints of human development. Prerequisite: graduate standing; consent required.

**421—Practicum in Cultural Diversity I (1).** A practicum conducted on a workshop with content focused on racial, cultural and gender dynamics in social work practice. Prerequisites: graudate standing; consent required. Graded on a S/U basis only.

**422—Practicum in Cultural Diversity II (1).** Continuation of 492. A practicum conducted as a workshop with content focused on racial, cultural and gender dynamics in social work practice. Prerequisites: graduate standing; consent required. Graded on a S/U basis only.

**423—Advanced Foundations of Human Behavior for Clinicians (3).** Examines prevailing models of clinical and social classification, with emphasis on strength perspective and social treatment. Prerequisites: graduate standing in social work; consent required.

**424—Advanced Foundations of Human Behavior for Administrators (3).** Examination of relevant theoretical and behavioral foundations in order that students can acquire the knowledge to function as a social work administrator. Prerequisites: graduate standing; consent required.

**430—Generalist Social Work Practice (3).** This course develops the generalist approach to social work knowledge, values, systems and processes with emphasis upon the generic aspects of intervention at several levels of social organization. Prerequisite: graduate standing in Social Work; consent required.

**431—Community and Organization Dynamics (3).** Examination of social environment in which social work is practiced with particular emphasis on development of analytic framework for understanding formal organizations and communities. Prerequisite: graduate standing in Social Work; consent required.

**433—Advanced Interaction Skills Workshop (3).** Advanced class in social processes and interaction skills basic to generalist social work practice. Learning in cognitive, behavioral and affective domains: including group dynamics, com- munication and social influence theory. Prerequisite: graduate standing in social work.

**434—Strategies of Clinical Social Work Intervention (3).** Strategies of social treatment with individuals and small groups applicable to practice in public and private social agency settings. Prerequisites: graduate standing in social work; consent required.

**435—Fundamentals of Social Work Administration (3).** Basic managerial skills which social workers need for supervision, planning, staff development and administrative positions in social agencies; focus on individual management functions and skills associated with them. Prerequisite: graduate standing; consent required.

**436—Social Work Practice in Physical Health Field (3).** Designed to prepare students for graduate social work practice across physical health care settings. The focus is on optimizing functioning in the community and the prevention of secondary psychosocial debility. Prerequisite: graduate standing; consent required.

**437—Social Work Practice in Mental Health (3).** Focus is on social work practice roles applicable in mental health settings, including public and private, institutional and community-based; and substance abuse and developmental disabilities settings. Prerequisites: graduate standing; consent required.

**438—Social Work Practice in the Family and Children's Services (3).** Focus is on the unique aspects of social work practice with families across the life cycle who seek family centered sevices incommunity-based agencies. Prerequisites: graduate standing; consent required.

**439—Management of a Social Agency (3).** Basic resource management and control techniques common to social agencies with emphasis on personnel management, information and data managment, and fiscal management. Prerequisites: graduate standing; consent required.

**440—Research Methods in Social Work (3).** Examines research methodology and design as applied to the study of social work techniques and problems. Emphasizes differential uses of scientific observation and techniques for developing knowledge and improving practice. Prerequisite: completion of first year graduate program; consent required.

**441—Evaluative Research in Clinical Social Work Practice (3).** Develop ability to systematically evaluate effectiveness of interventive strategies designed to produce positive change in clients environment and/or cognitive, affective and behavioral functioning. Prerequisite: 440; graduate standing; consent required.

**442—Evaluative Research in Social Work Planning & Administration (3).** Develop ability to design and implement appropriate evaluative research methods and strategies employed in social and human service program planning and management. Prerequisite: 440; graduate standing; consent required.

**450—Social Work Interventions in Child Welfare (3).** Intensive seminar in direct social work practice in the field of child welfare. Explores most current theory and practice and applications in prevention, protection and restructuring. Prerequisites: graduate standing; consent required.

**451—Organizational Issues in Social Work Practices in Child Welfare (3).** Intensive seminar in meso-level practice in the filed of child welfare. Examines communication theory, team building, and interorganizational dynamics as they affect professional practice in child welfare. Prerequisties: graduate standing; consent required.

**453—Advanced Social Group Work (3).** An intensive exposure to the theories and models of social group work practice through cognitive, affective and experiential (laboratory) methods of teaching/learning. Prerequisites: graduate standing; consent required.

**454—Family Treatment (3).** Comparative study of theories and methods required for work with problems of family functioning. Both conjoint and subsystem approaches to family treatment are examined. Prerequisite: graduate standing; consent required.

**456—Law and Social Work Practice (3).** Legal processes relevant to social work practice and court procedures and study of decisions affecting social work across specializations. Prerequistie: senior or graduate standing and consent required.

**457—Helping Strategies with Older Persons (3).** Focus on interdisciplinary methods of assessment and intervention strategies designed to optimize healthy functioning for older persons and their families. Prerequisites: graduate standing; consent required.

**458—Supervision, Consultation and Staff Training (3).** Philosophy, objectives, principles and methods of social work supervision, staff development and consultation with emphasis on the commonality of the teaching-learning-evaluating functions. Prerequisite: graduate standing; consent required.

**460—Graduate Field Practicum I (3-6).** Supervised social work practice in a school-approved agency providing a full range of interventive experiences. Winter semester, 2 or 3 days per week. Prerequisites: admission to MSW program, 410, 420, 430, 431, 433; graduate standing; consent required. Graded on S/U basis only.

**461—Graduate Field Practicum II (cr.arr.).** Field instruction tailored to concentration and specialization interests, developing depth in clinical skills in direct service or planning and administration. Prerequisites: completion of all required graduate coursework except 498; consent required. Corequisite: 498. Graded on S/U basis only.

**468—Professional Practice Seminar I (3).** Provides integrative learning experience in social work practice in an area of beginning specialization in autonomous social work practice. Prerequisites: graduate standing; consent required. Corequisite: 491.

**470—Knowledge Building I (3).** Advanced systemic review of theories requiste for study and implementation of policy and practice centered research in social welfare and development; emphasis placed on critical analysis of theories needed for research and study of integrated social development.

**471—Knowledge Building IIA (3).** Building on the foundation laid in Social Work 470, in depth examination of human development and social environment theories appropriate to scientific examination of social welfare practice with individuals, families, formed and natural groups.

**472—Research Methodology and Design Seminar (3).** Review of historical development of social welfare and social work research with emphasis on critical analysis of seminal studies; examiniation of "state-of-the-art" social welfare and development initiatives, designs and methodology.

**473—Knowledge Building IIB (3).** Building on the foundation laid in Social Work 470, in depth examination of human development and social environment theories appropriate to scientific examination of social welfare practice with formal organizations, interorganizational combinations, communities and larger political entities.

**474—Pro Seminar I (3).** Joint student-faculty exercise in intellectual discovery focusing on current and emerging issues in the field of social work and social development; emphasis on integration of multi-disciplinary perspectives.

**477—Social Welfare Policy Seminar (3).** Critical examination of comparative models of social policy development; preparation of a professional social work policy analysis in the student's area of interest/specialization that is suitable for submission to an appropriate referred journal.

# Sociology

**College of Arts and Science**
**109 Sociology Building (573) 882-8331**
**CHAIR** K. Benson
**PROFESSORS** B. Bank, K. Benson, E. Brent, J. Galliher, D. Granberg, R. Hessler, J. McCartney, M. Neitz, C. Vaughan
**ASSOCIATE PROFESSORS** C. Lo, I.O. Pearce
**ASSISTANT PROFESSORS** W. Brekhus, J. Hermsen, V. Johnson, A. Riley
**PROFESSORS EMERITI** B. Biddle, R. Habenstein, P. Hall, A. Twaddle, T. Vaughan,

**DEGREES** AB, MA, PhD in sociology

Sociology is the study of human societies. Sociologists study small-scale interactions occurring in everyday life such as the patterning of conversations. They also study large-scale, macro-patterns of interaction such as the economic dominance of advanced industrial countries over countries of the Third World. Sociologists analyze highly organized social behavior such as the work of government bureaucracies or business corporations and such seemingly spontaneous events as riots and crowd action. They study business, politics, religion, education, science, health care and knowledge systems. They also analyze populations, including age and sex structures, labor markets, urbanization and globalization.

Sociology includes scientific and critical components. It builds knowledge based on careful observations and hypothesis testing, but it also is concerned with the moral and ethical problems of human societies.

Sociological training can be highly valuable to the undergraduate student. It provides a broad understanding and critical consciousness of the social world, which is of value in itself and also is useful in a variety of careers. Sociological training also includes more specific, highly marketable skills in such areas as the analysis of social data, the evaluation of public programs and the management of public and private organizations.

Many AB graduates in sociology take graduate degrees in the field and pursue careers either as applied sociologists or as academicians. A large number also enter graduate training in related fields such as law, public policy, social work, medicine, business and urban and regional planning. Others go directly into careers in which broad, liberal arts training with a social science emphasis is helpful.

An area of concentration in sociology requires a minimum of 30 hours of course work organized to provide progressively more sophisticated levels of sociological analysis culminating in a capstone course.

**The structure of the major is as follows:**

- Entry courses (six hours); students must take two entry-level courses in sequence:
  *Soc 1, 4 or 50 (prerequisite for all other courses in sociology) and
  *Soc 110 (prerequisite, 1, 4, or 50)
- Basic courses (six hours)
  *Soc 180 (prerequisite, 110)
  *Soc 299 (prerequisite, 110)
- Post basic courses (three hours plus three hours of prerequisites)
- Two of the 200- or 300-level courses from one of the following areas: social psychology, sociology of organization and work, deviance, sociology of inequalities or institutions, policy and social policy
  *Soc 375 is recommended for all majors, especially those wishing to pursue graduate work in sociology or a related field.
- Capstone course (three to six hours)
  *Soc 298: Qualified students seeking a degree with honors in sociology must do an honors thesis.
  *Soc 282 is for all other students.

**To minor in sociology, a student must complete a total of 15 hours, including the following sociology courses:**

- Soc 1: Introduction to Sociology (3) or 4: Social Change in American Society (3) or 50: Social Deviance (3)
- Soc 110: Social Inequalities (3)
- One other sociology course
- Six hours (two courses) of 200 level or above

## COURSES

**1—Introduction to Sociology (3).** Nature of organization and activities of human groupings— family, community, crowd, social class, etc.; structure, function of institutions; social influences shaping personality, behavior, social change. No credit for both 1 and Rural Sociology 1. cor.

**4—Social Change in American Society (3).** Structural changes taking place in the economy, class structure, politics, education and life styles in post-industrial america. No credit for both 1 and 4.

**50—Social Deviance (3).** Survey of approaches to the study of behaviors commonly regarded as deviant such as crime, sexual abuse, substance abuse, mental illness, etc.

**60—The Female Experience: Body, Identity, Culture (3).** (same as Women Studies 60). Study of the experience of being female in American Culture. Course will focus on development of women's identities through such topics as: sexuality, reproduction, self-image, rape and health care.

**101—Topics in Sociology (3).** Organized study of selected topics. Particular topics may vary from semester to semester. Prerequisites: 1 or 4 or 50, departmental consent for repetition.

**110—Social Inequalities (3).** (same as Black Studies 108). Survey of inequalities based upon criteria such as race, ethnicity, sex, age, religion and social class in contemporary societies. Focus on dynamics by which privilege and inequalities are structured. Required for Sociology majors. Prerequisites: 1, 4, or 50. cor.

**120—Population and Ecology (3).** (same as Rural Sociology 120). Changes in the structure and characteristics of population groups and their relationship to both human and non-human aspects of the biophysical environment.

**130—Social Perspectives on Aging (3).** Survey of basic knowledge in social gerontology, aging and old age in American society. Analysis of changes as individuals age, differences among old people, social problems of the aged. Prerequisites: 1 or 4 or equivalent.

**139—The Black Americans (3).** (same as Black Studies 139) Analysis of history of blacks in the United States. Assessment of contemporary black community in terms of its institutions, styles of life, patterns of work and intergroup relations. Prerequisites: 1 or 4 or equivalent or instructor's consent.

**140—Culture and Mass Media (3).** Sociological study of modern folk, local, popular and mass cultural production and consumption; mass media, diffusion, change, differentiation. Prerequisites: 1 or 4 or equivalent or instructor's consent.

**160—Social Bases of War and Peace (3).** (same as Peace Studies 160). Social conditions associated with and preceding war and peace; war as a social institution; international images and stereotypes; proposals for preventing war and reducing international hostilities. Prerequisites: 1 or 4.

**180—Social Research I (3).** (same as Rural Sociology 180). Introduction to principles of methodology; theory and research; survey of basic research designs and perspectives; preparation for understanding and conducting social research. Required for Sociology majors. Prerequisites: 110

**200—Class, Status, and Power (3).** Study of the structure of wealth, poverty, prestige, and power in relationship to societal, interpersonal, and individual opportunities, constraints and outcomes. Prerequisites: 1 or 4 or equivalent.

**210—Public Opinion and Communication (3).** Nature of public opinion; processes of opinion formation; special publics, pressure groups; effects of communication through personal contacts and mass media; propaganda, censorship; opinion surveying. Prerequisite: 1 or 4 or 50.

**211—Criminology (3).** Sociology of law; constitutional, psychological, sociological theories of criminal behavior; process of criminal justice; treatment of corrections; control of crime.

**214—The Family (3).** (same as Rural Sociology 214). Families, kin and households as interacting groups; roles, socialization, problems, structural change; family in relation to other social institutions; historical, cultural and class variations. Prerequisites: 1, 4, 50 or Rural Sociology 1.

**215—Collective Behavior (3).** (same as Peace Studies 215). Analysis of crowd behavior and related phenomena: rumors, disasters, fashions. Social responses to unclear, dangerous or unjust conditions. The dynamics of conflict, consensus and change. Prerequisites: 1 or 4 or 50.

**216—Urban Sociology (3).** (same as Rural Sociology 216). Urbanism as a world phenomenon; ecological, demographic characteristics of cities; organization of urban society including status systems, occupational structure, formal and informal associations, racial and cultural relations, forms of communication, housing, city planning. Prerequisites: 1 or 4 or Rural Sociology 1 or equivalent.

**217—The Sociology of Sport (3).** The role of sport in modern society. Includes violence in sport; politics and economics of sport; male, female, and racial inequalities; and international comparisons of sport structures. Prerequisites: 1 or 4 or 50.

**219—Organizations and Institutions (3).** Social organization of modern societies with focus on complex organizations (corporations, bureaucracies) within institutional arrangements (economy, polity, education, religion); organizational structure; interorganizational networks; interrelations of institutional sectors. Prerequisite: 1 or 4 or equivalent.

**224—Sociology of Health (3).** A survey of sociological thinking and research on health, health problems, health occupations and health services. How these are shaped by the society. Problems faced by individuals and the system. Potential solutions to problems. Prerequisite: 110 or junior standing in a health related discipline.

**252—Occupations and Professions (3).** Analysis of occupational, professional aspects of American society. Division of labor; occupational mobility; work and the self; colleagueship and informal organizations of work. Prerequisites: 1 or 4 or 50.

**260—Social Psychology (3).** Survey of theories and research concerned with the ways in which individuals construct social situations and are affected by them. Topics covered include self-identities, social influence, personal relationships, prejudice and discrimination. Prerequisites: 1 or 50.

**262—Sociology of Sex Roles (3).** (same as Women Studies 262). Study of the ways in which femininities and masculinities are constructed in American society with particular attention to gender ideologies and the gendered nature of the social structure. Prerequisites: Sociology 1, 60 or equivalent.

**270—The Sociology of Religion (3).** (same as Rural Sociology 270). Sociology of religious experience, action, organization, movements and social change; contemporary trends, including mainline and new religions, civil religion, secularization. Prerequisite: 1 or 4 or Rural Sociology 1.

**282—Senior Seminar (3).** Integrates perspectives, methods, substantive foci of undergraduate courses. Analysis of sociology as a discipline and profession. Discussion of op-

portunities for graduate study, employment. Prerequisite: 180 and 299 and senior sociology major.

**285—Social Problems (3).** Trends in modern societies: urbanization, occupational structure, technological change, etc. as these have produced alienation and legitimacy problems. Political, economic, health, welfare, military, justice institutions may be considered. Counter movements and policy issues. Prerequisites: 1 or 4 or 50.

**290—Practicum (1-9).** (same as Rural Sociology 290). Independent research or professional experience under faculty supervision. Project must be arranged by student and faculty member prior to registration. Prerequisites: junior standing and instructor's consent.

**295—Service Learning in Sociology (3).** Students participate in a variety of research-oriented, community service projects which illuminate and reinforce concepts introduced in various sociology courses. Repeatable twice for credit. Does not meet A&S general education requirements. Prerequisite: instructor's consent. f,w,s.

**298—Honors in Sociology (3).** Intensive work in a selected field within sociology, including readings and research. Repeatable up to 6 hours with departmental consent. Prerequisites: for honors candidates; 180 and 299.

**299—Recent Theories in Sociology (3).** (same as Rural Sociology 299). Introduction to major theoretical positions and issues in contemporary American sociology. Logical and intellectual structure of major theoretical schools: functionalism, conflict, exchange, symbolic interaction, phenomenological-ethnomethodological theories. Prerequistite: 110.

**301—Topics in Sociology (cr.arr.).** Organized study of selected topics. Subjects and earnable credit may vary from semester to semester. May be repeated with departmental consent. Prerequisites: junior standing & instructor's consent.

**305—Social Demography (3).** (same as Rural Sociology 305). General demographic theories; age, sex, and ethnic composition of population; fertility, mortality and migration as components of population change; social, economic and political implications of demographic trends. Prerequisites: 1 or Rural Sociology 1 and junior standing.

**310—Social Inequalities (3).** Examination of theories and research concerned with inequalities based on social class, gender, and race-ethnicity. M.A. core course for sociology students. Prerequisite: graduate standing or instructor's consent.

**311—Sociology of Social Policy (3).** (same as Rural Sociology 311). Sociological theories and methodologies focused on social policy; policy as process; contextual and critical policy analyses; assessing policy effects and consequences. Prerequisite: senior standing.

**312—Contemporary Corrections (3).** Development of concepts of punishment, treatment. Contemporary penal and correctional institutions; problems of custody, classification, education, industry and treatment program; probation, parole. Prerequisites: 110 and 211 or graduate standing.

**319—Society and Social Control (3).** The concept of social control is analyzed from both micro and macro theoretical perspectives. Focus is on patterns of social domination. MA core course. Prerequisite: 219 or 252 or graduate standing.

**321—Expert Systems (3).** (same as Computer Science, Veterinary Medicine & Surgery and Anthropology 321). Introduction to the use of expert system shells, designed for graduate students from any department. Students create prototype expert systems under close supervision by faculty experts. Prerequisite: departmental consent.

**322—Sociology of Aging (3).** Sociological research and theories of aging and old age; historical, demographic, comparative, social psychological and structural topics are studied in depth. Prerequisites: 6 hours of Sociology and junior standing.

**323—Death and Dying (3).** Death and dying explored from demographic, sociological and social psychological perspectives. Topics: trends and differentials; definitions of death; dying as a social process; funerals and survivors; cultural solutions to problems of death. Prerequisite: instructor's consent. w.

**324—Sociology of Health Systems (3).** Analyzes organization of U.S. health system and systems in the developed and developing world. Special attention to reform movements, universality, effectiveness, quality, and efficiency. Prerequisite: 180, 224, and 299 or graduate standing.

**333—Social Organization (3).** Survey of approaches to the analysis of social organization emphasizing complex organizations, division of labor, social inequality, politics and the state, social change. MA core course. Prerequisite: 219 or 252 or graduate standing or instructor's consent.

**335—Social Change and Trends (3).** (same as Rural Sociology 335). Nature of social change. Emphasis on sociological theories and models of social change and thier application in analysis and implementation of change in social structures.

**336—Social Movements and Conflicts (3).** Survey of approaches and research on social movements and social change. Historical and contemporary social movements in the U.S.; collective protest and violence; political revolutions. MA core course. Prerequisite: 215, 219, or 262 or graduate standing.

**337—Race and Ethnic Relations (3).** The experience of racial and ethnic minorities; inequality, assimilation, ethnic and racial conflict, accomodation. Prerequisites: 1 or 4 or equivalent and junior standing.

**343—Advanced Social Psychology (3).** Major theoretical fields and their application to human problems. M.A. core course. Prerequisite: 260 or graduate standing.

**344—Group Dynamics and Role Theory (3).** (same as Psychology 344). Detailed investigation of one or more theoretical and experimental area in social psychology.

**345—Self, Identity and Interaction (3).** Consequences of social interaction on self and identity development. Sociological research on self-concept, self-esteem, identity research, self-verification, self-discrepancy theory and social identity theory. Prerequisite: 260 or graduate standing.

**346—Structure of Interpersonal Behavior (3).** (same as Psychology 346). Patterns and processes of social interaction and interpersonal relationships. Analysis of such topics as communication, non-verbal behavior, empathy, impression management, love, intimacy, life cycle of relationships. Prerequisites: 260 or instructor's consent.

**350—Special Readings (cr.arr.).** Extensive reading in selected area or special field. Prerequisites: 12 hours Sociology & departmental consent.

**354—Political Sociology (3).** (same as Peace Studies 354). Social bases of power and politics, economic and political elites, the political- economy of the advanced societies, sources of political conflict and change. MA core course. Prerequisite: 200, 210, 215, or 219 or graduate standing.

**355—Sociology of Education (3).** (same as Education Studies B355). Contexts, structures and processes of schooling; effects on class, race, ethnicity and gender; social change, educational policy, and organizational dynamics; higher education and the economy. Prerequisites: 1 or equivalent.

**362—Feminist Research and Criticism (3).** Examination of both feminist critiques of traditional social research and recent, feminist-oriented research that attempts to answer these criticisms. Prerequisites: 180 or equivalent.

**371—Attitude Change (3).** (same as Psychology 371).

**372—Social Organization of the Industrial Societies (3).** The organizational and interorganizational structure of modern capitalist and socialist societies, including examination of alternative models such as technocracy, bureaucratic society, state capitalism, state socialism, organized capitalism. Prerequisites: 219 or 252 or graduate standing.

**373—Global Perspectives on Women and Development (3).** (same as Black Studies and Women Studies 373. Examines the history and structure of "development" discourse and practices. Stresses the interconnections and impact on women globally. Reviews women's strategies in defining and instituting programs to improve quality of life in communities. Prerequisites: Sociology 110, Women Studies 111, Black Studies 111, or Women Studies 370.

**375—Social Statistics (3).** (same as Rural Sociology 375). Descriptive statistics and bivariate quantitative analysis techniques commonly used by social scientists. Includes coverage of parametric and non-parametric methods. Introduction to computer analysis. Prerequisite: 180 or graduate standing.

**376—Advanced Social Statistics (3).** (same as Rural Sociology 376). Introduction to multivariate analysis for social scientists. Emphasis on non-experimental applications of analysis of variance and correlation-regression. Computer applications emphasized. Prerequisite: 375 orequivalent.

**400—Problems (cr.arr.).** Directed research not leading to thesis or dissertation. Prerequisites: 12 hours Sociology & departmental consent.

**403—Professional Problems (1).** Problems of teaching, non-academic employment professional organization, ethics. Required of all M.A. and Ph.D. candidates new to the program.

**405—Theories of Society (3).** Fundamental theoretical developments in modern sociology seen as an empirical discipline. Required for M.A. students. Prerequisites: graduate standing or instructor's consent.

**406—Seminar in Social and Economic Development (3).** (same as Rural Sociology 406). Analysis of world economy and societal development: assessment of contemporary and historical bases of international economic and political stratification.

**409—Seminar in State and Economy (3).** Analysis of public policy and economic change in contemporary political-economic systems; growth of welfare state, capitalist planning, state socialist economics.

**410—Seminar in Comparative Social Institutions (3).** Analysis of selected social institutions such as agriculture, family, economy, education, health care, law, polity, religion. Inter-institutional and international comparisons. Prerequisites: 333 or instructor's consent.

**411—Seminar in Sociology of Work (3).** Recent developments in the sociological study of occupations and professions. Surveys alternative theoretical perspectives and methodological approaches. Deals with rationalization, professionalization, alienation, class consciousness, self-management.

**412—Seminar in Sociology of Organizations (3).** Recent developments in the sociological analysis of complex organizations, including corporations, public bureaucracies, educational organizations, religious organizations, etc. Surveys alternative theoretical perspectives and methodological approaches.

**414—Seminar in Culture and Mass Media (3).** Sociological examination of culture and mass media, including institutional character, production and distribution, audience effects, relation of social structures. Current research, theories, methods.

**415—Seminar in Family Sociology (3).** Research and theory on family structure and family life; in-depth study of a selection of topics and issues. Prerequisites: 369 or 322 or 346 or instructor's consent.

**420—Independent Readings in Preparation f/Comprehensive Examinations (1-6).** Independent readings for PhD comprehensives. Open only to PhD candidates who have passed qualifying examinations. Prerequisite: consent of major advisor.

**425—Social Processes of Information/Knowledge Utilization (3).** (same as Rural Sociology 425). Factors conditioning communication and diffusion of ideas and practices; exercise of personal influence; role of change agents and agencies in the process of change.

**428—Seminar on Race Relations (3).** Critical examiniation of social research methods and sociological theories applied to the study of race relations in the United States.

# Sociology

**429—Seminar in Criminology and Deviant Behavior (3).** Survey of empirical research and sociological theory in criminology and deviant behavior. May be repeated once with instructor's consent. Prerequisites: 211 & graduate standing or instructor's consent.

**430—Research Methodology (3).** Meta-theoretical and conceptual issues at the core of design decision making, questionnaire construction, qualitative field techniques, interviewing, scaling, panel analysis, computer applications to qualitative data; experimental, survey and case study designs, ethics. Required for M.A. students.

**431—Seminar in Multivariate Analysis Techniques (3).** (same as Rural Sociology 431). Examination of various qualitative techniques of data analysis. Prerequisites: 430 or instructor's consent.

**432—Seminar in Qualitative Methods in Sociology (3).** (same as Rural Sociology 432). Examination of various qualitative methods of research, including problem-formulation, access and interpretation of data, theory-generation, and preparation of research reports. Prerequisites: 430 or instructor's consent.

**433—Seminar in Social Psychology I (3).** (same as Psychology 433). Intensive review of concepts and theories of social psychology; emphasizes readings from primary sources. Ph.D. candidates only.

**438—Seminar in Sociological Theory I (3).** Traces development of sociological theory from the "generation of 1890" through the 1940s, including the work of Durkheim, Weber, Parsons and others. Prerequisite: 405 or equivalent.

**439—Seminar in Sociological Theory II (3).** Theoretical developments in sociology in Europe and United States since 1950. Recent formulations, controversies. Prerequisite: 405 or equivalent.

**440—Topical Seminar in Contemporary Sociological Theory (3).** Critical evaluation of selected points of view in current sociological theory. May be repeated with departmental consent. Prerequisite: 405 or equivalent.

**441—Topical Seminar in Historical Sociology (3).** Methodological approaches to sociological explanation of historical phenomena; related sociological theories of historical development, including Weberian, Marxist and other perspectives applied to a topical historical problem. Prerequisite: 405 or equivalent.

**442—Seminar in Sociological Theory Construction (3).** Philosophy and structure of science, critical examination of selected methods, models and theories with special concern for theory construction. Prerequisite: 405 or equivalent.

**446—Community Social Structure (3).** (same as Rural Sociology 446). A comparative study of communities in different nations and in urban and rural areas. A primary focus of the course will be on social change in communities, in response to changing economic, political, social, cultural, and ecological factors.

**450—Research (1-6).** Research not expected to terminate in thesis or dissertation. Prerequisite: instructor's consent.

**462—Seminar in Sociology of Gender (3).** Analysis of recent research in which gender is a major focus. This research is chosen to exemplify a variety of theoretical perspectives, research strategies, and substantive topics.

**470—Social Interaction Research (3).** (same as Psychology 470).

**480—Seminar in Sociological Reasoning and Research Development (3).** Systematic development of sociological research integrating theory, method, and contributions to knowledge. Formulations of sociological problems, conceptual frameworks, research programs analytical stratgies. Prerequisites: 430 or equivalent, doctoral standing.

**490—Research (cr.arr.).** Advanced work leading to thesis or dissertation. Prerequisite: consent of major advisor. Graded on a S/U basis only.

# Soil and Atmospheric Sciences

**College of Agriculture, Food, and Natural Resources**
**116 Gentry Hall (573) 882-6591**
*For additional information, see the School of Natural Resources in the College of Agriculture, Food, and Natural Resources section of the catalog.*

**CHAIR** R. Hammer
**PROFESSORS** S. Anderson, R. Hammer, R. Kremer
**ASSOCIATE PROFESSORS** F. Eivazi, C. Gantzer, R. Miles
**ASSISTANT PROFESSORS** E. Alberts, N. Kitchen, R. Lerch, A. Lupo, P. Market, P. Motavalli, G. Willson
**PROFESSORS EMERITI** R. Blanchar, J. Brown, G. Buyanovsky, G. Darkow, W. Decker, E. Kung, S. Mudrick, C. Scrivner, G. Wagner, C. Woodruff

**DEGREES** BS, MS and PhD in soil and atmospheric sciences

The bachelor of science degree in soil and atmospheric sciences is designed to prepare the student for a career as a professional soil scientist or meteorologist in industry, research or academia. The Department of Soil and Atmospheric Sciences offers an undergraduate degree in Soil and Atmospheric Sciences with an emphasis in either atmospheric science or soil science. Requirements for the two emphasis areas are listed below.

## ATMOSPHERIC SCIENCE

This course of study prepares the student for employment as a professional meteorologist in the National Weather Service and other government agencies, meteorological consulting firms, and industry. The program emphasizes interdisciplinary studies in natural resources leading to specialization in environmental sciences. Opportunities also exist for preparation in broadcast meteorology. The course of study may serve as a preparatory curriculum for advanced study in atmospheric science. Many students enter graduate school on completion of this program.

An emphasis in **Atmospheric Science** requires 128 hours for graduation. **The following courses are required:**
Atm Sci 50: Introductory Meteorology (3)
Atm Sci 102: Weather Briefing (1)
Atm Sci 302: Daily Analysis and Forecast Interpretation (3) WI
Atm Sci 304: Meteorological Analysis I (4)
Atm Sci 305: Meteorological Analysis II (4)
Atm Sci 312: Remote Sensing for Meteorology and Natural Resources (3)
Atm Sci 314: Atmospheric Physics (3)
Atm Sci 366: Climates of the World (3)
Atm Sci 394: Atmospheric Thermodynamics (4)
Atm Sci 395: Atmospheric Dynamics (4)
Atm Sci 399: Long Range Forecasting (3)
**Select additional hours from among the following courses:**
Atm Sci 200: Independent Study (1-3)
Atm Sci 303: Meteorology of the Biosphere (3)
Atm Sci 350: Fundamentals of Meteorology (3)
Atm Sci 356: Micrometeorology (3)
Atm Sci 390: Internship in Meteorology (1-6)
**Physical Sciences:** 15 hours
Chem 31: General Chemistry I (2)
Chem 32: General Chemistry II (3)
Physics 175: University Physics (5)
Physics 176: University Physics (5)
**Mathematical Sciences:** 30 hours
Math 14: Precalculus Mathematics (5) or Math 9: Trigonometry (2) and Math 10: College Algebra (3)
Math 80: Analytic Geometry and Calculus I (5)
Math 175: Calculus II (5)
Math 201: Calculus III (3)
Math 304: Differential Equations (3)
Stat 31: Elementary Statistics (3)
Two computer courses: 6 hours
**Additional Requirements**
English 20: Exposition and Argumentation (3)
Communication 75: Introduction to Speech Communication (3)
English or Communication: 3 hours
Humanities and fine arts: 9 hours
Social and behavioral sciences: 9 hours (3 hours in Economics)
**Additional Electives** Elective courses are chosen to broaden the student's educational experience with an emphasis in natural resources.

A minor in **atmospheric science** requires a minimum of 15 hours of courses including:
Atm Sci 50: Introduction to Meteorology (3)
Atm Sci 102: Weather Briefing (1)
Atm Sci 303: Meteorology of the Biosphere (3)
Atm Sci 366: Climates of the World (3)
An additional five hours in atmospheric science or in a closely related area as recommended by the minor adviser.

## SOIL SCIENCE

This course of study prepares the student for employment as a professional soil scientist in government, industry, consulting, or academia. Courses offered in soil science emphasize the application of basic math, physics, chemistry, geology, and biology to understanding the function and use of soils. Soil science professionals have a wide range of career opportunities, including working in environmental management and monitoring, land-use planning and assessment, agricultural and horticultural production, consulting and sales, landscaping, recreational management, teaching, and conducting research for both private and government institutions. Among the state and federal government agencies that employ soil scientists are the U.S. Natural Resources Conservation Service, the U.S. Forest Service, the U.S. Environmental Protection Agency, the Missouri Department of Natural Resources, the Missouri Department of Conservation and the Missouri Department of Health. Opportunities in private industry include working in environmental consulting firms and the horticultural and agricultural production and service industries. Specialization in soil science supplements the skills of students with degrees in agronomy, agricultural economics, agriculture systems management, archaeology, atmospheric science, engineering, environmental science, forestry, fisheries and wildlife, geology, horticulture, or parks and recreation.

An emphasis in **Soil Science** requires 128 hours for graduation. **The following courses are required:**
Soils 100: Introduction to Soils (3)
Soils 106: Soil Science Laboratory (2)
Soils 290: Soils and the Environment (3) WI
Natr 380: Resource Practicum (3)
**Select a minimum of 10 hours from the following courses:**

Soils 280: Soil Classification (2)
Soils 307: Soil Physics (5)
Soils 308: Soil Conservation (3)
Soils 312: Soil Microbiology (2)
Soils 313: Soil Fertility and Plant Nutrition (3)
Soils 314: Soil Fertility and Plant Nutrition Lab (2)
Soils 316: Soil Microbial Ecology Methods (1)
Soils 318: Environmental Soil Chemistry (3)
Soils 320: Genesis of Soil Landscapes (4)
Soils 388: Soil-Plant Relationships (3)

**Select additional 9 hours from the following courses or from additional Soils courses:**

Atm Sci 50: Introductory Meteorology (3)
Atm Sci 303: Meteorology of the Biosphere (3)
Atm Sci 312: Remote Sensing for Meteorology and Natural Resources (3)
Atm Sci 356: Micrometeorology (3)
Atm Sci 366: Climates of the World (3)
Biol Eng 311: Soil and Water Conservation Engineering (3)
Biol Eng 321: Irrigation and Drainage Engineering (3)
For 309: Watershed Management (3)
Natr 315: Natural Resources Management and Water Quality (3)

**Quantitative Skills:** 15 hours are required in the following subject areas:

Math 108: Calculus for Social and Natural Sciences I (3) or Math 80: Analytic Geometry and Calculus I (5)
Computer science: 3 hours
Statistics: 3 hours
Natr 211: Natural Resource Biometrics (3)
Quantitative elective: 3 hours

**Sciences:** 40 hours are required in the following subject areas:

Chem 31: General Chemistry I (2)
Chem 32: General Chemistry II (3)
Chem 33: General Chemistry III (3)
Chem 205: Introduction to Organic Chemistry (5) or Chem 210: Organic Chemistry I (3)
Bio Sci 12: General Botany (5)
Natr 70: Ecology and Renewable Resource Management (3)
Forestry 302: Forest Ecology (3)
Geology: 3 hours
Physics: 4 hours
Science electives: 9 hours

**Additional Requirements**

English 20: Exposition and Argumentation (3)
Humanities and fine arts: 9 hours
Social and behavioral sciences: 9 hours (3 hours in Economics)

**Additional Electives**

Elective courses are chosen to broaden the student's educational experience with an emphasis in natural resources.

A minor in **soil science** requires a minimum of 15 hours of courses in soil science. Selection of courses should be done in consultation with the minor adviser.

**Geological Sciences/Soil Science BS Dual Degree**

The Department of Soil and Atmospheric Sciences and the Department of Geological Sciences offer a dual BS degree program in geology and soil science. The dual degree program requires 132 hours for graduation. For more information on the dual degree program, contact an adviser in the Department.

## COURSES

### ATMOSPHERIC SCIENCE

**50—Introductory Meteorology (3).** (same as Geography 50). Physical processes of atmosphere in relation to day-to-day changes in weather. f. cor.

**102—Weather Briefing (1).** Student participation in daily discussions of current weather patterns and forecasts and their applications to weather sensitive activities including aviation, agriculture and industry. Prerequisites: 50 or instructor's consent. Not open to junior or senior majors in Atmospheric Science. w.

**200—Independent Study in Atmospheric Science (1-3).** Independent study of a topic dealing with meteorological theory or application of meteorological science to the solution of relevant problem. Prerequisites: upper-level standing, 50 or equivalent, and instructor's consent. f,w,s.

**301—Topics in Atmospheric Science (cr.arr.).** Development of theory and applications for selected topics in atmospheric science. Prerequisites: junior standing and instructor's consent.

**302—Daily Analysis and Forecast Interpretation (3).** A Capstone experience. In depth daily analysis and interpretation by students of the current and forecast states of the atmosphere. Discussions of implications to specific weather sensitive activities. Writing intensive. Prerequisite: senior or graduate Atmospheric Science major.

**303—Meteorology of the Biosphere (3).** (same as Geography 303). Energy balance of biological systems including plant canopies, forests and animals. Effects of weather events on plant and animal production discussed. Prerequisites: 50, graduate standing or instructor's consent. w.

**304—Meteorological Analysis I (4).** Meteorological Data. Basic techniques for surface and upper air analysis, using selected examples of weather patterns. Prerequisites: 50, Mathematics 175 (C or better), one college physics course (pre or corequisite). f, odd yrs.

**305—Meteorological Analysis II (4).** Graphical analysis and interpretation of physical, kinematical and dynamical properties of the atmosphere. Analysis techniques applicable to atmospheric research. Prerequisite: 304 or equivalent. w, even yrs.

**312—Remote Sensing for Meteorology and Natural Resources (3).** Principles of remote sensing with emphasis on the properties of atmosphere and the earth's surface from airborne and satellite sensors. The techniques for using geosynchronous and orbiting satellite platforms for assessing weather and natural resource features. Prerequisites: junior standing or above, college algebra and trigonometry, Computer Science 75 or Agriculture 111.

**314—Atmospheric Physics (3).** Physics of atmospheric nucleation-condensation, cloud droplet and precipitation formation, associated electrical phenomena, radiation transfer and remote sensing. Prerequisites: 1 year of college Physics and Mathematics 175. f, alt years.

**350—Fundamentals of Meteorology (3).** Comprehensive review of fundamental concepts and major developments of modern meteorology; introduces basic physical and dynamic processes of the atmosphere. Prerequisites: Mathematics 175 & Physics 175. f.

**356—Micrometeorology (3).** Study of transport processes in the surface boundary layer. Important applications in pollution will be discussed. Prerequisite: Atmospheric Science 350.

**366—Climates of the World (3).** (same as Gergraphy 366). A study of the world distribution of climates based on "cause and effect" relationships. Special attention is given to the impacts of climate on humanity. Prerequisites: 50 or equivalent or graduate standing. w.

**385—Numerical Methods in Atmospheric Science and Natural Resources (3).** Examines numerical methods used in solving differential equations, filtering data sets, and Fourier decomposition of discrete data sets. Prerequisite: Math through Calculus III or senior standing.

**390—Internship in Meteorology (1-6).** Practical professional work experience with professional or scientific meteorologists in off-campus work environment. Prerequisites: junior standing, 12 hours Atmospheric Science. 2.0 G.P.A.

**394—Atmospheric Thermodynamics (4).** Thermodynamics of dry and moist air, atmospheric hydrostatics, convection, and development of the fundamental equations of geophysical fluid dynamics. Prerequisites: 50, Math 175 and Physics 175 or instructor's consent. f, even years.

**395—Atmospheric Dynamics (4).** Dynamics and kinematics of atmospheric flow. Manipulation of fundamental equations, numerical modeling of atmosphere. Prerequisite: 392. w, odd years.

**399—Long-Range Forecasting (3).** Physical-dynamical principles of long-range forecasting from a month to a year. Empirical and numerical approaches in forecast practice. Prerequisite: 350 or 366.

**400—Problems (cr.arr.).** Independent study by graduate students in atmospheric science. Prerequisites: graduate standing and instructor's consent. f,w,s.

**401—Topics in Atmospheric Science (cr.arr.).** Development of the theory with its application for selected topics in atmospheric science. Prerequisites: graduate standing and instructor's consent.

**402—Radiation in the Atmosphere (3).** Physics of solar and infrared radiative transfer in the atmosphere, including energy conversion effects, atmospheric optics, and photochemical processes. Prerequisites: 1 year College Physics and Mathematics 175. alt. w, even years.

**410—Seminar (cr.arr.).** Prerequisite: graduate standing. w.

**412—Advanced Dynamic Meteorology (3).** Application of perturbation dynamics, advanced dynamics, and numerical methods to study of atmospheric circulations. Prerequisite: 393. alt. w, odd years.

**416—Atmospheric General Circulation (3).** Comprehensive review of dynamical theories of general circulation with intensive discussion of current problems. Prerequisites: 393 or instructor's consent. alt. f, odd years.

**466—Advanced Dynamic Climatology (3).** Study of global climate; application of large scale atmospheric dynamics; conservation of various forms of energy, climatic evaluation, large scale climatic modification. Prerequisites: 393 and 416 or 366, or instructor's consent. alt. w, even years.

**490—Research (cr.arr.).** Research for thesis preparation. Graded on a S/U basis only. f,w,s

### SOIL SCIENCE

**100—Introduction to Soils (3).** (same as Plant Science 100). Introduction to soil sciences with emphasis placed on physical biological, and chemical properties and application to land use, plant growth and environmental problems. Prerequisites: 3 hrs of Chemistry. f,w.

**106—Soil Science Laboratory (2).** Laboratory application of fundamental soil science concepts. Prerequisites: concurrent enrollment in Soils 100. f,w.

**107—Introduction to Soil Science with Lab (5).** (same as Geology 107). Introduction to soil science with emphasis placed on physical, biological, and chemical properties and applications to land use, plant growth, and environmental problems with laboratory application of these concepts. Prerequisite: 3 hours of Chemistry.

**200—Problems in Soil Science (cr.arr.).** Special individualized research projects or readings in soil science. f,w,s.

**201—Topics (cr.arr.).** Organized study of selected topics in soil science. Intended for undergraduates. f,w,s.

**280—Soil Classification (2).** One four-hour lab section per week. Soil and land classification systems with heavy emphasis on the U.S. Soil Taxonomy. Study of the soil orders through the Great Group level. Students will learn to classify soils from descriptions and data. Introductory soil science or instructor's consent. w, odd yrs.

**290—Soils and the Environment (3).** Addresses the role of soils and soil properties on environmental pollution and management. Emphasis will be placed on carbon, nitrogen,

phosphorus, and sulfur transformations and transport in natural and disturbed ecosystems and soil management practices and technology to prevent or remediate environmental pollution. Prerequisites: Soils 100, 3 hrs of chemistry, English 20 or instructor's consent. f.

**300—Problems (cr.arr.).** Special individualized non-thesis research projects or readings in soil science. f,w,s.

**301—Topics (cr.arr.).** Organized study of selected topics in soil science. Intended for upper division undergraduate and graduate students. f,w,s.

**307—Soil Physics (5).** Study of the physical properties of soils and theory and methodology of selected instrumentation for the evaluation of those properties. Topics include soil solids, water, solutes, aeration, and temperature. Prerequisites: 100, Physics 21 or equivalent. f.

**308—Soil Conservation (3).** Conservation of soil with respect to topsoil, soil productivity, and fertility. Prerequisite: 100. Recommended: Agricultural Systems Management 201. w.

**312—Soil Microbiology (2).** Microbiology/Ecology of life in the soil Ecosystem. Emphasis is placed on the role of microbes in nutrient cycles, microbial pesticide transformations, etc. Prerequisite: General soils 100 or instructor's consent. w.

**313—Soil Fertility and Plant Nutrition (3).** (same as Plant Science 313). Explanation of principles of delivery of plant nutrients to plants, discussion of the role of each essential nutrient in crop plants and introduction to the management of soil amendments. Prerequisites: Soil Science 100 or instructor's consent. w.

**314—Soil Fertility and Plant Nutrition Laboratory (2).** (same as Plant Science 314). The application of elementary analytical procedures to the evaluation of the nutrient status of soils and crop plants. Prerequisite: concurrent or previous enrollment in 313. w.

**316—Soil Microbial Ecology Methods (1).** The application of modern and traditional techniques in soil microbiology to environmental and ecological concerns. Prerequisites: concurrent with 312. w.

**318—Environmental Soil Chemistry (3).** Application of chemical kinetic, solubility, and mobility principles in air-soil-water systems to environmental problems. Prerequisites: 106 and organic chemistry. f.

**320—Genesis of Soil Landscape (4).** The co-evolution of soil landscapes. The role of water in the accumulation of parent materials and development of soil horizons. Factors and processes of soil genesis. Distribution of soil in their natural settings. Prerequisites: introductory soil science orintroductory geology or permission of instructor. w, odd yrs.

**388—Soil-Plant Relationships (3).** Discussions of the interactions occurring in the soil-plant environment continuum as plants grow. Prerequisites: 18 hours of college level natural science or natural resource courses including introductory soil and plant science.

**400—Problems (cr.arr.).** Special individualized non-thesis research projects or readings in soil science. f,w,s.

**401—Topics (cr.arr.).** Organized study of selected topics in soil science. Intended for graduate students in soil science. f,w,s.

**407—Advanced Soil Physics (3).** Transport of mass and energy through soil with emphasis on development of the equations of flow. Evaluation of analytical and numerical solutions to differential equations describing transport phenomena. Prerequisites: 307, Mathematics 304, or equivalent. alt. w, odd years.

**410—Seminar (1).** In-depth development of advanced aspects of soil science through reviews of results of research in progress and current scientific publications. w.

**414—Advanced Soil Fertility (3).** History and application of concepts of fertility and plant nutrition. Prerequisites: 313 and Plant Science 315 or equivalent, 14 hours of college chemistry and five hours of calculus.

**418—Soil Chemistry (3).** Equilibrium, kinetic, and biological principles describing mineral solubility and transformations in soil-water-plant systems. Prerequisites: 318 or Geology 342, and Chemistry 230. f.

**420—Pedology (3).** Three one-hour lectures. Detailed study of processes of soil horizonization and current topics in soil genesis including quantitative assessment of spatial and temporal variability and application of GIS in landuse planning. Prerequisites: Soils 320, one statistics course beyond ANOVA. w, even yrs.

**450—Nonthesis Research (1-9).** Research not expected to terminate in dissertation. f,w,s

**490—Thesis Research (1-10).** Original investigations in soil science in support of thesis for master's and doctoral candidates. Graded on a S/U basis only. f,w,s

# South Asian Language and Area Studies

**INTERDEPARTMENTAL PROGRAM IN THE COLLEGE OF ARTS AND SCIENCE**
**437 General Classroom Building (573) 882-3065**
**CHAIR** B. Gupta
**PROFESSORS** G.N. Barrier, P. Wallace
**ASSISTANT PROFESSOR** S. Cohen
**INTERNATIONAL LIBRARIAN** P. Bhullar
**PROFESSORS EMERITUS** R. Bussabarger, P. Gardner, W.A. Noble, A. Robins,

**DEGREE** AB degree in international studies

South Asian Area program at MU offers courses in history, politics, philosophy, religion, culture, social life, and languages of India. It thus provides the opportunity for study of an ancient and extensive civilization that has played and continues to play a significant role in human history.

Students interested in the study of South Asia study Hindi, the national language of India and the dominant language in North India, or Sanskrit, the language of traditional learning and culture. Students are urged to start the language sequence as soon as possible.

**AB IN INTERNATIONAL STUDIES WITH SOUTH ASIAN STUDIES AREA EMPHASIS** The AB in International Studies gives a broad sampling of liberal arts courses that have a thematic focus and also allows for an in-depth look at a region or culture. The South Asia Program provides a focus for a student who wishes to pursue an AB in International Studies with emphasis on South Asian Studies. It prepares students to enter the numerous MA and PhD programs in this area of specialization at various universities, such as University of Pennsylvania, University of Wisconsin at Madison, and University of Texas at Austin. Students are encouraged to take advantage of their intensive language summer offerings. This program also offers the students an opportunity to take advanced Hindi for nine months through the American Institute of Indian Studies (AIIS). An advanced degree opens a variety of professional and job opportunities. Such a degree should prove attractive to those planning to work in such fields as international business, trade and diplomacy, international law, agricultural development, among others.

**DEGREE REQUIREMENTS** Students pursuing a degree in International Studies with a focus on South Asia take 22 credit hours of language study, 12 credit hours of courses in the social and behavioral sciences from at least two different departments, and six credit hours in the humanities from two departments. In addition, students take nine credit hours in courses that are comparative in method or multicultural in scope, e.g., cultural anthropology, comparative political systems, and Asian humanities, and six hours of additional work in one of the following departments: Anthropology, Economics, History, Philosophy, and Religious Studies. Courses will be selected in consultation with a program adviser.

## COURSES

**1—Elementary Hindi I (5).** Oral-aural and structural approach. Devanagari script. f.

**2—Elementary Hindi II (5).** Continuation of Elementary-Hindi I. Spoken and written Hindi. Prerequisite: grade of C or better in Hindi I or its equivalent w.

**3—Elementary Hindi III (3).** Continuation of 2. f. Prerequisite: 2 or equivalent.

**110—Civilization of India (3).** (same as Anthropology 110, History 110).

**115—Philosophy: East and West (3).** (same as Philosophy 115).

**118—Gandhi: The Man and His Ideas (3).** (same as History 118)

**152—Asian Humanities (3).** (Same as Rel St 152, History 152 & Art Hist & Arch 152) This course is an introduction to the literature and visual arts of Asia through selected master works. It focuses principally on India and China and investigates the distinctive features of their cultures.

**181—Asian Civilizations (3).** (same as History 181, Political Science 181).

**182—History of India (3).** (same as history 182).

**203—Advanced Hindi Readings I (4).** Directed readings in the literature of the student's area of concentration, and advanced conversation.

**204—Advanced Hindi Readings II (4).** Continuation of 203.

**232—Hinduism (3).** (same as Religious Studies 232). Origin and development of central themes of traditional Hinduism from earliest times to the modern period. Topics include: the Vedic tradition, rituals and practice, varieties of yoga and meditation, Indian religious thought and devotional Hinduism. Prerequisites: Junior standing or instructor's consent.

**233—Buddhism of South and Southeast Asia (3).** (same as Religious Studies 233). Examines the origins of Buddhism in India, the narratives of the life of the Buddha, the development of early Buddist schools, the extension of Buddhism into Central and Southeast Asia, and the current practice of Buddhism in South and Southest Asia. Prerequisites: sophomore standing or instructor's consent.

**245—Nonviolence in the Modern World (3).** (same as History 245 and Peace Studies 245). Readings on recent world history, emphasis on Ghandi and nonviolent tradition in America, Europe and the Third World. Prerequisite: sophomore standing, writing intensive course.

**282—History of British India (3).** (same as History 282) Introduction to traditional India, the Muslim experience; European rivalry and British hegemony; problems of Crown rule; social and political reforms in the making of modern India.

**301—Topics (cr.arr.).** Organized study of selected topics. Subjects and earnable credit may vary from semester to semester. Prerequisite: departmental consent for repetition.

**330—Religious Narratives of South Asia (3).** (same as Religious Studies 330). Study of major narratives of India and their interpretation in literature and art. Topics include: Vedic and Epic mythology, stories of Krishna, myths and images of Shiva, and forms of the Goddess. Prerequisites: 130, 232, 233, or junior standing, or permission of instructor.

**350—Special Readings in South Asian Languages (1-6).** Individual advanced study of desired South Asian language. Prerequisite: two years of South Asian languages.

**360—Asian Philosophy (3).** (same as Philosophy 360).

**362—Philosophy of India (3).** (same as Philosophy 362).

**364—Contemporary Indian Philosophy (3).** (same as Philosophy 364).

**371—Southeast Asia (3).** (same as Geography 371).

**372—Geography of South Asia (3).** (same as Geography 372).

**374—Politics in India and South Asia (3).** (same as Politi-

cal Science 374).

**384—Religion and Politics in Modern India, 1857-1947 (3).** (same as History 384).

**400—Problems (3).** (same as History 400).

**421—Religious Texts and Interpretation: The Veda (3).** (same as Religous Studies 421). This course examines the Veda, the foundational scripture of Hinduism. It includes close study of Vedic texts and rituals and the influence, interpretation, and application of the Veda in the later Hinduism. Prerequisite: graduate status or instructor's permission. f, alt yrs.

**474—Problems of South Asia (3).** (same as Political Science 474).

**475—Indian Philosophy (3).** Reality, levels of being, status of the world, nature of know- ledge in Indian philosophy in relation the Advaita Vedanta sys- tem of Samkara. Prerequisite: graduate standing.

# Spanish

*See Romance Languages*

# Special Education

**College of Education**
**303 Townsend (573) 882-3741**
**INTERIM CHAIR** T. Lewis
**PROFESSOR** J. Leigh
**ASSOCIATE PROFESSORS** T. Lewis, M. Pullis
**ASSISTANT PROFESSORS** S. Huntze, R. McCathren, M. Stormont

**DEGREES** MA, M Ed, EdS, PhD and EdD in special education

Initial teacher certification can be obtained through graduate studies in Special Education. The required courses may be applied to a graduate degree where applicable.

Graduate programs prepare teachers and leadership personnel in the field of special education. Program graduates assume roles as teachers in a variety of educational settings, consulting teachers, college professors, researchers, school administration and leaders in state and federal government agencies. Programs meet students' needs and interests within the framework of the requirement of each specific degree.

## COURSES

**L299—Student Teaching in Special Education (cr.arr.).** Ten-week, full-time placement in Special Education classroom; field-based opportunity for the application of competencies developed in initial certification areea(s). Prerequisite: advisor's consent.

**L311—Introduction to Special Education (3).** Introductory overview of the field of special education; historical developments, characteristics of special populations, and compliance with state and federal regulations. cor.

**L312—Introduction to Special Education for Regular Educators (3).** Introduction to the field of special education for other majors; survey of exceptionalities with emphasis on the mainstreaming exceptional students. cor.

**L322—Behavioral Management for Exceptional Students (3).** Study of classroom management and applied behavior analysis strategies. Focus on teacher as decision-maker in the design, implementation, evaluation of individual and group management programs. Prerequisite: L311. Concurrent L323, L324, L325. w.

**L323—Instructional Methods and Technology for Exceptional Students (3).** Study of direct instructional models as applied to academic and functional skills. Examination of instructional materials, media, technology applied to instruction of exceptional students. Prerequisite: L311. Concurrent with L322, L324, L325. w.

**L324—Assessment and Evaluation in Special Education (3).** Procedures and instruments used in the assessment of individual with disabilities, including standardized and nonstandardized measures of intellectual ability, academic achievement, oral language, social/emotional behaviors, career/vocational needs. Prerequisite: L311; concurrent: L322, L323, L324, L325.

**L331—Language Development of Exceptional Students (3).** Study of language and communication issues and disorders in special education; normal and atypical language development; language assessment and intervention models and programs. Prerequisite: L322, L324, L325; concurrent: L332.

**L332—Collaboration and Consultation in Special Education (3).** Study of communication, problem-solving, collaboration strategies. Application of strategies to work with exceptional students, their families, other professional members of interdisdiplinary, interagency teams. Prerequisites: L311, L322, L323, L324, L325. Concurrent. L331. f.

**L351—Assessment of Functional Skills of Students w/ Severe Disabilities (3).** Trains prospective teachers in standardized and criterion- referenced methods of assessment in various curriculum areas for moderately and severely handicapped students. Opportunities to apply various assessment techniques. Prerequisites: L322, L323, L324, L325; concurrent: L331, L332.

**L352—Curriculum for Persons With Severe Disabilities (3).** Study of development and implementation of functional, age-appropriate, community-referenced curriculum for persons with severe handicaps. Curriculum goals and instructional strategies in community access, domestic, vocational, recreation skills. Prerequisite : L331, L332, L351; concurrent: L341, L342.

**L353—Mngng. Hlth. Rel. Prb. & Techn. f/Disabled Child. in Therp. Rec. (3).** (same as Parks, Recreation and Tourism 353). Provides prospective therapeutic recreators, teachers and rehabilitation personnel with information regarding managing health problems of the disabled child. Details regarding medical devicing and/or technology are emphasized. s.

**L354—Augmentative Communication for Persons With Severe Disabilities (3).** Aided and unaided augmentative communication systems and nonspeech systems; techniques of teaching functional communication programs. Prerequisite: L341, L342, L352; concurrent: L343, L344, L353.

**L360—Topics in Special Education (3).** In-depth study of certain developments, findings, trends and issues in one or more areas of special education. Prerequisite: Educational & Counseling Psychology A205.

**L372—Methods in Vocational Education for the Disabled & Disadvantaged (2-3).** (same as C&I F372). Study of legislation, interagency cooperation, curriculum, transition, evaluation/grading role of support personnel. For educators, counselors and administrators working in vocational settings with special needs students and students with disabilities.

**L387—Introduction to Severely Handicapped (3).** Study of historical events, legislation, casual factors, identification, and programs related to persons with severe handicaps. Emphasis on education and related services enabling these individuals to participate in integrated settings. Prerequisites: L339.

**L400—Problems in Special Education (cr.arr.).**

**L401—Professional Seminar in Special Education (1).** Designed to provide overview of Special Education, COE program requirements, and general graduate student expectations. Students STRONGLY encouraged to take course first semester in graduate program. Prerequisites: acceptance into a post- baccaluareate or master's degree program. Graded on S/U basis only.

**L402—Students with Behavioral Disorders (4).** Study of characteristics of students with behavioral disorders as they relate to best practices for assessment, instruction, and intervention. Prerequisites: L311 and instructor's consent.

**L403—Practicum: Students with Behavioral Disorders (3).** Graduate field experience in educational setting for students with behavioral disorders. Application of competencies from L402. Prerequisite: instructor's consent.

**L404—Students With Learning Disabilities (4).** Study of characteristics of students with learning disabilities as they relate to best practices for assessment, instruction, and intervention. Prerequisites: 311 and instructor's consent.

**L405—Practicum: Students with Learning Disabilities (3).** Graduate field experience in educational setting for students with learning disabilities. Application of competencies from L404. Prerequisite: instructor's consent.

**L406—Students with Mental Retardation (4).** Study of characteristics of students with mild/moderate mental retardation as they relate to best practices for assessment, instruction and intervention. Prerequisites: L311 and instructor's consent.

**L407—Practicum: Students with Mental Retardation (3).** Graduate field experience in educational setting for students with mental retardation. Application of knowledge and skills from L406. Prerequisite: instructor's consent.

**L410—Seminar in Special Education (1-3).**

**L415—Practicum in Special Education (3).** Provides graduate practicum experience relevant to the education of exceptional students. Prerequisites: L311 and instructor's consent.

**L416—Practicum I: Cross-Categorical Special Education (3).** Graduate field-based experience focused on observation and participation in programming for students with mild-moderate disabilities. Prerequisite: instructor and/or advisor's consent.

**L417—Practicum II: Cross-Categorial Special Education (3-8).** Advanced gradute field experience. Demonstration of required competencies with mild-moderate disabilities. Prerequisite: L416 and instructor and/or advisor's consent.

**L420—Trends and Issues in Special Education (3).** A study of the historical developments and related trends, issues and problems associated with the education of exceptional students. Prerequisites: admission to graduate study and instructor's consent.

**L421—Research with Exceptional Children (3).** Explores significant, historical, and current research in special education. Emphasizes the application of research, methodology, and findings relative to problems facing the practitioner. Prerequisites: admission to graduate study and instructor's consent.

**L422—Grant Writing (3).** Preparation of research, demonstration, training, or other grant proposals meeting the criteria for competitive funding by a federal agency; review and evaluation of proposals.

**L423—Special Education Administration (3).** Principles, protective safeguards, and general practices associated with the organization and administration of special education; legal foundations for special education; selection, training, and supervision of personnel.

**L425—Foundations of Research in Special Education (3).** Overview of professional writing and intermediate research applications with a focus on knowledge and skills needed for higher level doctoral work in statistics and research design. Prerequisites: A354 or equivalent, L421 or equivalent, and instructor's consent.

**L426—Foundations I: History, Law and Policy in Special Education (3).** The changing concept of disability will be viewed from the perspectives of history, legal issues, and policy traced from early Greek and European periods through contemporary times. Prerequisites: graduate standing and instructor's consent.

**L427—Foundations II: Pedagogical Theories in Special Education (3).** A study of theories of teaching as they apply to special education with emphases on empiricallly based

practices, historical trends, current theories, and the relationship between theories of learning and teaching. Prerequisite: graduate standing and instructors consent.

**L430—Nature and Needs of Gifted and Talented Students (3).** A conceptual and empirical examination for educational personnel of student identification procedures, special populations, programming issues, research topics and teacher competencies. Prerequisite: instructor's consent.

**L431—Curriculum Methods for Gifted and Talented Students (3).** A theoretical examination for educational personnel of specific instructional approaches including structure of intellect, enrichment triad, empirical research, and creative problem solving. Prerequisites: L430 or instructor's consent.

**L432—Planning and Administering Gifted Education Programs (3).** Principles of program development for gifted and talented students. Topics include student identification, procedures, conducting needs assessments, teacher competencies, resource utilization, alternative administrative models, parent and community participation, program supervision and evaluation.

**L433—Affective Development of Gifted Students (3).** Psychosocial development of gifted students; theories, and practices in affective development; strategies to develop positive self-concept, successful coping strategies, and effective peer relationships by gifted students. cor.

**L434—Assessment and Evaluation in Gifted Education (3).** Seminar focuses on practices for identifying students for gifted education programs, evaluation models applicable to school programs and strategies for grading and evaluation of gifted students.

**L435—Practicum: Gifted Education (3).** Provides graduate field experience in the area of gifted education. Prerequisite: instructor or advisor's consent.

**L440—Psychological and Sociological Aspects of Mental Retardation (3).** Study of psychological and sociological germane to the study of mental retardation including learning characteristics and mental retardation as a psychological phenomenon. Prerequisites: admission to graduate study and instructor's consent.

**L445—Advanced Studies in Mental Retardation (3).** Current theories and practices and their historic roots through examination of empirical and descriptive literature.

**L446—Advanced Studies in Severe Disabilities (3).** Theory, research and best practices; development, implementation and evaluation of programs leading to full inclusion of persons with severe disabilities.

**L450—Programmatic Approaches to Educ. of Child. with Behav. Disorders (3).** Course provides an in-depth study of the major theoretical perspectives and treatment programs for behavior disordered students. Prerequisites: admission to graduate study and instructor's consent.

**L455—Advanced Studies in Behavioral Disorders (3).** Contemporary issues a historical perspective; theoretical perspectives or models which guide research, policy, and intervention approaches.

**L460—Assessment and Remediation of Learning Disabilities (3).** Provides further study of the methods, materials, and current research on psychoeducational assessment and program planning for the disabled learner. Prerequisites: L383 or instructor's consent.

**L462—Special Education Literacy Assessment and Instruction (3).** Study of literacy assessment and instruction methods specific to special education; formal and informal assessment: language and instructional strategies to improve literacy for students with disabilities. Pre/co-requisites: L312, L323, L331, L324, Literacy Methods.

**L465—Advanced Studies in Learning Disabilities (3).** Major current issues, trends, and controversies in learning disabilities; theories, research, and practices in learning disabilities.

**L470—Introduction to Early Childhood Special Education (3).** An overview of theoretical perspectives, issues underlying education of young handicapped children (birth to five years). Rationale, scope, theoretical foundations for early intervention and legislative issues. Prerequisite: L311.

**L471—Assessment in Early Childhood Special Education (3).** Procedures and instruments used in assessment of children with special needs, including screening, diagnosis, interpretation of diagnostic findings, and application to instructional plans.

**L472—Method of Early Childhood Special Education (3).** Instructional programming, management, and evaluation relative to the provision of intervention of children with disabilities.

**L474—Practicum: Early Childhood Special Education (3).** Graduate field experience in an approved setting for young children with special needs. May be repeated. Prerequisite: instructor's consent.

**L475—Advanced Studies in Early Childhood Special Education (3).** Origins, theoretical perspectives, issues, scope and efficacy of the field of early childhood special education.

**L480—Internship: College Teaching in Special Education (3).** Individually guided and supervised college teaching experiences. Competency based activiities using portfolio assessment methods. May be taken more than once. Prerequisite: instructor's consent.

**L481—Internship: Special Education Research (cr.arr.).** Individually guided research internship with doctoral advisor and/or faculty mentor(s). Opportunity to develop research competencies either on individual or collaborative projects. May be taken more than once. Prerequisite: instructor's consent.

**L482—Internship: Professional Practice in Special Education (cr.arr.).** Individually guided internship in the public schools and/or agencies serving students with special needs or exceptionalities. Focus on professional practices, administrative practices, and/or evaluation practices.

**L483—Introduction to Cross-Categorical Special Education (3).** Study of characteristics of mild-moderate disabling conditions and associated issues such as assessment, programming options, and inclusionary practices. Pre/co-requisites: L312, L323, L324, L331, and L416.

**L484—Cross-Categorical Teaching Methods (4).** Will provide the learner with current empirically validated best practices for use with children and youth with mild disabilities. Both academic and social behavior instructional methodology will be reviewed. Prerequisites: Introduction to Cross Categorical.

**L490—Research in Special Education (cr.arr.).** Graded on a S/U basis only.

# Statistics

**College of Arts and Science**
**222 Mathematical Sciences Building**
**(573) 882-6376**
**CHAIR** F. Wright
**PROFESSORS** A. Basu, R. Madsen, P. Speckman
**ASSOCIATE PROFESSORS** J. Cavanaugh, D. Sun
**ASSISTANT PROFESSORS** C. He, A. Micheas, T. Sun, C. Wikle
**LOWER DIVISION COORDINATOR** L. Ries

**DEGREES** AB, BS, MA, PhD in statistics

In order to solve the many problems of today's world, information is needed. How much? What kind? After it is obtained, what must be done with it? Statisticians are trained to help answer these questions. Early admission into the statistics department will allow students to plan their programs so that the math and statistics prerequisites can be taken in the proper sequence.

**REQUIREMENTS FOR THE AB DEGREE** The following requirements are in addition to those for the AB degree as set by the College of Arts and Science. The minimum math requirements are a complete calculus sequence such as Math 80, 175 and 201, and Math 331 (Matrix Theory). The statistics requirement is at least 21 hours of courses numbered 100 or above from the department of statistics, excluding Stat 185 and 292. CECS 103 (Algorithm Design and Programming I) is **required**, and Math 307 (Numerical Analysis) or Math 308 (Numerical Linear Algebra) is recommended.

Students are encouraged to supplement their work in statistics with courses from areas such as economics, biology, accounting, finance, marketing, management, psychology, sociology, engineering, agriculture and atmospheric science.

**REQUIREMENTS FOR THE BS DEGREE** The following requirements are in addition to those for the BS degree as set by the College of Arts and Science. Required statistics courses include Stat 150 and 250; or Stat 207; or Stat 215; or Stat 295; or Stat 320; plus additional courses to total a minimum of 21 hours; **or** Stat 325 and 326, plus additional courses numbered 298 or above to total a minimum of 20 hours. Statistics 325 and 326 are particularly helpful in preparing for the actuarial examinations. Other required courses include a course in professional writing such as Engl 162; Math 80, 175, 201; Math 331 (Matrix Theory) or 340 and 341 (Introduction to Abstract Algebra I and II); and six hours in computing including CECS 103 (Algorithm Design and Programming I) and one additional course numbered 100 or above, excluding Stat 305 (Statistical Software and Data Analysis). Possible choices for the second course on computing are CECS 203 (Algorithm Design and Programming II), Math 307 (Numerical Analysis), or Math 308 (Numerical Linear Algebra).

**SPECIAL EMPHASIS AREAS** Students pursuing the BS degree who elect to fulfill the special emphasis area instead of taking a foreign language must complete a special program consisting of no fewer than 12 hours of upperclass courses that are not from the parent department, are not normally required of departmental majors and do not appear elsewhere in the area of concentration. This program must be carefully planned to form a coherent unit and must be approved by the Director of Undergraduate Studies.

**The following are examples of possible special emphasis areas:**
A. MATHEMATICAL SCIENCES
B. BIOLOGICAL SCIENCES
C. BEHAVIORAL SCIENCES
D. PHYSICAL SCIENCES
E. BUSINESS
F. ENGINEERING

**REQUIREMENTS FOR A MINOR IN STATISTICS** A minimum of 15 hours in statistics courses at the 200 level and above, chosen in consultation with and approved by the Director of Undergraduate Studies.

**One of the following courses must be included in the 15 hours of study.** Stat 207: Statistical Analysis (3); 215: Elements of Probability and Statistics (3); 250: Introduction to Probability and Statistics II (3); 295: Introduction to Statistical Models for Research (3); 320: Introduction to Mathematical Statistics (3); 325: Introduction to Probability Theory (3); or 326: Statistical Infer-

ence I (3).
A maximum of three of the 15 hours may be in Stat 300: Problems (1-3) or 301: Topics (cr. arr.).

## CREDIT FOR BEGINNING COURSES

(1) As stated in the course descriptions, a student may not receive credit towards an undergraduate degree for both Statistics 25 and 31.
(2) A student may not receive credit towards an undergraduate degree for more than one of Statistics 150, 207, 215.
(3) Subject to (1) and (2), a student may receive no more than five hours of credit towards an undergraduate degree for any combination of Statistics 25, 31, 207 and 215.

## COURSES

**25—Introductory Statistical Reasoning (3).** Statistical concepts and critical reasoning needed to evaluate conclusions based on quantitative information in health studies, opinion polls, etc. Prerequisite: grade in the C range in Math 10, 14 or 15 or MMPT score of 26 or above. Students may not receive credit for both Statistics 25 and 31. f,w,s.

**31—Elementary Statistics (3).** Collection, presentation of data; averages; dispersion; introduction to statistical inference, regression and correlation. Prerequisites: grade in the C range in Math 10,14, 15 or an MMPT score of 26 or above. Students may not receive credit for both Statistics 25 and 31. cor. f,w,s.

**150—Introduction to Probability and Statistics I (3).** Designed primarily for students in College of Business and Public Administration. Probability theory; random variables; expectation; probability distributions; descriptive statistics; sampling distributions. Computer is used to assist in learning concepts. Prerequisite: grade in C the range in math 60. f,w,s.

**185—Statistical Methods in Natural Resources (3).** Statistical methods, with emphasis on applications to natural resources and including computer exercises. Prerequisite: a college level computing course and grade in the C range or better in Math 10. No credit if student has had 150 and 250. w.

**207—Statistical Analysis (3).** For graduate students and superior seniors with no previous training in statistics. Intensive study of concepts, techniques of statistical analysis, and their applications. Prerequisite: Mathematics 10 or equivalent. f,w,s.

**215—Elements of Probability and Statistics (3).** Primarily for middle and secondary mathematics education students. Probability, random variables, expectations, descriptive statistics, estimation, hypothesis testing, and regression. Introduction to materials for middle and secondary school use. Prerequisites: Math 61 or 80 or equivalent. w.

**250—Introduction to Probability and Statistics II (3).** Continuation of 150. Estimation; hypothesis testing; regression; correlation; statistical decision theory; Bayesian inference. Computer is used to assist in learning concepts. Prerequisite: grade in the C range or better in Statistics 150. f,w,s.

**292—Statistical Methods in the Health Sciences (3).** Basic inference methods, both parametric and non-parametric, appropriate for answering questions arising in health sciences research. Computer exercises involving data from real experiments from health science area. Prerequisite: Mathematics 10 and graduate standing or instructor's consent. w.

**295—Introduction to Statistical Models for Research (3).** Models and methods commonly used in research, including simple and multiple regression, one and two-way ANOVA, non-parametric methods, loglinear and logistic regression models. Grade in the C range or better in Statistics 25, 31, 185, 207, or 292 or instructor's consent. Credit will not be given in both Statistics 250 and 295.

**298—Honors (2).** Special work for Honors candidates in statistics.

**299—Honors (2).** Special work for Honors candidates in statistics.

**300—Problems (1-3).** Independent investigations. Reports on approved topics. Prerequisite: instructor's consent. f,w,s.

**301—Topics (cr.arr.).** Organized study of selected topics. Subjects and earnable credit may vary from semester to semester. Repeatable with departmental consent. Prerequisites: junior standing and instructor's consent.

**302—Senior Seminar (3).** A capstone course required of and open only to senior statistics majors. Students will participate in statistical consulting, attend colloquia, and review articles in professional journals. Writing of reports will be emphasized. Prerequisite: senior statistics major. w.

**305—Statistical Software and Data Analysis (3).** Programming with major statistical packages emphasizing data management techniques and statistical analysis for regression, analysis of variance, categorical data, descriptive statistics, non-parametric analyses, and other selected topics. Prerequisite: any 200 or above course in the Statistics department or instructor's consent. f.

**307—Nonparametric Statistical Methods (3).** Statistical methods when the functional form of the population is unknown. Applications emphasized. Comparisons with parametric procedures. Goodness of-fit, chi-square, comparison of several populations, measures of correlation. Prerequisite: 207 or 215 or 250 or 295 or 320 or equivalent.

**320—Introduction to Mathematical Statistics (3).** (same as Mathematics 320). Introduction to theory of probability and statistics using concepts and methods of calculus. Prerequisites: Mathematics 201 or instructor's consent. No credit for both 315 and 320. f,w,s.

**325—Introduction to Probability Theory (3).** (same as Mathematics 325). Probability spaces; random variables and their distributions; repeated trials; probability limit theorems. Prerequisites: Mathematics 201 or instructor's consent. f.

**326—Statistical Inference (3).** (same as Mathematics 326). Sampling; point estimation; sampling distribution; tests of hypotheses; regression and linear hypotheses. Prerequisite: 325. w.

**327—Theory of Nonparametric Statistics I (3).** A first course in Non-parametric statistical methods based on ranks. Both theory and application are emphasized. Two-sample problems. K-sample problems. Tests for independence. Contingency tables. Goodness-of-fit tests. Prerequisite: 320 or instructor's consent.

**328—Introduction to Stochastic Processes (3).** Study of random processes selected from: Markov chains, birth and death processes, random walks, Poisson processes, renewal theory, Brownian motion, Gaussian processes, white noise, spectral analysis, applications such as queuing theory, sequential tests. Prerequisite: 325.

**345—Categorical Data Analysis (3).** Discrete distributions, frequency data, multinomial data, chi-square and likelihood ratio tests, logistic regression, log linear models, rates, relative risks, random effects, case studies. Prerequisites: Statistics 326, or both 385 and 395.

**360—Deming Philosophy & Statistical Process Control (3).** Statistical control charts, economic design of control charts, acceptance sampling, pareto chart, and other graphical procedures, Deming philosophy, Taguchi methods. Prerequisites: Statistics 320 or 326 or instructors consent.

**370—Sampling Techniques (3).** Theory of probability sampling designs. Unrestricted random sampling. Stratified sampling. Cluster sampling. Multistage or subsampling. Ratio estimates. Regression estimates. Double sampling. Prerequisites: 207 or 215 or 250 or 295 or 320 or 326.

**375—Operations Research (3).** Study of mathematical and statistical models employed in operations research. Prerequisites: 207 or 215 or 250 or 320 or 326.

**385—Regression and Correlation Analysis (3).** Measurement of relationships among variables including multiple regression, partial correlation, and some nonparametric methods. Prerequisites: 207 or 215 or 250 or 295 or 320 or 326 & Mathematics 80. f,w.

**386—Applied Time Series Analysis (3).** A study of univariate and multivariate time series models and techniques for their analyses. Emphasis is on methodology rather than theory. Examples are drawn from a variety of areas including business, economics and soil science. Prerequisites: Statistics 326, or both Statistics 320 and 395 or instructor's consent.

**395—Analysis of Variance (3).** Study of analysis of variance and related modeling techniques for cases with fixed, random, and mixed effects. Exposure to designs other than completely randomized designs including factorial arrangements, repeated measures, nested, and unequal sample size designs. Prerequisite: Statistics 207 or 215 or 250 or 295 or 320 or 326. f,w,s.

**400—Problems and Special Readings (cr.arr.).** Approved reading and study, independent investigations, and reports on approved topics. Prerequisites: graduate standing and instructor's consent. f,w,s.

**404—Mathematical Statistics I (3).** Theory of estimation and tests of hypotheses including sufficiency, completeness and exponential families. Neyman-Pearson lemma, most powerful tests, similarity and invariance. Bayes and minimum variance unbiased estimates. Confidence intervals and ellipsoids. Prerequisite: 326 or instructor's consent.

**405—Mathematical Statistics II (3).** Asymptotic distributions of maximum likelihood estimators, chi-square and likelihood ratio test statistics. EM algorithm, bootstrap, and introduction to generalized linear models. Prerequisites: Statistics 404, Math 310 or instructor's consent.

**411—Statistics Seminar (cr.arr.).**

**414—Data Analysis I (3).** Applications of linear models including regression (simple and multiple, subset selection, regression diagnotics), analysis of variance (fixed, random and mixed effects, contrasts, multiple comparisons) and analysis of covariance; alternative nonparametric methods. Prerequisite: 320 or 326.

**415—Data Analysis II (3).** Advanced applications including analysis of designs (e.g. repeated measures, hierarchical models, missing data), multivariate analysis (Hotelling's T2, MANOVA, discriminant analysis, principal components, factor analysis), nonlinear regression, generalized linear models, categorical data analysis. Prerequisite: 414.

**416—Statistical Consulting (3).** Participation in statistical consulting under faculty supervision. Formulation of statistical problems. Planning of surveys and experiments. Statistical computing. Data analysis. Interpretation of results in statistical practice. Prerequisites: 326; 464 or 385 & 395; instructor's consent.

**420—Bayesian Statistics (3).** Bayes theorem, subjective probability, likelihood principle, non-informative priors, conjugate priors, asymptotic properties, Bayesian computation, hierarchical Bayes, statistical decision, Bayesian hypothesis testing, predictive inference, applications. Prerequisite: Statistics 326, Math 331 and Math 302 or equivalent.

**423—Experimental Design (3).** Examination and analysis of modern statistical techniques applicable to experimentation in social, physical or biological sciences. Prerequisites: 395 or instructor's consent.

**430—Reliablity Theory & Survival Analysis (3).** Statistical failure models. Parametric life test procedures. Non-parametric life test procedures. Bayes methods. System Reliability. Accelerated life testing. Kaplan-Meier estimator. Cox's regression model. Prerequisites: 403 or instructor's consent.

**440—Advanced Probability (3).** (same as Mathematics 440). Measure theoretic probability theory. Characteristic functions; conditional probability and expectation; sums of independent random variables including strong law of large numbers and central limit problem. Prerequisites: 325, Math 310; or instructor's consent.

**441—Stochastic Processes (3).** (same as Mathematics

# Statistics

441). Markov processes, martingales, orthogonal sequences, processes with independent and orthogonal increments, stationarity, linear prediction. Prerequisite: 440.

**452—Special Topics in Statistics (cr.arr.).** Prerequisite: instructor's consent.

**461—Recent Developments in Statistics (3).** The content of the course which varies from semester to semester, will be the study of some statistical theories or methodologies which are currently under development, such as bootstrapping, missing data, non-parametric regression, statistical computing, etc. Prerequisites: 326 and instructor's consent.

**464—Theory of Linear Models (3).** Theory of multiple regression and analysis of variance including matrix representation of linear models, estimation, testing hypotheses, model building, contrasts, multiple comparisons and fixed and random effects. Prerequisites: Mathematics 331, Statistics 320 or 326, and instructor's consent.

**465—Advanced Linear Models (3).** Advanced topics in the theory and application of linear models. Specific content varies with instructor. Prerequisites: 464, Math 302 and 310 or instructor's consent.

**466—Multivariate Analysis (3).** Distribution of sample correlation coefficients. Derivation of generalized T-squared and Wishart distributions. Distribution of certain characteristic roots, vectors. Test of hypotheses about covariance matrices and mean vectors. Discriminant analysis. Prerequisites: 326, Math 302, 331 or instructor's consent.

**470—Theory of Nonparametric Statistics II (3).** Estimation, hypothesis testing, confidence intervals, etc., when functional form of the population distribution is unknown. Prerequisites: 403 or 327 or instructor's consent.

**490—Research (cr.arr.).** Graded on a S/U basis only.

# Teacher Development Program (TDP)

**College of Education**
**101 Hill Hall**
**(573) 882-0560**
**DIRECTOR** Deborah Carr

The TDP is the primary academic unit for all undergraduate programs in the BS Ed (teacher preparation) or BES in the College of Education.

**BACHELOR OF EDUCATIONAL STUDIES (BES)** Students wishing to pursue a career in an educational setting other than public school domains may choose to pursue the BES degree. Each program of study requires the general education requirements of the College of Education (refer to College of Education section of this catalog for specific requirements). A major concentration of a minimum of 24 semester hours in education must be completed as well as a second concentration of a minimum of 24 semester hours developed with the adviser. A third concentration of 12 to 15 hours may also be included in the program of study. All education requirements pertaining to minimum grade point average, professional standing and graduation must be fulfilled. Refer to the College of Education section of this catalog for additional information. Students may choose from a number of different emphasis areas within Curriculum and Instruction or interdepartmental.

**Departmental** The BES degree may be selected by students desiring to work in an education related field; however, this degree does not lead to teacher certification. Students interested in the BES degree may complete an individualized course of study developed with an adviser in the department.

**Interdepartmental** Students may develop a specialized program with a professional adviser in the Advising Center in the College of Education. Contact Advising Services, 102 Hill Hall, for more information.

**BACHELOR OF SCIENCE IN EDUCATION (BS Ed)** Students seeking certification to teach in public school settings will complete this degree. Each student must complete the general education requirements of the College of Education (refer to the College of Education section).

Students will proceed through four phases as they complete the program. Each phase will include training in technology as well as clinical experience. General education and content requirements will be completed each semester in addition to the required TDP courses.

**Professional Education** The COE professional education requirements include those that are common to all majors as well as requirements that are specific to each major. *A course gpa of 2.000 or better with an overall professional education gpa of at least 2.500 is required for Missouri Teacher Certification. (2.750 UM & overall gpa required for graduation). In addition, students majoring in a degree leading to a certification in a subject (K-12 or 9-12 or 5-9) must obtain a gpa of 2.500 in the content area).*

Phase I (Inquiry into Learning) includes three courses for a total of nine hours: Ed100, Ed200, and Ed201. This phase provides students with an immersion into the discipline and culture of teaching and learning prior to focusing on a teaching specialty. This phase will provide experiences that include the teacher's roles in facilitating learning at all levels of development, career exploration, general instructional strategies, human development, classroom and behavior management and educational measurement. Emphasis in Phase I on oral and written communication. All students in the BSEd degree program complete these courses regardless of major.

Phase II (Inquiry into Curriculum and Pedagogy and Inquiry into Schools, Communities and Society) occurs over a three-semester sequence and focuses increasingly on a chosen teaching specialty and on interdisciplinary teaching. This phase provides students with experience in the methods of teaching in a specific subject area as well as emerging problems and practices within the field of education, and how problems of schools, family, community and society affect educators. Application required. Certain degree programs have limited enrollments. The number of hours is dependent on the selected program. (See specific majors for courses required in Phase II.)

Phase III (Internship) occurs during the last semester (minimum 15 hours) of the program with placement in a partnership school for the entire semester. Application required.

Phase IV (Induction Years Program) occurs after the student graduates and begins the first year of teaching. This phase offers support to the graduate during the first two years of teaching.

Recommendation for initial certification after graduation requires an acceptable score on the Praxis II specialty area examination for each major. The examination should be taken during the last year of the program and official scores submitted to the College of Education. Effective September 1, 2004, those seeking certification(s) in additional area(s) must submit an official passing score for the Praxis II specialty area examination for each area.

In addition to the general education and professional education courses, students must complete the following specific degree requirements *(Note: All program requirements are subject to revision upon faculty action)*:

**GENERAL EDUCATION** 36-42 hours
The College of Education (COE) general education requirements are comprised of the MU general Education Requirements and additional requirements of the COE.

**Symbolic Thought and Communication** (9 hours)

**Linguistic Studies** (3 hours)
- English 20 (3)
- Oral Communication Proficiency (demonstrate competency on communication markers in Phase I, II, III).
- Two courses designated as Writing Intensive (WI).
- A grade of 2.000 is required in each of the above courses.

**Mathematical Statistical and Computing Studies** (6 semester hours)
- Math 10B or 10A (3)
- A Math Reasoning Proficiency course (3)
- A grade of 2.000 is required in each of the above courses.

**Computer and Information Proficiency** (demonstrate competency on technology markers in Phase I, II, III).

**Distribution of Knowledge** (18 hours)

**Humanities and Fine Arts** (9 hours) Select course work from at least 2 departments.

**Biological and Physical Sciences** (9 hours) to include one biological science and one physical/earth science. One science must include a laboratory component.

**Intermediate Level Course** met in A or B; B preferred

**Social and Behavioral Science** (9 hours)
- Political Science 1 (3) or Political Science 11 (3)
- American History (3)
- Psychology 1 or Western Civilization (3)

**World/International and Multicultural Requirements**

**World International** As part of, or in addition to the above general education requirements, *all majors* must complete a course which reflects the study of world/international topics.

**Multicultural Studies** Students address this requirement by demonstrating competence on diversity markers in Phases I, II, III.

**EARLY CHILDHOOD EDUCATION**

**Birth-Grade 3** In addition to the general education, Phase I and Phase III requirements students must also complete:

**Additional General Education:**

**Mathematics, Statistics or Computers** (3 additional semester hours required):

Stat 25: Introduction to Statistical Reasoning (3)
Math 68: Geometric Concepts for Teachers (3)
(Note: These courses fulfill the general education requirement and the mathematics reasoning proficiency requirement.)

**Humanities** (3 additional semester hours required)

Must include one course in literature and one course in art or music. (Note: students who cannot read music must take a basic music theory course that enables them to read music.)

**Social Behavioral** (3 additional semester hours required)
General Psychology 1 is required as well as one course in either Sociology or Anthropology.
**Subject/Concentration** (9) Students should also take the following courses *before* entering Phase II:
NS 34: Nutrition, Current Concepts and Controversies (3)
HDFS 250: Early/Middle Childhood Development (3)
HDFS 241 or 351: Multicultural Study of Children or The Black Family (3)
**Phase II** (47-48)
**Inquiring into Schools, Communities, and Society** (5)
ED304: Inquiring into Schools, Communities, and Society I (3)
ED306: Inquiring into Schools, Communities, and Society II (2)
**Field Experience** (5)
ED303: Semester I (2)/ED317F: Emergent and Developing Literacy in Early Childhood Field Experience (2) (proposed)
ED305: Semester II (0-3)/ED314F: Teaching and Learning Math, Sci. & Soc. Studies w/ Young Children Field Experience (3) (proposed)
ED307: Semester III (0-3)/ED314F: Teaching and Learning Math, Sci. & Soc. Studies w/ Young Children Field Experience (3) (proposed)
**Inquiry into Curriculum and Pedagogy** (37)
ED310: Early Childhood Seminar I (2)
ED312: Early Childhood Seminar III (3)
ED313: Motor Development in Young Children (2)
ED314: Teaching & Learning Mathematics, Science and Social Studies with Young Children (8)
ED315: Working with Infants and Toddlers (2-3)
ED316: Pre-Kindergarten Student Teaching (5)
ED317: Emergent and Developing Literacy in Early Childhood (5)
ED319: Young Children's Emergent Language (2)
ED320: Children's Literature (2)
ED323: Art for Children (2)
ED324: Music for Children (2)
HDFS 356: Child and Family Advocacy (2)

**ELEMENTARY EDUCATION**
**Grades 1-6** In addition to the general education, Phase I and Phase III requirements students must also complete:
**Math, Statistics or Computers** (3 additional semester hours required):
Stat 25: Introduction to Statistical Reasoning (3)
Math 68: Geometric Concepts for Teachers (3)
(Note: These courses fulfill the general education requirement and the math reasoning proficiency requirement.)
**Humanities**
Must include one course in literature and one course in art or music. (Note: students who cannot read music must take a basic music theory course that enables them to read music.)
**Science**
T85 Elements of Health (2)
**Social Behavioral** (6 additional semester hours required)
Psychology is required as well as one course in Economics and one course in Geography.
**Elementary Education Content Requirements**
**Phase II** (39)
**Inquiring into Schools, Communities, and Society** (5)
ED304: Inquiring into Schools, Communities, and Society I (3)
ED306: Inquiring into Schools, Communities, and Society II (2)
**Phase II Field Experience** (6)
ED303: Semester I (2)/ED321F: Emergent Literacy Field Experience (2) (proposed)
ED305: Semester II (2)/ED326F: Teaching Mathematics in Elementary School Field Experience (1) (proposed)/ED327F: Teaching Science in Elementary Schools Field Experience (1) (proposed)
ED307: Semester III (2)/ED325F: Social Studies Field Experience (2) (proposed)
**Inquiry into Curriculum and Pedagogy** (28)
ED319: Young Children's Emergent Language (2)
ED320: Children's Literature (2)
ED321: Emergent Literacy (3)
ED322: Developmental Literacy (2)
ED323: Art for Children (2)
ED324: Music for Children (2)
ED325: Elementary Social Studies (3)
ED326: Teaching Mathematics in Elementary Schools (4)
ED327: Teaching Science in Elementary Schools (3)
ED328: Interdiscipline Teaching in Elementary School (3)
T284: P.E. Activities in the Elementary School (2)
**Area of Concentration** (18 hours, in addition to General Education)
Courses and course sequences appropriate for the areas of concentration are specified by subject area faculty (see below). To increase the depth of knowledge in the areas selected, courses must build upon course work completed to meet general education requirements.

Students must complete a minimum of 18 additional hours beyond general education requirements evenly distributed (9 hours each) in two (2) of the following areas:

**Mathematics** Courses which satisfy the mathematics area of concentration must be above the Math 10 level with at least one course from the following: Math 61, 80, 108. Recommended courses include: Math 60, 226, 231, 233, 250, 260 and Stat 150 or 215.

**Fine Arts** Departments from which courses may be selected include: Art, Music, Theater. Choose courses from 2 different departments. If more than one course in Music or Theater is selected, at least one must be at an intermediate level or above (defined as requiring a prerequisite of a course or class standing or an audition). NOTE: A maximum of 3 credit hours total for ensembles and applied music study may count towards the Fine Arts Concentration.

**Humanities** Departments from which courses may be selected include: Art History and Archaeology; Classical Humanities; English; Honors College Humanities Sequence; Linguistics; Philosophy; Religious Studies; Foreign Language. Choose courses from 2 different departments. At least one must be at an intermediate level or above (defined as requiring a prerequisite of a course or a class standing).

- **Science** One or more courses must be taken from each of the three areas: Biological, Physical, and Earth Science. Recommended Courses are:
  - Biological Science: Biology 6 (3); Biology 108 (3)
  - Physical Science: Physics 15 (3); Physics* 21* (4); Chemistry 15* (3); Chemistry 32 (3)
  - Earth Science: Geology 1* (4); Geology 10* (4); Astronomy 1 (4); Atmospheric Science 50** (3)

* Lab based course

**Social Sciences** The Social Sciences concentration includes courses in a minimum of 2 areas: History; Political Sciences; Economics; Geography. Recommendations: World History; Economics 5; Non-western world history.

**Behavioral Science** The Behavioral Science concentration includes courses in the following areas: Sociology; Rural Sociology; Psychology; Anthropology.

**Note: Some combination of general education and concentration areas must produce a total of 21 semester hours in one of the following categories:**

- Social and Behavior Sciences
- Humanities Studies and Fine Arts
- Biological and Physical Science
- Mathematics

**MIDDLE SCHOOL (Language Arts, Mathematics, Science or Social Studies) Grades 5-9** (Refer to General Education requirements) Students choose one major area of concentration from Language Arts, Mathematics, Science or Social Studies plus a minor area.
**Phase II**
**Inquiring into Schools, Communities, and Society** (5 hours)
ED304: Inquiring into Schools, Communities, and Society I (3)
ED306: Inquiring into Schools, Communities, and Society II (2)
**Field Experience** (3 hours) in:
ED329F (proposed)
ED330F (proposed)
ED331F: Intro. Teaching Mathematics in Middle & Secondary Schools Field Experience (1) (proposed)
ED332F: Teaching & Modeling Middle School Mathematics Field Experience (1) (proposed)
ED333F: Middle School Language Arts I Field Experience (1) (proposed)
ED334F: Middle School Language Arts II Field Experience (1) (proposed)
ED335F: Middle School Language Arts III Field Experience (1) (proposed)
ED336F: Middle School Social Studies Field Experience (1) (proposed)
ED337F: Middle School Science Field Experience (1) (proposed)
ED338F: Teaching, Engaging, & Assessing Mid-Level Students Field Experience (1) (proposed)
ED339F: Middle School Literacy Field Experience (1) (proposed)
**Inquiry into Curriculum and Pedagogy: All Students** (3-6 hours)

ED338: Teaching Engaging and Assessing Middle-level students (TEAMS) (3)
ED339: Middle School/Adolescent Literacy (proposed) (3) (not required for Language Arts majors)

**Inquiry Into Curriculum and Pedagogy: Discipline Major** (3-9 hours)

*Mathematics (6 hours)*
ED331/351: Introduction to Teaching mathematics in Middle and Secondary Schools (3)
ED332: Teaching and Modeling Middle School Mathematics (3)
*English/Language Arts (9 hours)*
ED333: Middle School Language Arts I (3)
ED334: Middle School Language Arts II (3)
ED335: Middle School Language Arts III (3)
*Social Studies (3 hours)*
ED336: Middle School Social Studies (3)
*Science (3 hours)*
ED337: Middle School Science (3)

**Inquiry Into Curriculum and Pedagogy: Discipline Minor** (3-6 hours)

*Mathematics (3 hours)*
ED331/351: Introduction to Teaching mathematics in Middle and Secondary Schools (3)
*English (6 hours)*
ED333: Middle School Language Arts I (3)
ED334: Middle School Language Arts II (3)
*Social Studies (3 hours)*
ED336: Middle School Social Studies (3)
*Science (3 hours)*
ED337: Middle School Science (3)
*Business or Tech/Ind. (3 hours)*
ED384: Curriculum Design for Practical Arts and Vocational Technology Programs (3)
*Agriculture (4 hours)*
Ag Ed 360: Rationale and Structure of Agricultural Education Programs (3)
Ag Ed 361: Integrated Field Experience I (1) is taken concurrently with Ag Ed 360.

**Total Professional Education Requirement:** 44-47 hours

**Specialty Area Requirements** Middle school majors select either:

A. Two core areas of study from among: Mathematics, Science, Social Studies and English/Language Arts (one identified as a "major" and one as a "minor" area).

OR

B. One core area of study from among: Mathematics, Science, Social Studies, and English/Language Arts (this field will be the major field of study) and one endorsement area from among: Agricultural Education, Art K-9, Business Education, Family and Consumer Sciences Education, Speech & Theater, and Technology and Industry Education

**Major area requirements:** (3-9 hours in each area may be met by General Education requirements.)

**Mathematics Major** (27 hours) *A content area gpa of at least 2.500 is required for Missouri Teacher Certification. (2.750 UM & overall gpa required for graduation).*
Math 10A or 10B: College Algebra (3)
Math 60: Finite Mathematics (3)
Math 61: Elements of Calculus (special section for middle grade majors) (3)
Math 68: Geometric Concepts (3)
Math 226: Discrete Mathematics (3)
Math 233: Algebraic Structures (3) OR Math 231: Elementary Matrix Algebra w/ Applications (3)
Math 250: Elementary Logic and Set Theory (3)
Math 260: Geometric Axioms and Structures (3)
Stat 215: Elements of Probability and Statistics (3)

**Science Major** (36 hours) *A content area gpa of at least 2.500 is required for Missouri Teacher Certification. (2.750 UM & overall gpa required for graduation).*
Chemistry 31, 32, 33 (8)
Physics 21-22 (8)
Geology 1 or 10 (4)
Atmospheric Science 50 (3)
Biology 42 and Biology 6 or 250 or Natural Resources 60 (8)
Science electives (5)

**Social Studies Major** (36 hours) *A content area gpa of at least 2.500 is required for Missouri Teacher Certification. (2.750 UM & overall gpa required for graduation).*
American History (9)
World History (9)
Political Science 1: American Government (3)
Economics (3)
Geography (3)
Psychology 1: General Psychology (3)
Non-Western History or Asian Geography (3)
Social Science elective (3)

**English/Language Arts Major** (24 hours) *A content area gpa of at least 2.500 is required for Missouri Teacher Certification. (2.750 UM & overall gpa required for graduation).*
English 120: Intermediate Composition
English 105: Introduction to Literature
English 226: Survey of American Literature II
English 341: History of English Language (3)
English elective 12 hours–at least one course must be selected from each of the following categories:

A. Courses in 19th century literature/African American Literature/Folklore (English 104, 304, 330, 334, 337, 385, 387).
B. Courses in 20th century lit/lit by and about women (English 308, 328, 332, 346, 386, 389).
C. Courses which synthesize literary study (genres, comparative lit. critical theory, major authors) (English 301, 338, 370, 371, 374).
D. Courses in writing (English 50, 70, 261, 280, 302, 311, 312, 313).

**Minor (second field area requirements:** (3-9 hours in each area may be met by General Education requirements.)

**Mathematics Minor** (21 hours) *A content area gpa of at least 2.500 is required for Missouri Teacher Certification. (2.750 UM & overall gpa required for graduation).*
Math 10A or 10B: College Algebra (3)
Math 60: Finite Mathematics (3)
Math 61: Elements of Calculus (special section for middle grade majors) (3)
Math 68: Geometric Concepts (3)
Math 233: Algebraic Structures (3)
Math 260: Geometric Axioms and Structures (3)
Statistics 215: Elements of Probability and Statistics (3)

**Science Minor** (21 hours) *A content area gpa of at least 2.500 is required for Missouri Teacher Certification. (2.750 UM & overall gpa required for graduation).*
Chemistry 31 and 32: General Chemistry (5)
Biology 1 and 2 or Biology 42: General Biology (5)
Geology 1: Principles of Geology (4)
Physics 21: College Physics (4)
Natural Resources 60 or Biology 6 or Biology 250 (3)

**Social Studies Minor** (21 hours) *A content area gpa of at least 2.500 is required for Missouri Teacher Certification. (2.750 UM & overall gpa required for graduation).*
American History (6)
World History (6)
Geography (3)
Political Science 1: American Government (3)
Economics (3)

**English/Language Arts** (21 hours) *A content area gpa of at least 2.500 is required for Missouri Teacher Certification. (2.750 UM & overall gpa required for graduation).*
English 120: Intermediate Composition
English 105: Introduction to Literature
English 226: Survey of American Literature II
English electives-12 hours. Take one course from each area:

A. Courses in 19th century literature/African American Literature/Folklore: English 104, 304, 330, 334, 337, 385, 387.
B. Courses in 20th century lit/lit by and about women: English 308, 328, 332, 346, 386, 389.
C. Courses which synthesize literary study (genres, comparative lit, critical theory, major authors): English 301, 338, 370, 371, 374.
D. Courses in writing: English 50, 70, 261, 280, 302, 311, 312, 313.

***Endorsement Areas Requirements****

**Agricultural Education** (21 hours) *A content area gpa of at least 2.500 is required for Missouri Teacher Certification. (2.750 UM & overall gpa required for graduation).*
Agricultural Economics 40 (3)
Animal Science 65 (3)
Plant Science 110 (3)
Agricultural Systems Management 20 (3)
Natural Resources 60 or 160 (3)
Agriculture Electives from the College of Agriculture, Food and Resources (6)

**Art K-9**
Art 60: Beginning Drawing (3)
Art 20: Basic Design (3)
Art 55: Art Craft Fundamentals (3)
Art 3: Art Appreciation (3) or Art History 10: History of Western Art I (3)
Art 175: Beginning Watercolors (3)
Art 185: Beginning Sculpture (3) or Art 21: Basic 3D Design (3)
Art 130: Beginning Ceramics (3)
Art 290: Seriography (3) or Art 291: Itaglio Printmaking (3)

**Business Education** (21 hours) *A content area gpa of at least 2.500 is required for Missouri Teacher Certification. (2.750 UM & overall gpa required for graduation).*
F34: Advanced Word Processing Applications (3)
Econ 4 or 14: Principles/Fundamentals of Microeconomics (3)
F114: Introduction to Microcomputers in Education (1)
F314: Utility Software for Microcomputers (2)
Select from the following courses (12 hours total):
Acct 36: Accounting I (3)
Econ 5: Principles of Macroeconomics (3)
F137: Business Communication (2)
F142: Filing Systems and Records Management (2)
F139: Office Procedures and Administration (3)
F335: Document Planning and Design (3)
F345: Business Software Applications (3)
F380: Laboratory Planning and Management (3)
Mgmt 202: Principles of Management (3)
Mgmt 254: Introduction to Business Law (3)
F25: Principles of Salesmanship (3)

CFE 183: Personal and Family Finance (3)
Q360: Intro to Web Design (3)

**Family and Consumer Sciences Education** (21 hours) *A content area gpa of at least 2.500 is required for Missouri Teacher Certification. (2.750 UM & overall gpa required for graduation).*

HDFS 250: Early and Middle Child Dev (3)
HDFS 175: Intro to Family (3)
NS 34: Nutrition, Current Concepts & Controversies (3)
CFE 183: Personal and Family Finance (3)
T160: Preschool Field Experience (1)
Select 9 hours from 2 areas:
EDN 161: Fund of Environmental Design (3)
HDFS 163: Close Relationships in Families (3)
HDFS 241: Multicultural
NS 134: Nutrition & Fitness (3)
CFE 185: Consumer in Our Society (3)
TAM 180: Textiles
TAM 188: Social Appearance in Time & Space (3)

**Speech and Theatre**
Com 75: Intro to Speech Comm (3)
Comm 272: Argument and Advocacy (3)
Thtr 44: Acting for Non Majors (3) or 243 Acting I (3)
Thtr 60: Script analysis (3)
Thtr 233: (3)

**Six hours from:**
Thtr 261: Theatrical Directing (3)
Thtr 2: Voice and Articulation (2)
Thtr 20: Beg Scenic Construction Lab (2)
Thtr 21: Beg Costume Construction Lab (2)
Thtr 120: University Theater Workshop (1)
Comm 261: Relational Comm (3)
Comm 275: Business and Professional Comm (3)
Comm 276: Persuasive Speaking (3)

**Technology and Industry Education** (21 hours) *A content area gpa of at least 2.500 is required for Missouri Teacher Certification. (2.750 UM & overall gpa required for graduation).*

F314: Utility Software for Microcomputers (2) or F345: Business Software Applications (3)
Engr 30: Design Graphics (3)
ASM 20: Agricultural/Industrial Materials and Processes (3)
Plus 12-13 hours from the following:
ASM 1: Internal Combustion Power (3)
ASM 80: Physical Principles for Agricultural Applications (3)
ASM 165: Mobile Hydraulics (3)
ASM 215: Electricity Wiring and Equipment (3)
Q310: Semi Applications in Technology (3)

**ART EDUCATION Grades K-12** In addition to the general education, Phase I and Phase III requirements, students must also complete:

**General Education-Humanities:** Music 122 Music in the US (2), Music 217 History of Western Music I (2) & Music 218 History of Western Music II (2) required.

**Phase II** (19)

**Inquiring into Schools, Communities, and Society** (5)
ED304: Inquiring into Schools, Communities, and Society I (3)
ED306: Inquiring into Schools, Communities, and Society II (2)

**Field Experience** (3)
ED303: Semester I (1)/ED366F: Overview of Art Education Field Experience (1) (proposed)
ED305: Semester II (1)/ED367F: Inquiry into Art Education: Pre-school through Middle School Field Experience (1) (proposed)
ED307: Semester III (1)/ED368F: Inquiry into Art Education: Secondary Field Experience (1) (proposed)

**Inquiry into Curriculum and Pedagogy** (11)
ED366: Overview of Art Education (3)
ED367: Inquiry into Art Education: Pre-School through Middle School (3)
ED368: Inquiry into Art Education (3)
T316: Reading in Content Area (2)

**Subject/Concentration** (9 hours counted toward General Education Humanities) (51)
*Multicultural Requirement*
T310: Multicultural Classroom (3)
*Art History (12)*
Art 3: Art Appreciation (WI)
ArH 10: History of Western Art*
ArH 141: American Art and Architecture*
ArH 272: Contemporary Art*
*or the equivalent approved by the advisor
*Studio (36)*
A. Core
Art 5: Fundamentals of Art
Art 60: Beginning Drawing
Art 20: Basic Design
B. Course from each category
Art 55: Artcraft Fundamentals
Art 260: Intermediate Drawing
Art 175: Beginning Watercolor or Art 177: Beginning Painting
Art 185: Beginning Sculpture or Art 21: Basic 3D Design
Art 130: Ceramics
Art 290: Beginning Printmaking or Art 296: Serigraphy
T310: Computer Art Tools or Multimedia
C. Elective to complete 36 hrs.

**Elective Studio Specialization** In addition to the minimum 48 hours of preparation in art and art history, the election of at least one in-depth advanced studio area of specialization beyond 48 hours is highly recommended.

With proper long-range planning, the in-depth courses can be scheduled within a four-year program and normal course loads.

Students who wish to teach art usually pursue the BS Ed degree. AB and BFA candidates may acquire art teaching certification by completing the additional art education requirements not already completed in the AB or BFA programs.

**BUSINESS AND MARKETING EDUCATION Grades 9-12** In addition to the general education and the education requirements required in Phase I and Phase III, students must complete the following:

**Phase II** (19)

**Inquiring into Schools, Communities, and Society** (5)
ED304: Inquiring into Schools, Communities, and Society I (3)
ED306: Inquiring into Schools, Communities, and Society II (2)

**Field Experience** (3)
ED303: Semester I (1)/F307F (proposed)
ED305: Semester II (1)/ED384F: Curriculum Construction in Business and Marketing Education Programs Field Experience (1) (proposed)
ED307: Semester III (1)/ED386F: Teaching Business & Marking Education Subjects Field Experience (1) (proposed)
Inquiry into Curriculum and Pedagogy (11)*
F307: Coordination Procedures (Business and Marketing Education) (3)
ED384: Curriculum Design in Business and Marketing Education (3)
ED386: Teaching of Business and Marketing Education Subjects (3)
T316: Reading in Content Areas (2)
*Computing (7 hours)*
75: Introduction Computer Science (3)
F114: Introduction Microcomputers (1)
F345: Business Software Applications (3)
*Economics (6 hours)*
5: Fundamentals Macroeconomics (3)
14: Fundamentals Microeconomics - MRP (3)
*Accounting (6 hours)*
36: Accounting I (3)
37: Accounting II (3)
*Management (6 hours)*
202: Principles of Management (3)
254: Introduction to Business Law (3)
*Keyboarding/Typewriting/Word Processing (67 hours)*
F34: Advanced Word Processing Applications (3)
F335: Document Planning and Design (3)
*Office Administration (5 hours)*
F137: Business Communication (2)
F139: Office Procedures and Administration - WI (3)
*Marketing (15 hours)*
204: Principles of Marketing (3)
F25: Principles of Salesmanship (3)
F75: Retailing (3)
F125: Merchandising (3)
Marketing Elective (3)
*Marketing Experience (4 hours)*
F325: Directed Occupational Experience (4) (Student may petition advisor for reduction of hours based on appropriate retail experience)

A maximum of four hours in keyboarding/typewriting may be transferred. Students in the business and marketing education program normally complete at least one course in word processing at MU.

**ENGLISH\LANGUAGE ARTS Grades 9-12**

**General Education-Humanities:** Music 122 Music in the US (2), Music 217 History of Western Music I (2) & Music 218 History of Western Music II (2) required.

**Humanities** nine semester hours required - must choose nine semester hours from the following - must be from two fields:
Art
Art History
Classical Humanities
General Honors Humanities
Eng 91: Introduction to Film Before 1945 (3)
Eng 92: Introduction to Film Since 1945 (3)
Philosophy
Theater
Religious Studies

**Phase II** (19)

**Inquiring into Schools, Communities, and Society** (5)
ED304: Inquiring into Schools, Communities, and Society I (3)
ED306: Inquiring into Schools, Communities, and Society II (2)

**Field Experience** (3)

ED303: Semester I (1)/ED340F: Teaching English/Language Arts I Field Experience (1) (proposed)
ED305: Semester II (1)/ED341F: Teaching English/Language Arts II Field Experience (1) (proposed)
ED307: Semester III (1)/ED342F: Language Arts III Field Experience (1) (proposed)
**Inquiry into Curriculum and Pedagogy** (11)
ED340: Teaching English/Language Arts I (3)
ED341: Language Arts II (3)
ED342: Language Arts III (3)
T316: Reading in Content Area (2)
**Subject/Concentration** (33)
English 105: Introduction to Literary Study
English 216: Survey of British Literature; Romanticism to Present
English 225: Survey of American Literature, 1607-1890
English 226: Survey of American Literature, 1890-Present
English 120: Intermediate Composition
English 340: Structure of American English
English 341: History of English Language or English 342: Regional and Social Dialects of American English or English 343: Principles of Teaching English as a Second Language
**At least 12 additional hours in English, to be selected from four of the following categories.** At least 6 of these hours must be in 300-level courses:
A. Courses in traditional British literature: English 315, 317, 321, 324, 327
B. Courses in 19th century literature/African American literature/folklore: English 104, 304, 330, 334, 337, 385, 387
C. Courses in 20th century literature/literature by and about women: English 308, 328, 332, 346, 386, 389
D. Courses which synthesize literacy study (comparative literature, genres, critical theory, major authors): English 301, 338, 370, 371, 374
E. Courses in writing: English 50, 70, 162, 261, 280, 302, 311, 312, 313

**FOREIGN LANGUAGES (French, German, Latin or Spanish)**
**Grades K-12** Students who have taken foreign language in high school should take the Foreign Language Placement examination at MU prior to enrolling in any language course. Students who test into upper-level language courses will receive college credit for all courses below the course enrolled in when that course is completed with a grade of C or better.
**Recommended:** Study abroad in target language
**General Education-Humanities:** Music 122 Music in the US (2), Music 217 History of Western Music I (2) & Music 218 History of Western Music II (2) required.
**Phase II** (19)
**Inquiring into Schools, Communities, and Society** (5)
ED304: Inquiring into Schools, Communities, and Society I (3)
ED306: Inquiring into Schools, Communities, and Society II (2)
**Field Experience** (3)
ED303: Semester I (1)/ED371F: Inquiring into Foreign Language Curriculum and Pedagogy Field Experience (1) (proposed)
ED305: Semester II (1)/ED372F: Inquiring into Foreign Language Curriculum and Pedagogy II Field Experience (1) (proposed)
ED307: Semester III (1)/ED373F: Inquiring into Foreign Language Curriculum and Pedagogy III Field Experience (1) (proposed)
**Inquiry into Curriculum and Pedagogy** (11)
ED371: Inquiring into Foreign Language Curriculum and Pedagogy I (3)
ED372: Inquiring into Foreign Language Curriculum and Pedagogy II (3)
ED373: Inquiring into Foreign Language Curriculum and Pedagogy III (3)
T316: Reading in Content Area (2)
**French Content** (43)
Fr 1: Elementary French I (5)
Fr 2: Elementary French II (5)
Fr 3: Elementary French III (3)
Fr 106: Intermediate French Composition and Conversation (3)
Fr 126: Intermediate French Composition and Conversation: Civilization (3)
Fr 206: Advanced French Composition and Conversation I (3)
Fr 231: Introduction to French Literature I (3)
Fr 232: Introduction to French Literature II (3)
Fr 260: French Phonetics or 307 Advanced Oral French for Teachers (3)
Fr 311: History of French Language
Fr 356: Stylistics (3)
Fr 378: Structure of Modern French (3)
One 300-level French course
**Civilization** 110: French Civilization (3) is required of French majors. The course partially satisfies the general education humanities requirement but cannot be counted toward total hours in French.
**German**
Ger 1: Elementary German I (5)
Ger 2: Elementary German II (5)
Ger 3: Elementary German III (3)
Ger 106: German Conversation and Composition I (3)
Ger 203: Advanced German Reading (3)
Ger 206: German Conversation and Composition II (3)
Ger 275: German Classics (3)
Ger 306: German Conversation and Composition III (3)
Ger 381: Advanced Grammar, Syntax and Stylistics (3)
Nine additional hours of 300-level German (9)
**Civilization** Ger 110: German Civilization: Beginning to 1850 or Ger 111: German Civilization: 1850 to Present (3) is required of all German majors. It satisfies one humanities requirement but cannot be counted toward total hours in German.
**Latin**
**Language** (21)
Latin 1: Elementary Latin I (5)
Latin 2: Elementary Latin II (5)
Latin 3: Latin Reading (3)
Latin 210: Latin Poetry (3)
Latin 303: Latin Stylistics (2)
Additional 300-level course work (9)
**Classical Studies** (9) Select from the following courses.
CS 50: Greek and Latin in English Usage (3)
CS 60: Classical Mythology (3)
CS 115: Greek Culture (3)
CS 116: Roman Culture (3)
CS 225: Greek Classics in Translation (3)
CS 226: Greek Drama (3)
CS 227: Advanced Mythology (3)
**Spanish** (43)
Span 1: Elementary Spanish I (5)
Span 2: Elementary Spanish II (5)
Span 3: Elementary Spanish III (3)
Span 106: Intermediate Spanish Composition and Conversation (3)
Span 205: Advanced Spanish Conversation (3)
Span 206: Advanced Spanish Composition (3)
Span 231: Introduction to Hispanic Literature I (3)
Span 232: Introduction to Hispanic Literature II (3)
Span 260: Spanish Phonetics (3)
Span 356: Spanish Stylistics (3)
Span 361: History of the Spanish Language or Span 307: Advanced Oral Spanish for Teachers (3)
Span 379: Structure of Modern Spanish (3)
One 300-level Spanish course (3)
**Civilization** Span 110: Spanish Civilization (3) or Span 112: Latin American Civilization (3) is required of Spanish majors. This course partially satisfies humanities in the general education requirement but cannot be counted toward requirements for Spanish.

**MATHEMATICS**
**Grades 9-12**
**General Education-Humanities:** Music 122 Music in the US (2), Music 217 History of Western Music I (2) & Music 218 History of Western Music II (2) required.
Mathematics and Mathematics Reasoning Proficiency requirements fulfilled in content requirements:
**Physical and Biological Science** (nine semester hours required)
Physical science must be Physics 21: or Physics 175
**Social Behavioral**
General Psychology 1 is required
**Phase II** (19)
**Inquiring into Schools, Communities, and Society** (5)
ED304: Inquiring into Schools, Communities, and Society I (3)
ED306: Inquiring into Schools, Communities, and Society II (2)
**Field Experience** (3)
ED303: Semester I (1)/ED351F: Intro. Teaching Mathematics in Middle & Secondary School Field Experience (1) (proposed)
ED305: Semester II (1)/ED352F: Teaching Mathematics in Secondary Schools: Focus on Algebra Field Experience (1) (proposed)
ED307: Semester III (1)/ED353F: Teach. Math in Sec. Schools: Focus on Geometry/Probability/Stat. Field Experience (1) (proposed)
**Inquiry into Curriculum and Pedagogy** (11)*
ED351: Introduction to Teaching Mathematics in Middle and Secondary Schools (3)
ED352: Teaching Mathematics in the Secondary Schools: Focus on Algebra (3)
ED353: Teaching Mathematics in the Secondary Schools: Focus on Geometry (3)
T316: Reading in Content Area (2)
Math 80: Analytic Geometry and Calculus (5)
Math 175: Calculus II (5)
Math 201: Calculus III (3)
Math 226: Discrete Mathematical Structures (3)
Math 331: Matrix Theory (3)
Math 360, 362, 366 or 367: Geometry (3)
Stat 215, 320, 325, or 326: Mathematical Statistics (3)
Comp. Sci. 103: Algorithm Design and Programming (3)
In addition to the courses listed above, *four* elective courses in mathematics at the 300 level or above are required (12 hours).
Recommended electives include:
Math 307: Numerical Analysis

Math 309: Applied Analysis
Math 310: Advanced Calculus
Math 316: Fractals and Chaos
Math 324: Numerical Linear Algebra
Math 330: Theory of Equations
Math 333: Higher Algebra
Math 335: Theory of Numbers
Math 340: Introduction to Abstract Algebra
Math 355: History of Mathematics
Math 360: College Geometry
Math 362: Projective Geometry
Math 366: Foundations of Geometry
Math 367: Intro. to Non-Euclidean Geometry
Math 372: Introduction to Topology
*Mathematics and mathematics pedagogy courses must be taken on a graded basis.
Note: The mathematics, education faculty recommend that secondary mathematics majors take an elementary and/or middle grade mathematics methods course (ED326 or ED332) as an elective.

**MUSIC (Vocal and/or Instrumental)**
**Grades K-12**
**General Education-Humanities:** Music 122 Music in the US (2), Music 217 History of Western Music I (2) & Music 218 History of Western Music II (2) required.
**Vocal and Instrumental Certification** Students wishing to be certified in both vocal and instrumental music must meet all requirements described in both sections above.
**Phase II** (18)
**Inquiring into Schools, Communities, and Society** (5)
ED304: Inquiring into Schools, Communities, and Society I (3)
ED306: Inquiring into Schools, Communities, and Society II (2)
**Field Experience** (3)
ED303: Semester I (1)/ED361F: Teaching Music I Field Experience (1) (proposed)
ED305: Semester II (1)/ED62F: Teaching Music II Field Experience (1) (proposed)
ED307: Semester III (1)/ED363F: Teaching Music III Field Experience (1) (proposed)
**Inquiry into Curriculum and Pedagogy** (10)
ED361: Teaching Music I (3)
ED362: Teaching Music II (2)
ED363: Teaching Music III (3)
T316: Reading in Content Area (2)
**Subject/Concentration** (57 Instrumental, 55 Vocal) *A content area gpa of at least 2.500 is required for Missouri Teacher Certification. (2.750 UM & overall gpa required for graduation)*
**General Music Courses** Applied music private lessons (17-20 semester hours required). All students must establish proficiency in piano and complete four semester hours (minimum of two semesters) in a 200-level course in applied music. All students must be enrolled in a major ensemble every semester except while student teaching.
**Music Theory**
Music 190: Syntax Structure & Style I (2) f1
Music 191: Syntax Structure & Style II (2) w1
Music 290: Syntax Structure & Style III (2) f2
Music 291: Syntax Structure & Style IV (2) w2
Music 313: Syntax Structure & Style V (2) f (possibly s)
Music 180: Aural Training & Sight Singing I (2) f1
Music 181: Aural Training & Sight Singing II (2) w1
Music 280: Aural Training & Sight Singing III (2) f2
Music 281: Aural Training & Sight Singing IV (2) w2
**Conducting & Techniques** (see below for differences between instr. and vocal majors)
Music 131: Basic Conducting (2) w2
**Instrumental Majors Only:**
Music 12: Guitar (1)
Music 134: Reh. Clinic Band Conducting (2) w3
Instrumental Techniques: Take 6 courses, do *not* take the course that includes your major instrument.
Music 148: Percussion (1)
Music 140: Strings 1-Violin & Viola (1) f
Music 141: Strings 2-Cello & Bass (1) w
Music 137: Woodwinds 1-Single Reeds (1) f
Music 138: Woodwinds 2-Flute & Double Reeds (1) w
Music 145: Brass 1-High Brass (1) f
Music 146: Brass 2-Low Brass (1) w
Music 309: Band Arranging (2)
Music 242: Seminar in String Techniques or equivalent (stringed instrument majors)
Music 246: Marching Band Techniques (2) (band instrument majors)
2 semester hours of vocal music: Choose from voice class, lessons, choir
*Vocal Majors Only:*
Music 133: Reh. Clinic Choral (2) f3
Music 133: Reh. Clinic Choral (2) f4 must be repeated
Music 12: Guitar Class (1)
Music 270: Dictation in Singing: Italian (1) f
Music 271: Dictation in Singing: German (1) w
Music 272: Dictation in Singing: French (1) f
Music 310: Choral Arranging (2)
Instrumental Techniques (3) (1 course required from each of the following areas)
Music 148: Percussion (1)
Music 140 or 141: Strings I or II (1)
Music 137 or 138 or 145 or 146: Woodwinds I or II, or Brass I or II (1)
Instrumental *and* Vocal Majors: All of the above (plan on an extra year)
Piano Pedagogy or Strings: See advisor
**Studio Instruction, Piano, Recital** (BS, 15 hours required)
Studio Instruction: must have 8 hours/4 semesters of Music 155 on major instrument and 4 hours minimum at Music 255
Piano Proficiency: must enroll in piano class until proficiency completed
Piano 10 (1) f1
Piano 11 (1) w1
Piano 110 (1) f2
Piano 111 (remedial) w2 (taken only if proficiency is not demonstrated with Music 110)
**Ensembles**: must enroll in 1 ensemble every semester of full-time enrollment except student teaching semester; if majoring in vocal *and* instrumental, one ensemble in each area per semester required.
1 semester of Marching Mizzou (band instrument majors)
**Recital Attendance:** Students must enroll in Music 91 for a minimum of 7 semesters.

**UNIFIED SCIENCE**
**Grades 9-12** Students may select endorsements in biology, chemistry, earth science or physics. In addition to the general education and the secondary professional requirements, students who intend to teach science must complete a core of courses in the sciences and related fields. This certificate combines biology, chemistry, physics and earth science into one certificate with "core" classes common to all areas. The certificate will allow a teacher to teach any of the beginning sciences. The concentration in the specific science is required for teaching advanced courses in that area.



**Phase II** (19)
**Inquiring into Schools, Communities, and Society** (5)
ED304: Inquiring into Schools, Communities, and Society I (3)
ED306: Inquiring into Schools, Communities, and Society II (2)
**Field Experience** (3)
ED303: Semester I (1)/ED355F: Teach. Sci. Second. Sch.: Phil., Hist., Sci. Inq., Curr., Assm., & Tech. 1 Field Experience (1) (proposed)
ED305: Semester II (1)/ED356F: Teaching Sc. Sec. Sch.: Phil., Hist., Sc. Inq., Curr., Assm., & Tech. 2 Field Experience (1) (proposed)
ED307: Semester III (1)/ED357F: Teach. Sci. Second. Sch: Phil., Hist., Sc. Inq., Curr., Assm., & Tech. 3 Field Experience (1) (proposed)
**Inquiry into Curriculum and Pedagogy** (11)
ED355: Teaching Science in the Secondary School: Philosophy, History, Science Inquiry, Curriculum, Assessment, and Technology Part I (3)
ED356: Teaching Science in the Secondary School: Philosophy, History, Science, Inquiry, Curriculum, Assessment, and Technology Part II (3)
ED357: Teaching Science in the Secondary School: Philosophy, History, Science, Inquiry, Curriculum, Assessment, and Technology Part III (3)
T316: Reading in Content Area (2)
Students must take the required course work as follows in their area.
**Unified Science — Biology**
The core of required courses is listed below.
Bio 42: Biology (5)
Botany (Bw 12, 214, 308, 317, 364) (2)
Bio 202: General Genetics (4)
Bio 203: Cell Biology (3)
Bio 212: Basic Microbiology
Bio 302: Evolution (3)
Bio 362: Ecology
Phys 210: Elements of Physiology
Chem 31, 32, 33: General Chemistry and Lab (8)
Chem 205: Organic Chemistry (5)
Geology 1 or 10 (4)
Atm Sci 50: Meteorology (3)
Phys 21 and 22: College Physics (8)
Astron 1: Astronomy (4)
Math 80 or 108: Calculus (3-5)
**Unified Science — Chemistry**
Chem 31, 32, 33: General Chemistry (8)
Chem 210, 212: Organic Chemistry (8)
Chem 221: Quantitative Analysis (4)
Chem 230: Physical Chemistry (3)
Chem 329: Environmental Chemistry (3)
Biochem 193: General Biochemistry (3)
Bio 42: Introduction to Biological Systems (5)
Bio 202: General Genetics (4)
Bio 362: Ecology (5)
Atm Sci 50: Meteorology (3)

Geology 1 or 10 (4)
Physics 21, 22: College Physics (8)
Astron 1: Astronomy (4)
Math 80 and 175: Calculus (10)

**Unified Science — Earth Science**

Geol 1: Principles of Geology (4)
Geol 10: Environmental Geology (4)
Geol 12: Oceanography (3)
Geol 124: Historical Geology (3)
Geol 225: Rocks & Minerals (3)
Geology 220 & 221: Geology of Missouri (with lab) (4)
Atm Sci 50: Meteorology (3)
Bio 42: Introduction to Biological Systems (5)
Bio 202: General Genetics (4)
Bio 302: Evolution (3)
Bio 362: Ecology (5)
Chem 31, 32, 33: General Chemistry (8)
Chem 205: Organic Chemistry (5)
Physics 21, 22: College Physics (8)
Atron 1: Astronomy (4)
Math 80 or 108: Calculus (3-5)

**Unified Science — Physics**

Physics 175 and 176: University Physics (10)
Physics 215: Atomic/Nuclear (3)
Physics 310: Electricity and Magnetism (3)
Physics 311: Light/Optics (4)
Physics 312: Thermodynamics (3)
Physics 314: Mechanics (3)
Physics 380: Quantum Mechanics (3)
Nuc Eng 303: Radiation Safety (3)
Chem 31, 32 and 33: General Chemistry (8)
Bio 42: Introduction to Biological Systems (5)
Bio 202: General Genetics (4)
Bio 362: Ecology (5)
Geology 1 or 10: Principles/Environmental Geology (4)
Atm Sci 50: Meteorology (3)
Astron 1: Astronomy (4)
Math 80, 175 and 201 Calculus (13)
Math 304: Differential Equations (3)

## SOCIAL STUDIES

**Grades 9-12**

**General Education-Humanities:** Music 122 Music in the US (2), Music 217 History of Western Music I (2) & Music 218 History of Western Music II (2) required.

**General Education - Science**

T85: Elements of Health (2)

**Phase I** (9)

**Phase II** (18)

**Inquiring into Schools, Communities, and Society** (5)

ED304: Inquiring into Schools, Communities, and Society I (3)
ED306: Inquiring into Schools, Communities, and Society II (2)

**Field Experience** (3)

ED303: Semester I (1)/ED345F: Secondary Social Studies I Field Experience (1) (proposed)
ED305: Semester II (1)/ED346F: Secondary Social Studies II Field Experience (1) (proposed)
ED307: Semester III (1)/ED347F: Secondary Social Studies III Field Experience (1) (proposed)

**Inquiry into Curriculum and Pedagogy** (10)

ED345: ICP Secondary Social Studies I (2)
ED346: ICP Secondary Social Studies II (4)
ED347: ICP Secondary Social Studies III (2)
T316: Reading in Content Area (15)
American History (12; 3 hours counted in General Education) Must include History 3, American History to 1865 (3) and History 4, American History Since 1865 (3)
World History (12; 3 hours counted in General Education) Must include History 1, Foundations of Western Civilization (3) or History 2, History of Modern Europe (3) and a course in non-Western civilization (India, China, Japan, Africa [excluding South African History]) (3)
Political Science (6) including:
Pol Sci 1: American Government (3 hours counted in General Education)
Pol Sci 55 or 150 (3)
Economics (6 hours; - 3 hours counted in General Education) Must include Econ. 4 or 14 Principals/Fundamentals of Microeconomics (3) and Econ. 5 Principles of Macroeconomics (3)
Geography (9) Must include Geography 1, Regions & Nations of Geography I (3) and Geography 2, Regions & Nations of Geography II (3) and an advanced Geography course (numbered 100 or higher) (3)
Behavioral Sciences (6) Any combination of Psychology, Sociology or Anthropology
3 semester hours of elective Social and Behavioral Science course work (in addition to general education and subject requirements listed above)

**OTHER CERTIFICATIONS OPTIONS:**

**Certification in Agricultural Education Grades 9-12 (Middle school 5-9 endorsement also available.** Refer to Middle School section in this portion of the catalog.) The agricultural education program prepares students to become teachers of agriculture. The program is listed under Agricultural Education in the College of Agriculture, Food and Natural Resources section in this catalog. Refer to this section of the catalog for specific requirements.

During the last semester on the Columbia campus, students in agricultural education enroll for a teaching internship (15 hours of student teaching under the supervision of an experienced teacher).

Students at other Missouri colleges planning to transfer to MU to major in agricultural education should contact the agricultural education office, 121 Gentry Hall, prior to registration.

**Certification in Family and Consumer Sciences Education Grades 9-12 (Middle School endorsement grades 5-9 also available.** Refer to Middle School section in this portion of the catalog.)

The Family and Consumer Sciences Education Program is listed under Human Environmental Sciences in this catalog.

## COURSES

**ED100—Orientation (1).** This course familiarizes and orients students with MU resources, College of Education programs and expectations and career options. Graded on S/U basis only.

**ED200—Inquiry Into Learning I (4).** This course is designed to focus students on the central themes of learning and teaching. Emphasis will be placed on the interaction of theory, philosophy and practice as related to the field of education. Required for Phase I of the Teacher Development Program.

**ED201—Inquiry into Learning II (4).** This course is designed to extend and build on material covered in ED200. The focus is on learning theory, student diversity, multicultural issues, instructional strategies, assessment and learning in the content areas. Prerequisites: ED200 and English 20, and admittance to College of education.

**ED300—Foundation of Teacher Prep I (4).** Designed for graduate students seeking teacher certification, this course addresses content and application in comprehensive classroom management, development, behavior management, and diversity. Field work is required and integrated with course content. Prerequisite: Psychology 1.

**ED301—Foundation of Teacher Prep II (4).** Designed for graduate students seeking teacher certification, this course addresses content and application in learning and instruction, assessment, and special needs students. Field work is required and integrated with course content. Prerequisite: ED300.

**ED304—Inquiring into Schools, Community and Society I (3).** This course focuses on schooling in American society, the school community, the school culture and students' lives and identities. Studied are the political, cultural, and economic conditions of the schools. Prerequisites ED201 and completion of Phase I or enrollment in a graduate level program in the College of Education.

**ED306—Inquiring into Schools, Community and Society II (2).** The second semester on schooling in American Society focuses on problem-posing and critical reflection about how the issues of politics, school organizations, ethics, justice, access and equity affect the building of community within a school and its classrooms. ED306 must be taken the semester prior to internship. Prerequisite: ED304.

**ED310—Early Childhood Seminar I (2).** Consideration of major historical influences on early current childhood curriculum and assessment practices, with emphasis on the role of the family. Prerequisite: admittance to Phase II required.

**ED311—Early Childhood Seminar II (1).** Consideration of a variety of topics in ECE including informal and formal assessment procedures and family-school communication/ collaboration. Prerequisites: Completion of Early Childhood Seminar I; admittance to Phase II required.

**ED312—Early Childhood Seminar III (3).** Reflection on the relationship of theory and practice in ECE. Consideration of various topics including individualizing curriculum, working with special needs children, and working with diverse families. Prerequisites: completion of Early Childhood Seminar III; admittance to Phase II required.

**ED313—Motor Development in Young Children (2).** For Early Childhood majors. Study of young children's motor development. Must be taken as part of the UTD ECE Motor/ Art/ Music block. Prerequisite: completion of ECE Language/ Literacy block; admittance to College of Education required.

**ED314—Teaching & Learning Math, Sci. & Social Studies w/Young Children (8).** Strategies for assessing and supporting young children's math, science and social studies learning. Must take concurrently with a K-3 field experience. Prerequisite: completion of ECE Language/Literacy block; admittance to College of Education required.

**ED315—Working with Infants and Toddlers (2-3).** Experience working with children aged 6 weeks to 2 1/2 years and their families. Opportunity to apply theories of cognitive, language, and social development. Prerequisite: course in child development and admission to Phase II; admittance to College of Education required.

**ED316—Pre-Kindergarten Student Teaching (5).** Application of knowledge of child development in working with children aged 2-6 and their families. Emphasis on planning and implementing developmentally appropriate practice. Prerequisite: admission to Phase II and completion of Literacy Block; admittance to College of Education required.

**ED317—Emergent and Developing Literacy in Early Childhood (5).** Strategies for assessing and supporting young children's literacy development. Must take concurrently with ED319, ED320 and K-3 field experience. Prerequisite: admittance to College of Education required.

**ED319—Young Children's Emergent Language (2).** For Early Childhood and Elementary Education majors. Study of young children's language development and implications for teachers. Must take with ED317, ED320, and K-3 field experience. Prerequisite: admittance to Phase II; admittance to College of Education required.

**ED320—Children's Literature (2).** For Early Childhood and Elementary Education majors. Surveys the field of children's literature. Must be taken with ED317, ED319, and K-3 field experience. Prerequisite: admittance to Phase II; admittance to College of Education required.

**ED321—Emergent Literacy (3).** Emergent reading. Instructional methods, diagnostic procedures, and materials appropriate for learners in elementary grades 1-3. Prerequisite: completion of Phase I.

**ED322—Developmental Literacy (2).** Instructional methods, diagnostic procedures, and materials appropriate for learners in elementary grades 4-6. Prerequisite: completion of Children's Literature ED320, Emergent Language ED321, and Emergent Literacy ED322.

**ED323—Art for Children (2).** This course focuses on appropriate teaching methods and strategies for teaching art (studio, art history, aesthetic, and criticism), artistic development of children, and curriculum, instructional, and organization strategies for the art classroom; admittance to College of Education required.

**ED324—Music for Children (2).** Preparation of early childhood and elementary education students with the skills, knowledge, and philosophical foundations necessary to integrate music into the early childhood and elementary curricula. Prerequisite: Music 8, 12, 18 or competency test; admittance to College of Education required.

**ED325—Elementary Social Studies (3).** To develop knowledge of social studies and the skills to teach social studies in the elementary school. The course is designed to provide the student with the skills to plan, implement, and evaluate both the teaching and learning processes for the elementary social studies classroom. Prerequisites: acceptance into Phase II, Term: Winter of junior year or Fall of Senior year; admittance to College of Education required.

**ED326—Teaching Mathematics in Elementary Schools (4).** Study of elementary mathematics content and curriculum, instructional techniques and materials, organizational strategies, discipline integration techniques and assessment methods and practices for teaching mathematics in the elementary school. Prerequisites: Math 10, Statistics 25 and Math 68; admittance to College of Education required.

**ED327—Teaching Science in Elementary Schools (3).** Concepts, materials, methods in the elementary school program. Prerequisite: Phase I, Fall and Winter; admittance to College Education required.

**ED328—Interdisciplinary Teaching in Elementary Schools (3).** Exploration of interdisciplinary models for teaching elementary school content. Topics of discussion and study will include: effective grouping strategies, action research, inclusion differentiation and teaming strategies, performance assessment, problem solving and critical thinking as a theme of instruction in all subjects, interdisciplinary student- parent conferencing strategies. Prerequisite: admittance to College of Education required.

**ED331—Intro. Teaching Mathematics in Middle & Secondary Schools (3).** Introduction to teaching mathematics including: professional mathematics teacher associations and journals, learning theories related to teaching mathematics, tools, and materials for teaching mathematics, curriculum and instructional strategies (middle and lower high school level), and techniques for assessing mathematical understanding. Prerequisites: Professional standing, Math 201 (Sec. Majors) and Math 68 (Middle Schools Majors); admittance to College of Education required.

**ED332—Teaching and Modeling Middle School Mathematics (3).** Major issues/topics of the course include: nature of middle school students, lesson planning, developing and utilizing teaching strategies, assessment alternatives, teaching via problem solving and mathematical modeling, interdisciplinary strategies and materials, and techniques for assessing mathematical understanding. Prerequisite: ED331 and at least 18 hours of required mathematics; admittance to College of Education required.

**ED333—Middle School Language Arts I (3).** Integrates an understanding of literacy (highlighting reading) with content area demands, literature and other media texts, oracy and mediacy, evaluation and inquiry within a context of diversity. Prerequisite: admittance to College of Education required.

**ED334—Middle School Language Arts II (3).** Knowledge of learning, instruction and management from Phase I will be applied specifically to the middle school language arts classroom and art of teaching literacy (highlighting writing), literature, oracy and mediacy will be examined. Prerequisite: admittance to College of Education required.

**ED335—Middle School Language Arts III (3).** Focuses on a sequential and comprehensive study of the language arts teacher as an integral member of a middle school team. Emphasizes integrated curriculum and the connections with literacy, literature, oracy and mediacy. Prerequisite: ED333 and ED334; admittance to College of Education required.

**ED336—Middle School Social Studies (3).** Curriculum decision making, instructional planning, techniques and strategies, materials selection, approaches to assessment in middle level social studies, all based upon early adolescent growth and development principles. Prerequisite: admittance to College of Education required. f.

**ED337—Middle School Science (3).** Concepts, materials, methods in the middle school program. Prerequisite: Phase I; admittance to College of Education required. f.

**ED338—Teaching, Engaging and Assessing Middle-Level Students (3).** In this course students will learn about the specific and individual needs of middle-level students and develop the skills and understandings to meet these needs. Prerequisite: admittance to College of Education required.

**ED339—Middle School Literacy (3).** Explores literacy implications of content areas. Topics include determining the difficulty of text, examining literature that supports content, creating alternative assessments, and evaluating reading/ writing strategies as tools for learning. (Required of all Middle School majors and minors EXCEPT Language Arts.) Prerequisite: admittance to College of Education required.

**ED340—Teaching English/Language Arts I (3).** Prepares prospective educators with the knowledge, skills, and strategies necessary for integrating and teaching the English/ language Arts, primarily focusing on the teaching of writing and critical thinking. The secondary focus is on Young Adult Literature and its teaching. Prerequisite: professional standing in the College of Education; admittance to College of Education required.

**ED341—Teaching English/Language Arts II (3).** Prepares prospective educators with the knowledge, skills, and strategies necessary for integrating and teaching the English/ Language Arts, primarily focusing on Young Adult Literature and critical thinking. The secondary focus is on the teaching of writing. Prerequisite: ED340; admittance to College of Education required. w.

**ED342—Language Arts III (3).** Prepares prospective educators with the knowledge, skills, and strategies necessary for integrating and teaching the English/ Language Arts, focusing on the teaching of American culture and critical thinking, through the study of print, electronic media, and a variety of cultural artifacts. Prerequisites: ED340 and ED341; admittance to College of Education required. f.

**ED345—Secondary Social Studies I (2).** Will introduce prospective teachers to the profession of social studies teaching; to the bases for making curriculum choices in social studies and the process of choosing content; and the process of planning curriculum and instruction in social studies classrooms. Prerequisites: acceptance into Phase II, Term: Fall of Junior year; admittance to College of Education required.

**ED346—Secondary Social Studies II (4).** Is designed for the secondary social studies teachers to develop knowledge of social studies and the skills to teach social studies. The student will plan implement, and evaluate both the teaching and learning processes for secondary social studies classroom. Prerequisites: acceptance into Phase II, Term: Winter of junior year; admittance to College of Education required.

**ED347—Secondary Social Studies III (2).** Will address the purposes and development of social studies assessment for all levels from classroom to national assessment. Assessment will be used to reflect upon curriculum/instruction, make revisions and set goals. Prerequisites: acceptance into Phase II, Term: Fall of senior year; admittance to College of Education required.

# Teacher Development Program (TDP)

**ED351—Intro. Teaching Mathematics in Middle & Secondary Schools (3).** Introduction to teaching mathematics including: professional mathematics teacher associations and journals, learning theories related to teaching mathematics, tools, and materials for teaching mathematics, curriculum and instructional strategies (middle and lower high school level), and techniques for assessing mathematical understanding. Prerequisites: Professional standing, Math 201 (Sec. Majors) and Math 68 (Middle Schools Majors).

**ED352—Teaching Mathematics in Secondary Schools: Focus on Algebra (3).** Major issues/topics of the course are: exploration of curriculum, teaching strategies, and assessment for algebra and pre-calculus/calculus. Lesson planning, integration of appropriate models, mathematical connections, calculators and computer technology will be developed. Prerequisite: ED351; admittance to College of Education required.

**ED353—Teach.Math in Sec.Schools: Focus on Geometry, Probability & Stat. (3).** Provides experience which advanced students' knowledge, understanding, and facility in engaging students in learning mathematics. Major issues/ topics highlighted in the course are: exploration of curriculum, teaching strategies, and assessment for geometry, probability and statistics. Prerequisite: ED351; admittance to College of Education required.

**ED355—Teach.Sci.Second.Sch.:Phil.,Hist., Sci.Inq.,Curr.,Assm., & Tech I (3).** An integration of the philosophy and history of science, technology, society; teaching science as inquiry; classroom management, strategies and curricula for teaching/learning science; and using technology in science learning. Prerequisite: professional standing; admittance to College of Education required.

**ED356—Teach.Sci.Second.Sch.:Phil.,Hist., Sci.Inq.,Curr.,Assm., & Tech 2 (3).** An integration of the philosophy and history of science, technology, society; teaching science as inquiry; classroom management, strategies and curricula for teaching/learning science; and using technology in science learning. Prerequisite: professional standing and Teaching Science in the Secondary School, Part I; admittance to College of Education required.

**ED357—Teach.Sci.Second.Sch.:Phil.,Hist., Sci.Inq.,Curr.,Assm., & Tech 3 (3).** An integration of the philosophy and history of science, technology, society; teaching science as inquiry; classroom management, strategies and curricula for teaching/learning science; and using technology in science learning. Prerequisite: Professional standing and Teaching Science in the Secondary School, Parts 1 and II; admittance to College of Education required.

**ED361—Teaching Music I (3).** Study of skills, knowledge, and philosophical foundations necessary to teach general music to children in grades pre-K, including methods, philosophies, and teach and learner behaviors. Prerequisite: junior standing; music education majors or instructor's consent; admittance to College of Education required.

**ED362—Teaching Music II (2).** Study of a broad repertoire of music literature and instructional materials, including critical evaluation and analysis for use in the general music classroom. Prerequisite: Teaching Music I; admittance to College of Education required.

**ED363—Teaching Music III (3).** A study of various strategies for the successful teaching of Middle and high school music programs. Prerequisite: Teaching Music II; admittance to College of Education required.

**ED366—Overview of Art Education (3).** This is the first of a three course sequence and serves as the foundation for inquiries of methodological and philosophical approaches to the teaching of the visual arts at the elementary and secondary level. Prerequisite: admittance to College of Education required.

**ED367—Inquiry into Art Education: Pre-School Through Middle School (3).** The second of three course sequence. It will cover art education issues as they apply to the Pre-School through Middle School setting. Prerequisite: admittance to College of Education required.

**ED368—Inquiry into Art Education: Secondary (3).** The third of a three course sequence. Student will learn about secondary art education and make application to practice with emphasis on adolescent development, curriculum design, student assessment, instruction, diversity/equity, and professionalism. Prerequisite: admittance to College of Education required.

**ED371—Inquiring into Foreign Language Curriculum and Pedagogy I (3).** This course introduces developing teachers to issues related to foreign language instruction. It focuses on language development, individual learning styles, instruction strategies, classroom behavior and management, professional development and in-field experiences. The course lays the foundation of foreign language pedagogy and curriculum development. Prerequisite: admittance to College of Education required.

**ED372—Inquiring into Foreign Language Curriculum and Pedagogy II (3).** This second course explores in greater depth issues related to foreign language instruction. It focuses on second language acquisition theories and research; learners; individual needs and styles; techniques and activities for the FL classroom; diversity and inclusion, resources and authentic materials; and in-field experiences. Prerequisite: admittance to College of Education required.

**ED373—Inquiring into Foreign Language Curriculum and Pedagogy III (3).** This course enables developing teachers to achieve a more advanced level of competency in the field of foreign language education. It provides them with ample opportunities to put into practice ideas and techniques learned in the first two courses, and to sharpen their decision-making abilities. It focuses on the application of various methodologies to the teaching and assessment of foreign languages. In-field experiences are also included. Prerequisite: admittance to College of Education required.

**ED384—Curriculum Construction in Business and Marketing Education (3).** Curricular development process, knowledge of core areas and competencies of business and marketing education programs. Selection of instruction material. Prerequisite: admittance to College of Education required.

**ED386—Teaching of Busienss and Marketing Education Subjects (3).** This course concentrates on the recent trends in methods, techniques, materials of instruction, media, measurement, and school-community relations in the teaching of business and marketing subjects. Prerequisite: admittance to College of Education required.

**ED399—Internship and Capstone Seminar (cr.arr.).** Internship is a full-semester experience in the public schools, including a capstone seminar addressing problems of practice (integrating subjects, reading and writing across the curriculum, meeting all students' needs), and evaluation of the interns preparation for entering the profession. It is offered each Fall and Winter for 10-16 credit hours. Admittance to College of Education required. Prerequisites: ED306 and admittance into Phase III. f,w.

# Textile and Apparel Management

**College of Human Environmental Sciences**
**137 Stanley Hall (573) 882-7317**

**CHAIR** K. Dickerson
**PROFESSOR** K. Dickerson
**ASSOCIATE PROFESSORS** U. Chowdhary, J. Hamilton, P. Norum, L. Wilson
**ASSISTANT PROFESSOR** J. Hawley
**INSTRUCTORS** S. Henson, Coordinator, Missouri Textile and Apparel Center, S. Stevens
**PROFESSORS EMERITI** H. Allen, E. Nugent, D. Saxon
**ASSOCIATE PROFESSORS EMERITI** B. Dillard, J. Holik
**ASSISTANT PROFESSOR EMERITUS** J. Griffin

**DEGREES** BS HES, MA and MS in Textile and Apparel Management; PhD in Human Environmental Sciences (Students must check with the department as to how frequently both required and elective TAM courses are taught.)

**TAM MAJOR** Students who major in TAM may choose from the following two options:
**BUSINESS STUDIES OPTIONS**
- Apparel Manufacturing Management
- Apparel Marketing and Merchandising

**INTERNATIONAL STUDIES OPTIONS**
- Apparel Manufacturing
- Retailing

**TAM MINOR** The undergraduate minor in Textile and Apparel Management requires a minimum of 18 semester hours with at least six hours at the 300-level or above. Prerequisites for all courses must be met, or student must have instructor's permission.
Historical Studies (three hours) TAM 187, 345, 387, 487
Behavioral Studies (three hours) TAM 188, 285, 288, 388, 488
Textiles (three hours) TAM 180
Apparel Industry Studies (three hours) TAM 181, 184, 186, 282, 283, 286, 381, 386
Specialty area (six hours)
The specialty area hours may be taken in whatever area(s) a student may wish to specialize.
Total 18 hours

**AREA OF COMPETENCE** The following courses are required of all students majoring in Textile and Apparel Management (25 hours):
TAM 180: Textiles (3)
TAM 181: Basic Concepts of Apparel Design and Production (3)
TAM 184: Introduction to the Textile and Apparel Industry (3)
TAM 186: Softgoods Retailing (3)
TAM 187: History of Western Dress (3)
TAM 188: Social Appearance in Time and Space (3)
TAM 283: Textile and Apparel in the Global Economy (3)
TAM 285: The Clothing and Textile Consumer (3)
TAM 290: Professional Seminar (1)

**BUSINESS STUDIES OPTIONS** A student who completes the requirements for Apparel Manufacturing Management or Apparel Marketing and Merchandising is prepared for a variety of career possibilities in the textile and apparel industry at the national and international levels. Professional courses and approved electives must total 67 credits.

• **Apparel Manufacturing Management** For students in Apparel Manufacturing Management, 25 hours are required in TAM in addition to the area of competence. An additional 18 hours of supporting area courses are required outside the department.
**Departmental Course Requirements** 25 hours
TAM 182: Apparel Production (3)
TAM 280: Textile Analysis (4)
TAM 281: Pattern-making (3)
TAM 282: Prin of Apparel Manufacturing (3)
TAM 347: Sourcing (3)
TAM 382: Apparel Production Management (3)
Six additional approved elective hours in TAM for a total of 25 hours
**Supporting Course Requirements** 18 hours
Acct 36: Accounting I (3)
Mktg 204: Principles of Marketing (3)
Mgmt 202: Fundamentals of Management (3)
Three hours of approved statistics (3)
Six additional approved electives in either business, engineering, art, or theatre.

• **Apparel Marketing and Merchandising** For the apparel marketing and merchandising student, 21-24 hours are required in Textile and Apparel Management in addition to the area of competence. Additionally, 21-24 hours of supporting courses are required outside of the department.
**Departmental Course Requirements**
TAM 282: Principles of Apparel Manufacturing (3) OR TAM 381: Apparel Manufacturing and Merchandising (3)
TAM 386: Retail Marketing and Merchandising (3)
12-15 elective hours in the department for a total of 18-21 hours
**Supporting Course Requirements**
Three hours of approved statistics (3)
Acct 36: Accounting I (3)
Acct 37: Accounting II (3)
Mgt 202: Fund of Management (3)
Mktg 204: Principles of Marketing (3)
Three hours of approved statistics (3)
Three to six additional hours must be selected from business-related courses approved by the department for a total of 18-21 hours.
Professional courses and electives for both business options must total 67 credits.

**INTERNATIONAL STUDIES OPTIONS** The international studies options are designed to provide students with tools & sensitivities required to function in intellectual and applied environments outside their own.

• **International Studies: Apparel Manufacturing** For students seeking this major 19 hours are required in TAM in addition to the area of competence. An additional 22 hours of supporting area courses and 9 hours of supporting area electives outside of the department are required.
**Departmental Course Requirements**
TAM 182: Apparel Production (3)
TAM 280: Textile Analysis (4)
TAM 281: Pattern Making (3)
TAM 282: Prin of Apparel Manufacturing (3)
TAM 382: Apparel Production Management (3)
3 elective hours in the department for a total of 19 hours
**Supporting Course Requirements**
PolSci 55: International Relations (3)
Three hours of approved geography
Three hours of approved business courses
Three hours of approved courses in accounting, math, or statistics.
Nine additional approved elective hours outside of the department.

• **International Studies: Retailing** This option prepares students for retailing in global market. Students will take the 25 hours in the area of

competence, 15 hours of TAM supporting area courses, and 34 hours of additional supporting area courses.

**Departmental Course Requirements** (15 hours)
TAM 282: Apparel Manufacturing (3)
TAM 386: Retail Marketing and Merchandising (3)
Nine hours additional approved TAM courses.

**Supporting Course Requirements** (34 hours)
Pol Sci 55: International Relations (3)
Mkt 204: Principles of Marketing (3)
Acct 36: Accounting I (3)
Three hours of approved geography courses (3)
Three hours of approved accounting, statistics, or other analytical course (3)
Ten hours from the same foreign language (10)
Nine hours of approved electives for a total of 34 hours

## CAREER OPPORTUNITIES IN TEXTILE AND APPAREL MANAGEMENT

Product design and development
Textile testing and quality control
Production management and marketing
Consumer research and education
Sales forecasting and planning
Retail merchandising and buying
Store operations management
Apparel promotion and public relations
Government trade analysis
International trade association liaison
Fashion editing and reporting
Museum curator/educator
Historic conservation
Graduate studies
College or university teaching/research

## COURSES

**180—Textiles (3).** Textile fibers and their processing related to selection, care, and performance of end products. Prerequisite: second-semester freshman or above. f,s

**181—Basic Concepts of Apparel Design & Production (3).** Introduction to design techniques, coordination of fabric with design, selection of support materials, and basic understanding of garment assembly operations. f,w.

**182—Apparel Production (3).** Laboratory in which a variety of assembly techniques will be used to construct sample garments and other sewn products. Prerequisite or corequisite: 181. f.

**183—Fashion Illustration (2).** Development of techniques and media for portraying the fashion figure and dress. Prerequisite: 81.

**184—Introduction to the Textile and Apparel Industry (3).** Surveys the development, production and marketing of softgoods merchandise from concept to consumer.

**186—Softgoods Retailing (3).** Surveys merchandising and retailing principles with specific applications to the softgoods industry. f,s.

**187—History of Western Dress (3).** Surveys the history of Western dress from prehistory through the 18th Century. w.

**188—Social Appearance in Time and Space (3).** An investigation of the motives and meanings that individuals negotiate through the use of dress in presenting themselves as players in complex social contexts. The emphasis is on cross-cultural, historical, and contemporary settings. f,w.

**280—Textile Analysis (4).** Importance of textile analysis in quality control; determination of textile performance and serviceability; and comparative examination of textiles with varying chemical, physical, and weave structures. Prerequisites: 180, one course in Physics or Chemistry suggested. w.

**281—Patternmaking (3).** (same as Theatre 255). A beginning course in the methods of pattern drafting. Methods explored include: flat patterning, draping, and theatrical patterning techniques. Prerequisites: 180 or Theatre 21 and instructor's consent. Graded on A/F/S basis only. w, even yrs.

**282—Principles of Apparel Manufacturing (3).** A study of the apparel manufacturing industry including the decision making involved in marketing, merchandising, and producing apparel. Prerequisites: 180, 181. f.

**283—Textiles and Apparel in the Global Economy (3).** Economic, social, and political dimensions of the textile complex and trade in a global economy; implications for production, distribution, and consumption of products. Prerequisite: 5-6 hours of Economics, (TAM majors should have TAM 184). w.

**285—The Clothing/Textile Consumer: Research and Analysis (3).** Examines the effects of economic, social and marketing factors on the clothing consumption process. Legislative and quality issues related to clothing and textiles are also discussed. Prerequisites: 3 hours of merchandising, marketing or microeconomics; 3 hours in computer science and 3 hours in statistics. w.

**286—Retail Finance and Merchandise Control (3).** Emphasizes assortment and financial planning utilizing computer applications in the retail environment. Prerequisites: TAM 186 and a three credit computer course.

**288—Social Psychology of Clothing (3).** Clothing and appearances as reflection and function of social psychological theories perspectives. Prerequisites: two courses in sociology, psychology, or economics, and 188. w.

**290—Professional Seminar (1).** Exploration of issues in professional activity/success including: evaluating opportunities, oral and written communication for presenting oneself, the articulation of professional/private life, and professional ethics. Prerequisites: Second semester junior, first semester senior, or prior to internship. f,w.

**300—Problems (cr.arr.).** Prerequisites: junior standing and instructor's consent. f,w,s.

**318—Topics (cr.arr.).** Selected current topics in field of interest.

**343—Electronic Commerce (3).** This course focuses on development of business-to-business and business-to-commerce, changes of market concepts, operations, and strategies brought by information technology, and challenges confronting traditional business. Prerequisite: junior standing.

**345—History of Textile Manufacturing and Trade (3).** Focuses on changing issues affecting the textile and apparel industry today and examines those issues from both historic and current perspectives. Prerequisite: TAM 187, 188 or instructor's consent.

**346—Global Retailing (3).** This course will examine how to apply retail concepts and activities to overseas markets, how to evaluate potential overseas markets, and how to develop global retail strategies. Prerequisite: junior standing.

**350—Readings (cr.arr.).** Prerequisites: senior standing and instructor's consent. f,w,s.

**355—Recent Trends (1-3).** For upper-class and graduate students who wish additional knowledge and understanding in specific subject matter areas.

**381—Apparel Manufacturing and Merchandising (3).** Investigation of the complex interaction of manufacturing, marketing, and merchandising in the apparel industry, achieved through instructional and experiential study. Includes study trip. Additional fees required. Minimum 2.5 overall GPA required Prerequisite: instructor's consent. Graded on A/F basis only. f.

**382—Apparel Production Management (3).** Examination of issues and management strategies necessary to produce a competitively priced apparel product of high quality. Prerequisites: 282, and junior standing or above. Graded on A/F basis only. w.

**383—Computer Aided Patternmaking (3).** (same as Theatre 355). Use of computer aided design technology to perform pattermaking techniques for apparel production. Prerequisite: 281 or Theatre 255, and basic computer course or instructor's consent. Graded on A/F basis only. w, odd yrs.

**384—Strategic Analysis of the Textile, Apparel and Retail Industries (3).** This course will integrate facets of each student's area of concentration with important concepts from related disciplines. Prerequisites: enrollment during the

# Textile and Apparel Management

student's last 45 hours of coursework; 15 hours of TAM coursework completed.

**385—Textile Fibers (3).** Advanced study of textile fibers; emphasis on their structure, composition, physical and chemical properties. Prerequisites: 182 and 6 hours Organic Chemistry.

**386—Retail Marketing and Merchandising (3).** Analytical management techniques appropriate for evaluation of retailing productivity. Emphasis on the use of these techniques and others in the development of a comprehensive retail marketing strategy. Prerequisites: 186, Accountancy 36, Marketing 204. w.

**387—19th and 20th Century Western Dress (3).** A study of nineteenth and twentieth century Western dress as influenced by time, place, and culture. Prerequisites: 187, or Theater 20 or instructor's consent.

**388—Clothing, Behavior, and Society (3).** Utilization of contextual perspective to examine and to understand use of clothing as a tool in symbolic interaction. Prerequisite: 188 or instructor's consent. f.

**389—Clothing for Individuals with Special Needs (3).** An integration of scientific, functional, and aesthetic principles, theories, and techniques to design, select and adapt clothes for those with special needs. Prerequisites: 181 or 182 or instructor's consent. f.

**390—Field Training (cr.arr.).** Practical aspects of internship experience coordinated with the university curriculum. Available for various areas of emphasis. Prerequisites: 2.5 GPA, instructor's consent, and necessary prerequisites for area of emphasis. See department for internship guidelines. f,w,s.

**400—Problems (cr.arr.).** Prerequisites: 300-level course in field of problem and instructor's consent.

**410—Seminar (1-4).** Reports and discussion of recent work in area of concentration.

**412—Qualitative Social Research Methods (3).** Focus is on the philosophical differences inherent in an interpretivist versus a positivist approach to social research, the strategies and methods of qualitative research, and qualitative research design and criticism. Prerequisite: graduate standing. May be repeated twice.

**415—Readings (cr.arr.).** Readings in recent research material in textiles and/or clothing. Prerequisites: graduate standing, 20 hours Textile and Apparel Management, and instructor's consent.

**418—Topics (cr.arr.).** Selected current topics in field of interest.

**430—Survey of Research in Textile and Apparel Management (3).** A survey of current research in textiles and apparel management. Underlying theory, research design and empirical techniques will be analyzed and critiqued. Prerequisites: graduate standing, 3 hours in Statistics and 3 hours in Research Methods.

**450—Research (cr.arr.).** Independent research not leading to a thesis. Report required.

**480—Textile Fabrics (3).** Advanced study of textile fabrics with emphasis on dyeing, finishing, and physical testing. Prerequisites: 182 and senior or graduate standing.

**483—Advanced Textiles and Apparel in the Global Economy (3).** Advanced analysis of economic aspects of the domestic and international textile and apparel industries. Prerequisites: 184, Economics 51 or equivalent, graduate standing.

**484—International Trade in Textiles and Apparel (3).** Economic, social, and political aspects of international production and trade of textiles and apparel. Prerequisites: Economics 326, and TAM 283 or 483, or instructor's consent.

**487—Textile History Seminar (3).** Investigation of research

in textile and costume history with emphasis on developing questions, methods of analysis and interpretation appropriate for data sources used. Prerequisite: 345, 382, or 387 or instructor's consent.

**488—Cultural Analyses of Dress (3).** Examines the social context of dress and other intimate manifestations of daily life using culture as the level of analysis. Prerequisites: 388, graduate standing, or instructor's consent.

**490—Research (cr.arr.).** Independent research leading to thesis or dissertation. Graded on a S/U basis only.

# Theatre

**College of Arts and Science**
**Rhynsburger Theatre, 129 Fine Arts Center**
**(573) 882-2021**

**CHAIR** W. Durham
**PROFESSORS** P. Atkinson, S. Burgoyne, W. Durham, J. Miller, C. Ruffin
**ASSISTANT PROFESSORS** C. Black, H. Carver, D. Crespy
**ADJUNCT ASSISTANT PROFESSORS** D. Packard, K. Packard
**PROFESSORS EMERITI** S. Archer, L. Clark, C. Waal

**DEGREES** AB, MA, PhD in theatre

The Department of Theatre offers students an appreciation of theatre as a fine art, sharpens the talents of those who seek careers in theatre and provides students with methods of stimulating and using their imagination and intensifying their communication skills. All courses used to satisfy Area of Concentration requirements must be completed with a grade of C or higher.

**Area of Concentration in Theatre consists of a core and an area of interest**

**A.** These core courses are required of all theatre students
Theatre 20: Basic Scenic Construction Lab (3) or Theatre 21: Basic Costume Construction Lab (3)
Theatre 60: Principles of Script Analysis (3)
Theatre 66: Introduction to Theatre History (4)
Theatre 120: University Theatre Workshop (1)
Theatre 220: Technical Theatre Practicum (1)
Theatre 267: Studies in Theatre History and Drama (3) or Theatre 211: Intermediate Playwriting (3) (Note: Playwriting area of interest students must take Theatre 267)
Theatre 399: Capstone (2)

**B.** Theatre students must also complete an area of interest in performance, design/technical theatre, or playwriting

**Choose one of the following**

**1. Performance**
Theatre 251: Theatrical Costume Design (3)
**Choose 15 hours of performance classes from**
Theatre 4: Stage Movement for the Actor (2)
Theatre 43: Stage Makeup (1)
Theatre 91: World Theatre Workshop
Theatre 233: Performance of Literature (3)
Theatre 240: Vocal Performance Technique (3)
Theatre 243: Acting I (3)
Theatre 244: Acting II (3)
Theatre 261: Theatrical Directing (3)
Theatre 266: Musical Theatre Performance (3)
Theatre 347: Acting III (3)
Theatre 362: Advanced Directing (3)
**Choose three hours of design/technical classes from**
Theatre 152: Stagecraft (3)
Theatre 154: Introduction to Theatre Design (3)
Theatre 252: Computer Graphics in Theatre Design (3)
Theatre 253: Scene Painting (2)
Theatre 255: Beginning Patternmaking (3)
Theatre 256: Sound Design (3)
Theatre 351: Theatre Organization and Management (3)
Theatre 352: Scene Design (3)
Theatre 354: Stage Lighting Design (3)
Theatre 355: Advanced Patternmaking (3)
Theatre 365: Theatre Architecture (3)

**2. Design/Technical Theatre**
**Choose fifteen hours of design/technical classes from**
Theatre 43: Stage Makeup (1)
Theatre 152: Stagecraft (3)
Theatre 154: Introduction to Theatre Design (3)
Theatre 251: Theatrical Costume Design (3)
Theatre 252: Computer Graphics in Theatre Design (3)
Theatre 253: Scene Painting (2)
Theatre 255: Beginning Patternmaking (3)
Theatre 256: Sound Design (3)
Theatre 351: Theatre Organization and Management (3)
Theatre 352: Scene Design (3)
Theatre 354: Stage Lighting Design (3)
Theatre 355: Advanced Patternmaking (3)
Theatre 365: Theatre Architecture (3)
**Choose five hours of performance classes from**
Theatre 4: Stage Movement for the Actor (2)
Theatre 91: World Theatre Workshop
Theatre 233: Performance of Literature (3)
Theatre 240: Vocal Performance Technique (3)
Theatre 243: Acting I (3)
Theatre 244: Acting II (3)
Theatre 261: Theatrical Directing (3)
Theatre 266: Musical Theatre Performance (3)
Theatre 347: Acting III (3)
Theatre 362: Advanced Directing (3)

**3. Playwriting:**
Theatre 111: Beginning Playwriting (3)
Theatre 154: Introduction to Theatre Design (3)
Theatre 211: Intermediate Playwriting (3)
Theatre 311: Advanced Playwriting: Problems (3)
**Choose one course from**
Theatre 90: African-Americans on Stage and Screen (3)
Theatre 160: New American Theatre (3)
Theatre 265: American Musicals (3)
Theatre 343: Studies in Dramatic Theory (3)
Theatre 344: Studies in Dramatic Criticism (3)
Theatre 363: Studies in Dramatic Literature (3)
Theatre 367: Studies in Theatre History (3)
**Choose two courses from**
Theatre 4: Stage Movement for the Actor (2)
Theatre 91: World Theatre Workshop (3)
Theatre 233: Performance of Literature (3)
Theatre 240: Vocal Performance Technique (3)
Theatre 243: Acting I (3)
Theatre 244: Acting II (3)
Theatre 261: Theatrical Directing (3)
Theatre 266: Musical Theatre Performance (3)
Theatre 347: Acting III (3)
Theatre 362: Advanced Directing (3)

**C.** Nine semester hours, including at least two upperclass courses, in another department related to the student's major interest. Performance students might take courses in music, English, or art history; design/technical students must take courses in art, housing and interior design, or textile and apparel management; playwriting students must take courses in creative writing in the Department of English.

**A minor in theatre consists of a core and an area of interest**

**A. These core courses are required of all theatre minors:**
Theatre 20: Basic Scenic Construction Lab (3) or Theatre 21: Basic Costume Construction Lab (3)
Theatre 60: Principles of Script Analysis (3)
Theatre 154: Introduction to Theatre Design (3) or Theatre 251: Theatrical Costume Design (3)

**B. Choose one of the following areas of interest**

**1. Performance**
Theatre 4: Stage Movement for the Actor (2)
Theatre 120: University Theatre Workshop (1)
Theatre 243: Acting I (3)
Theatre 244: Acting II (3), or Theatre 261: Theatrical Directing (3)

**2. Design/Technical Theatre**
Theatre 154: Introduction to Theatre Design (3) or Theatre 251: Theatrical Costume Design (3)
Theatre 220: Technical Theatre Practicum (1)
**Choose two courses from:**
Theatre 152: Stagecraft (3)
Theatre 256: Sound Design (3)
Theatre 352: Scene Design (3)
Theatre 354: Stage Lighting Design (3)

**3. Playwriting**
Theatre 111: Beginning Playwriting (3)
Theatre 211: Intermediate Playwriting (3)
Theatre 311: Advanced Playwriting: Problems (3)

## COURSES

**2—Voice and Articulation (2).** Techniques for improving speaking voice; theories underlying techniques. Attention to student's articulation, pronunciation, voice quality, general expressiveness.

**4—Stage Movement for the Actor (2).** Basic work in the techniques that comprise movement training for the actor. Prerequisite: instructor's consent.

**6—The Theatre in Society (3).** Examines the form and meaning of theatre in civilizations of the West from the ancient Greeks to modern times.

**20—Beginning Scenic Construction Lab (3).** Practical experience constructing and rigging theatrical scenery, properties, and stage lighting. Requires evening crew assignment.

**21—Beginning Costume Construction Lab (3).** Learn the basic sewing skills used in constume construction, through lecture, demonstration and practical application. Requires evening crew assignment. No prerequisite. f,w,s.

**43—Stage Makeup (1).** Character analysis, facial anatomy, color for stage and television makeup. Practice in application.

**44—Acting for Non-Majors (3).** Basic theory and practice of acting for the non theatre major.

**60—Principles of Script Analysis (3).** Methodologies of

script analysis for theatrical purposes. Extensive writing will be required. f,w.

**66—Introduction to Theatre History (4).** Survey of major periods emphasizing the produced play in its historical context. Includes weekly lab that includes script-in-hand readings of plays.

**90—African-Americans on Stage and Screen (3).** (same as Black Studies 90). A study of the evolution of traditional African-American culture and the impact of dramatic literature and the entertainment industry on the social perceptions of African-Americans. f.

**91—World Theatre Workshop (2).** (same as Black Studies 91). Provides a diverse ensemble of student performers, writers, and technicians with an intensive immersion in the process of theatrical production through the public presentation of dramatic literature that focuses on global issues of ethnicity and culture.

**101—Topics (cr.arr.).** Organized study of selected topics. Subject and credit may vary from semester to semester. May be repeated with departmental consent. Prerequisite: instructor's consent.

**111—Beginning Playwriting (3).** (same as English 111). Study and practice of playwriting fundamentals; emphasizes the one-act play.

**120—University Theatre Workshop (1).** Credit earned in performance or technical project under faculty supervision in or in support of University Theatre productions. May be repeated to total of 3 hours. Prerequisite: instructor's consent. Graded on a S/U basis only.

**152—Stagecraft (3).** Fundamentals of properties and scenic construction stressing terminology and practical production experience. Prerequisite: 20.

**154—Introduction to Theatre Design (3).** Design principles and elements as they relate to theatre performance. Use of drawing and creative 3-dimensional exercises to develop design concepts. Recommended to students interested in directing, playwriting, and design for the theatre. Prerequisite: Theatre 20.

**160—New American Theatre (3).** Survey of drama of the most recent decade as it documents contemporary mores and amplifies cultural themes. Prerequisite: Theatre 60.

**201—Topics (cr.arr.).** Organized study of selected topics. Subject and credit may vary from semester to semester. May be repeated with department consent. Prerequisite: instructor's consent.

**211—Intermediate Playwriting (3).** (same as English 211). Intermediate study of the writing process as applied to theatre, leading to the creation of a full-length play to be considered for production. Prerequisite: 111.

**220—Technical Theatre Practicum (1).** Credit earned in a technical project in support of a University Theatre production. May be repeated to total of three hours. Prerequisite: 20. Graded on a S/U basis only.

**233—Performance of Literature (3).** (same as English 233). Analysis and oral interpretation of literary works. Graded on A/F basis only. Prerequisite: sophomore standing.

**240—Vocal Performance Technique (3).** This course develops the ability to use the voice as a creative and expressive instrument through a comprehensive study of speech and voice dynamics which include the exploration of proper breathing, relaxation, tonal placement, and non-regional articulation.

**243—Acting I (3).** Basic theory, practice of acting, stage movement.

**244—Acting II (3).** Script analysis, character and role development in modern and contemporary non-realist theatrical forms. Rehearsal and presentation of scenes, based on contemporary dramatic and performance theory. Prerequisite: Theatre 60.

**251—Theatrical Costume Design (3).** Basic practice in costume rendering using charcoal, crayon, ink, watercolor and other media. Costume history, both theatrical and general, will be surveyed. Basic problems of theatre design will be considered. Prerequisite: 20.

**252—Computer Graphics in Theatre Design (3).** The use of graphics and CAD software to create theatre designs. The course will progress from 2D CAD drafting to 3D image rendering. Prerequisites: sophomore standing. Does not meet humanities general education requirements.

**253—Scene Painting (2).** Studio practice in techniques of painting scenery for the Theatre. Prerequisite: 20.

**255—Beginning Patternmaking (3).** (same as Textiles and Apparel Management 281). A beginning course in the methods of pattern drafting. Methods explored include: flat patterning, draping, and theatrical patterning techniques. Prerequisite: Theatre 21 and instructor's consent. Graded on A/F basis only. w, even yrs.

**256—Sound Design (3).** Beginning sound design for the theatre. Units include basics of researching, recording, and augmenting sound for the use in a theatrical production. Prerequisite: 20 and instructor's consent.

**261—Theatrical Directing (3).** Theory and practice of play directing, script selection, casting, play analysis, rehearsal and performance. Prerequisite: 60 and instructor's consent.

**265—American Musicals (3).** (same as Music-General 265). Historical survey of the development of the 20th-Century American Musical in Theatre and Film.

**266—Musical Theatre Performance (3).** (same as Music 266). A practical study for the actor of theatrical songs through character analysis, lyric interpretation and movement. A performance course. Prerequisite: instructor's consent.

**267—Studies in Theatre History and Drama (3).** Physical theatre, theatre organization, performance crafts, drama, and performance/dramatic theory of selected period(s). Prerequisite: Theatre 60, 66. May be repeated to a maximum of 6 hours with instructor's consent.

**280—Internship (1-3).** Internship: Experimental learning as an actor, designer, technician, publicist/manager, or dramaturge with an approved theatre company. Prerequisites: junior/senior standing and departmental consent. S/U graded only.

**301—Topics (cr.arr.).** Organized study of selected topics. Subjects and earnable credit may vary from semester to semester. May be repeated with departmental consent. Prerequisites: junior standing and instructor's consent.

**311—Advanced Playwriting: Problems (3).** (same as English 311). Advanced study of the writing process as applied to theatre, including theory and practice. Special playwriting problems and techniques. Prerequisite: 211.

**340—Summer Repertory Theatre (cr.arr.).** Seminar, participation, laboratory in Summer Repertory Theatre. May be repeated. Prerequisite: instructor's consent.

**343—Studies in Dramatic Theory (3).** Analysis of history, meaning and function of selected concepts of contemporary dramatic and performance theory. Prerequisite: senior standing.

**344—Studies in Dramatic Criticism (3).** Survey of methods of criticism of scripts and performances. Prerequisite: senior standing.

**347—Acting III (3).** Period acting sytles. Special projects in interpretation, rehearsal, creation of roles. Prerequisites: Theatre 60 and 243 or 244.

**350—Directed Reading Theatre (1-3).** Independent reading, reports. Prerequisite: instructor's consent.

**351—Theatre Organization and Management (3).** Practical and theoretical procedures of various types of theatre organizations. Areas covered will include stage management, shop management, crew management, and the organizational structure of various types of theatrical organizations.

**352—Scene Design (3).** Theory and practice of scenic design for the theatre with emphasis on the evolutionary process of design from concept to reality. Prerequisite: 154 or instructor's consent.

**354—Stage Lighting Design (3).** Theory and practice of lighting for theatre production. Prerequisite: instructor's consent.

**355—Advanced Patternmaking (3).** (same as Textiles and Apparel Management 383). Use of computer aided design technology to perform patternmaking techniques for apparel production. Prerequisite: Theatre 255, and basic computer course or instructor's consent. Graded on A/F basis only. w, odd yrs.

**362—Advanced Directing (3).** Advanced principles of theatrical directing; emphasizes stylistic variations. May be repeated once. Prerequisite: 261 and instructor's consent.

**363—Studies in Dramatic Literature (3).** Advanced survey of major movements, periods, writers. Prerequisite: senior standing. Repeatable to a maximum of 6 hours with instructor's consent.

**365—Theatre Architecture (3).** Examines the renovation of existing buildings into workable theatre spaces. Includes history of theatre architecture. Prerequisite: instructor's consent.

**367—Studies in Theatre History (3).** Advanced survey of major periods, movements. Prerequisite: senior standing. Repeatable to a maximum of 6 hours with instructor's consent.

**399—Theatre Capstone (2).** Theatre experiences and knowledge gained by students are connected through compilation of resume and portfolio. Student will meet with faculty jury to discuss his/her body of theatrical work. Required for senior theatre students. Prerequisite: instructor's consent.

**400—Problems (cr.arr.).** Individual study or project not leading to thesis or dissertation. Prerequisite: instructor's consent.

**401—Topics (cr.arr.).** Organized study of selected topics. Topic and credit may vary semester to semester. May be repeated with department consent. Prerequisite: instructor's consent.

**441—Introduction to Theatre Scholarship (3).** History, aims and techniques of academic writing in Theatre, including research, types of studies, primary materials, interpretation, writing techniques, and publication. Prerequisite: graduate standing.

**450—Research (cr.arr.).** Independent research of advanced nature leading to report. Prerequisite: instructor's consent.

**451—History of American Theatre I (3).** Examination of theatrical literature and production from the beginnings to World War One. Prerequisites: graduate standing and instructor's permission.

**452—History of the American Theatre II (3).** Examination of theatrical literature and production from World War One to the present. Prerequisite: graduate standing and instructor's permission.

**460—Seminar in Theatre History (3).** Selected problems in theatre history. May be repeated.

**462—Backgrounds of Modern Theatre Practice (3).** Survey of modern performance theory, aesthetics and practice. Emphasis on European theatre since 1875. May be repeated.

**466—Seminar in Dramatic Theory and Criticism (3).** Selected topics in dramatic theory and criticism. May be repeated.

**490—Research Theatre (cr.arr.).** Research leading to thesis or dissertation. Prerequisite: instructor's consent. Graded on a S/U basis only.

# Women Studies

**INTERDEPARTMENTAL PROGRAM IN THE COLLEGE OF ARTS AND SCIENCE**
**309 Switzler Hall (573) 882-2703**
**DIRECTOR** M. Garcia-Pinto
**ASSOCIATE PROFESSOR** T.O. Pearce
**ASSISTANT PROFESSOR** C. Holland

Students can receive a bachelor of arts degree in the College of Arts and Science with an interdisciplinary area of concentration that focuses on women studies. A minor is available. The curriculum includes women studies core courses as well as courses from several departments throughout the university. These courses are designed to evaluate present research and writing about women, question the stereotypes into which women have been cast and promote new research relating to women's concerns.

Advising of students and aid in designing an area of concentration or a minor in women studies are available from the Women Studies Office.

**AREA OF CONCENTRATION REQUIREMENTS** A student pursuing work in women studies is required to fulfill the basic skills and general education requirements for a bachelor of arts degree in the College of Arts and Science with 30 hours in women studies plus 15 hours in an appropriate minor field. (Students pursuing dual majors or dual degrees are exempted from the requirement of a minor field.) The 30 hours of women studies courses must include:

Wmn St 105: Feminism: The Basic Questions (3)
Wmn St 110: Women, Race and Class (3) or Wmn St 111: Social Perspective on Women, Race and Class
Wmn St 125: Social History of American Women
Wmn St 220: Feminist Theory I: Comparative Feminist Ideologies (3)
Wmn St 390: Senior Research Seminar (3)
At least 12 hours of additional courses numbered 200 or above.

**MINOR REQUIREMENTS** A student minoring in women studies is required to fulfill all requirements for their major degree program, and in addition, take 15 hours of women studies courses, including the following:

Wmn St 105: Feminism: The Basic Questions (3)
Wmn St 110: Women, Race and Class (3) or Wmn St 111: Social Perspectives on Women, Race and Class
Six additional hours must be in courses numbered 200 or above.

## COURSES

**1—Self Defense for Women (2).** The class is designed to teach women how to protect themselves through verbal and physical techniques. The skills taught include personal defense, the art of falling, being able to use the body as a weapon, and to devise and actively participate in a fitness program.

**60—The Female Experience: Body, Identity, and Culture (3).** (same as Sociology 60). Study of the experience of being female in American Culture. Course will focus on development of women's identities through such topics as: sexuality, reproduction, self-image, rape and health care.

**101—Topics (1-3).** Organized study of selected topics in women studies. Subjects and earnable credit may vary from semester to semester. Repeatable up to 6 hours. Prerequisite: sophomore standing.

**105—Feminism: The Basic Questions (3).** Introduction to the basic issues of Western feminist thought through a study of classical and contemporary sources. Course will consider images, conditions, activities and visions of women as they vary historically and socially.

**108—Introduction to Women's Literature (3).** (same as English 108). A study of traditional and non-traditional literature written by women from the perspective of feminist themes-love, power, work, family and other relations. Prerequisite: English 20.

**110—Women, Race, and Class (3).** (same as Black Studies 110). Study of women's experiences of family, work, sexuality, spirituality, violence, power, and love across race and class lines. Examine psychological, economic, and institutional connections between racism, sexism and classism. No credit for students who have taken 111.

**111—Social Perspectives on Women, Race and Class (3).** (same as Black Studies 111). Examines the impact of the construction of "female" on different categories of women. Reviews women's multilayered relationships. Stresses both the roles of creator and "victim" within social structures and value systems. No credit for students who have taken Women Studies 110.

**115—The Black Woman in America (3).** (same as Black Studies 115). Review and critique of a variety of materials about Black women from slavery to the social and philosophical impact of the Black woman's struggle on all women. Prerequisites: sophomore standing.

**122—Latin American Women's Culture (3).** (same as Spanish 122). Examines Latin American women across class, race, ethnicity and age, as producers of high and popular culture. We will be looking at how women have been seen in art, religion, popular and high culture and the ways in which women have seen themselves over time. No knowledge of Spanish required. May not be used in area of concentration in Spanish.

**125—Social History of U.S. Women (3).** (same as History 125). This course, the social history of US women, offers a general overview of US women, beginning with the colonial period up to the present day.

**201—Topics (1-3).** Organized study of selected topics in women studies. Subjects and earnable credit may vary from semester to semester. Repeatable up to 6 hours. Prerequisite: junior standing and/or105.

**208—Historical Survey of Women Writers (3).** (same as English 208). A study of writing by women from the Middle Ages to the present. Prerequisite: sophomore standing.

**220—Feminist Theory I: Comparative Feminist Ideologies (3).** Introduces central themes and problems in feminist thought, including conciousness-raising, motherhood, class, race, sexuality, nationalism, and transnational feminism. Prerequisite: 105 or junior standing.

**226—Latin American Women Writers (3).** (same as Spanish 226). An introduction to major literary and theoretical texts by twentieth century Latin American women in translation. Readings and class work in English. Prerequisite: sophomore standing.

**262—Sociology of Sex Roles (3).** (same as Sociology 262). Study of the ways in which femininities and masculinities are constructed in American society with particular attention to gender ideologies and the gendered nature of the social structure. Prerequisites: Sociology 1, 60 or equivalent.

**263—Women and Religions (3).** (same as Religious Studies 263). A rediscovery of the wealth of religious activity which women have created and enacted. Investigates women's roles and rituals in large-scale and local religions, including ancient Goddess religions, Hinduism, Buddhism, Judaism, Christianity, Islam, and African, South American, and native American groups. Prerequisite: sophomore standing.

**265—Liberal Thought and the Ownership of the Self (3).** (same as Political Science 265). Introduces students to foundational premises of liberal political thought through examination of the dispute between Locke and Filmer. Analyzes subsequent rethinking of that debate in works by Rousseau, Wollstonecraft, nineteenth-century American slaves, contemporary feminists, and communitarians. Prerequisite: sophomore standing.

**301—Topics (3).** Problems, topics, issues or review of research in any area of women studies and/or experimental development of new content areas. Repeatable up to 6 hours. Prerequisite: junior standing and/or 105.

**305—Women's Health (3).** (same as Nursing 305). A survey of international and domestic women's health issues; considers historical antecedents and specific effects of sociocultural variables and economic development on women's health in developing and developed nations.

**308—Major Women Writers (3).** (same as English 308) Study of a limited number (1-3) of significant writers to be read intensively using contemporary feminist critical theory. Prerequisites: two courses in British or American Literature. Repeatable with department's consent maximum of six hours for 308 and 308A.

**308A—Major African-American Women Writers (3).** (same as Black Studies and English 308A). Study of a limited number (1-3) of significant African-American writers to be read intensively using contemporary feminist critical theory. Prerequisite: two course in British or American literature. Repeatable with department's consent. Maximum of six hours for 308 and 308A.

**315—Themes in Literature by Women (3).** (same as English 346). Examines works by a number of women writers with particular attention to their sociolpolitical context. May repeat to six hours with department's consent. Prerequisite: junior standing.

**317—Women and the Media (2).** (same as Journalism 317). Focus on portrayal of women in American mass media. Other goals: historical perspective on women as journalists; exposure to issues usually not covered by mass media; research and writing skills. Prerequisite: instructor's consent.

**320—Feminist Theory II: Problems in Feminist Thought (3).** Examines recent problems and critical debates within feminist theory. Prerequisite: 220 or instructor's consent.

**332—European Women in the 20th Century (3).** (same as History 332). Examines the history of European women from World War I to the present. The course focuses on wars, migration, and the changing nature of family, work and community. Prerequisite: junior standing.

**348—Caribbean Women Writers (3).** Examines representative works by female authors from the Caribbean; primarily the English speaking islands. The depiction of Caribbean women will be a major consideration, as well as the unique qualities of Caribbean literature. Prerequisite: sophomore standing or instructor's consent.

**350—Special Readings (3).** Independent readings in women studies for highly qualified and motivated students. Topic selected in consultation with supervisory faculty member. Repeatable up to 6 hours. Prerequisite: junior standing and/or 105.

**362—Feminist Research and Criticism (3).** Examination of both feminist critique of traditional social research and recent, feminist-oriented research that attempts to answer these criticisms. Prerequisite: Sociology 180 or equivalent.

**363—Women, Art and Society 1700-1920 (3).** (same as Art History and Archeology 363). This course surveys and analyzes the careers and works of selected European and American women artists, and images of women (by female and male artists) in the 18th, 19th and first half of the 20th centuries. Prerequisites: junior standing, Art History 11 or equivalent, and instructor's consent.

**364—Women, Religion and Culture (3).** (same as Religious Studies 363). An advanced study of the role of women in religion, focusing on the methods of determining the significance of gender in religious life, sacred texts, symbols, rituals and/or beliefs. Traditions studied include Christianity, Islam, contemporary pagan communities, and Native American traditions. Prerequisite: Religious Studies/Women Studies 263 or instructor's consent.

**366—Feminist Political Thought (3).** (same as Political Science 366). This course examines the deployment of sexual difference in selected canonical works of the western political tradition, and it introduces students to important debates within contemporary feminist thought about the relationship between feminism and politics. Prerequisite: junior standing.

**370—The Politics of Reproduction and Fertility Control (3).** (same as Human Development and Family Studies 370). Examines the social construction of reproduction, including discourses and practices surrounding the body, pregnancy, birth, reproductive technology and diseases. Stresses the ethical issues and social policies affecting women. Prerequisite: junior standing or instructor's consent.

**373—Global Perspectives on Women and Development (3).** (same as Sociology and Black Studies 373). Examines the history and structure of "development" discourse and practices. Stresses the interconnections and impact on women globally. Reviews women's strategies in defining and instituting programs to improve quality of life in communities. Prerequisites: Sociology 110, Women Studies 111, Black Studies 111, or Women Studies 370.

**386—Women's Folklore and Feminist Theory (3).** (same as English 386). Examines folklore and artistic expression of women in relations to feminist theory and in multicultural contexts. Includes verbal genres (narrative/song) as well as material genres (quilting/arts). Prerequisite: junior standing or instructor's consent.

**390—Senior Research Seminar (3).** Seminar for senior students engaged in some area of research in women studies. Students will compare and evaluate their individual projects and/or collaborate on a common theme. Prerequisite: instructor's consent.

**401—Topics (3).** Problems, topics, issues or review of research in any area of women studies and/or experimental development of new content areas. Repeatable. Prerequisite: graduate standing or instructor's consent.

**Abbott, Carmen Casanova,** clinical instructor, hp/physical therapy; MA, University of Missouri-Columbia
**Abell, Sandra K,** professor, early childhood and elementary education; PhD, University of Iowa
**Aberbach, Ian M,** associate professor, mathematics; PhD, University of Michigan Ann Arbor
**Abrams, Douglas E,** associate professor, law; JD, Columbia University In The City of New York
**Acuff, Michael,** assistant professor clinical department, physical medicine & rehabilitation; MD, University of Missouri
**Adams, Gary Mitchell,** research assistant professor, agriculture economics; PhD, University of Missouri-Columbia
**Adams, Guy B,** professor, graduate school of public affairs; DPA, George Washington University
**Adams, John E,** associate professor, chemistry; PhD, University of California-Berkeley
**Adelstein, Edward H,** associate professor, pathology and anatomical sciences; MD, University of Missouri-Columbia
**Aggarwal, Kul B,** assistant professor clinical department, internal medicine; MD, Medical College-Amritsar India
**Ahlbrandt, Calvin Dale,** professor, mathematics; PhD, University of Oklahoma Norman Campus
**Akers, Lex A,** professor, electrical engineering; PhD, Texas Tech University
**Al Nakkash, Layla,** research assistant professor, dalton cardiovascular research center; PhD, University of Newcastle, Uk
**Alexander, Stephen,** professor, biological science; PhD, Brandeis University
**Ali, Mehrunissa,** assistant professor clinical department, psychiatry/neurology; MD
**Allee, Gary L,** professor, animal science; PhD, University of Illinois Urbana Campus
**Allen, Bryce L,** associate professor, information science & learning technologies; PhD, University of Western Ontario
**Allen, Danita J,** associate professor professional practice, editorial; MA, University of Missouri-Columbia
**Allen, Gary Keith,** assistant professor, veterinary pathobiology; DVM, Mississippi State University
**Allen, Rosemary K,** extension instructor, extension education; MED, University of Missouri-Columbia
**Allen, William Corwin,** professor, orthopaedic surgery; MD, University of Chicago
**Alshawa, Imad,** assistant professor clinical department, internal medicine; DMD, Damascus University
**Altemeier, William A,** associate dean, child health; MD, Vanderbilt University
**Amann, John F,** associate professor, veterinary medicine & surgery; DVM, Cornell University-Nys Statutory Colleges
**Amerman, James D,** professor, hp/communication science and disorders; PhD, University of Illinois Urbana Campus
**Anand, Satish C,** professor emeritus, agronomy; PhD, University of Wisconsin-Madison
**Anderson, Carol E,** assistant professor, history; PhD, Ohio State University Main Campus
**Anderson, Clay M,** assistant professor clinical department, internal medicine; MD, Stanford University
**Anderson, Stephen H,** professor, soil and atmospheric sciences; PhD, North Carolina State University At Raleigh
**Andrews, Richard,** dean, educational leadership & policy analysis; PhD, Purdue University
**Anglen, Jeffrey,** associate professor, orthopaedic surgery; MD, Johns Hopkins University
**Antoniou, Eric,** assistant professor, animal science; PhD, University of Limoges
**Antonovic, Sandra,** assistant professor clinical department, child health; MD, University of Southern California-Los Angeles
**Arbaugh, E Frances,** assistant professor, middle and secondary education; PhD, Indiana University
**Arelli, Prakash R,** research professor, agronomy; PhD, University of Georgia
**Armer, Jane M,** associate professor, school of nursing; PhD, University of Rochester
**Arndt, Jamie L,** assistant professor, psychological sciences; PhD, University of Arizona
**Arunachalam, Vairam,** associate professor, accountancy; PhD, University of Illinois Urbana Campus
**Asfaw, Amha,** research instructor, agronomy; MS
**Ashbaugh, Mark S,** professor, mathematics; PhD, Princeton University
**Ashford, Alicestine D,** clinical assistant professor, health management & informatics; EDD
**Asmar, Nakhle,** professor, mathematics; PhD, University of Washington
**Athanassiou, Alexandra,** adjunct instructor, mathematics; MA, University of Missouri-Columbia
**Atkinson, Warren Patrick,** professor, theatre; MFA, Illinois State University
**Atwater, Patricia,** assistant instructor, editorial; MA, University of London, England
**Atwood, Jerry L,** curators professor, chemistry; PhD, University of Illinois Urbana Campus
**Atwood, Tammy Jean,** assistant professor, accountancy; PhD, University of Illinois Urbana Campus
**Aucar, John A,** assistant professor, surgery; MD, University of Kansas Medical Center
**Austin, Susan L,** clinical instructor, school of nursing; MS, University of Missouri-Columbia
**Avery, Willard B,** associate professor clinical, child health; MD, Saint Louis University Main Campus
**Backus, Elaine A,** associate professor, entomology; PhD, University of California-Davis
**Bailey, Wayne C,** associate professor, entomology; PhD, Iowa State University
**Bajpai, Rakesh K,** professor, chemical engineering; PhD, Indian Institute of Technology, Kharagpur India
**Baker, David E,** associate professor, biological engineering; MS, Illinois State University
**Baker, Elizabeth A,** assistant professor, early childhood and elementary education; EDD, Vanderbilt University
**Baker, Janet,** clinical instructor, school of nursing; MS(N), University of Missouri-Columbia
**Bal, (Sonny) Bhajanjit,** assistant professor, orthopaedic surgery; MD, Cornell University Medical Center
**Balas, E Andrew,** professor, health management & informatics; PhD, University of Utah
**Baldwin, Diana J,** instructor, hp/occupational therapy; MA, University of Missouri-Kansas City
**Ballenger, Erma,** assistant professor, social work; PhD, University of Nebraska-Lincoln
**Banaszynski, Jacqueline M,** professor, editorial; BS, Marquette University
**Banerji, Shanka K,** professor emeritus, civil/environmental engineering; PhD, University of Illinois Urbana Campus
**Bangs, John,** adjunct instructor, finance; BSBA, University of Missouri-Columbia
**Bank, Barbara Julianne,** professor, sociology; PhD, University of Iowa
**Banks Wallace, Joanne,** assistant professor, school of nursing; PhD, University of Washington
**Banks, William D,** assistant professor, mathematics; PhD, Stanford University
**Barabtarlo, Gene,** professor, german & russian studies; PhD, University of Illinois Urbana Campus
**Barham, Mary Elizabeth,** assistant professor, rural sociology; PhD, Cornell University-Nys Statutory Colleges
**Barker, Michael Gary,** associate professor, civil/environmental engineering; PhD, University of Minnesota Twin Cities
**Barnett, Thomas William,** visiting assistant professor, music; DMA, University of Georgia
**Barone, Constance M,** associate professor, surgery; MD, Mount Sinai School of Medicine
**Barrett, Bruce Allen,** associate professor, entomology; PhD, Washington State University
**Barrier, Norman Gerald,** professor, history; PhD, Duke University
**Barrios, Jose M,** assistant professor clinical department, child health; MD
**Barrow, Lloyd H,** professor, middle and secondary education; PhD, University of Iowa
**Baskin, Tobias I,** associate professor, biological science; PhD, Stanford University
**Battle, Muriel W,** instructor, honors college; PhD, University of Missouri-Columbia
**Bauer, John H,** professor, internal medicine; MD, Jefferson Regional Medical Center-Sch of Rad Techn
**Bauer, Robert L,** associate professor, geological sciences; PhD, University of Minnesota Twin Cities
**Bausler, Cheryl,** assistant professor clinical department, school of nursing; PhD, University of Missouri-Columbia
**Beale, Geoffrey D,** assistant professor clinical department, radiology; MD, University of Michigan Ann Arbor
**Beamer, Lesa J,** assistant professor, biochemistry; PhD, Johns Hopkins University
**Beck, David A,** assistant professor clinical department, psychiatry/neurology; MD, University of Iowa
**Beck, Mary M,** clinical associate professor, law; JD, University of Missouri-Columbia
**Beck, Niels Christian,** professor, psychiatry/neurology; PhD, Saint Louis University Main Campus
**Beckman, Patricia,** assistant professor, religious studies; PhD, University of Chicago
**Beckmann, Joseph A,** assistant professor clinical department, family & community medicine; MD, University of Missouri-Columbia
**Beem, John Kelly,** professor, mathematics; PhD, University of Southern California
**Beerntsen, Brenda T,** assistant professor, veterinary pathobiology; PhD, University of Wisconsin-Madison
**Beitman, Bernard D,** professor, psychiatry/neurology; MD, Yale University
**Belden, Jeffrey L,** clinical associate professor, family & community medicine; MD, Southern Illinois University-Carbondale
**Bell Dolan, Debora,** associate professor, psychological sciences; PhD, West Virginia University
**Bell, Jacquelyn Sue,** assistant professor professional practice, editorial; MS, Ohio University Central office
**Belyea, Ronald Leslie,** professor, animal science; PhD, Cornell University-Nys Statutory Colleges
**Bender, Robert Morton,** professor, english; PhD, University of Michigan Ann Arbor
**Benfer, Robert A,** professor, anthropology; PhD, University of Texas At Austin
**Bennett, James E,** adjunct instructor, editorial; BJ, University of Missouri-Columbia
**Bennett, Karen L,** associate professor,

molecular microbiology and immunology; PhD, State University of New York-Special F Unit

**Bennett, Linda,** assistant professor, early childhood and elementary education; EDD, University of Northern Colorado

**Benoit, Pamela,** professor, communication; PhD, Wayne State University

**Benoit, William,** professor, communication; PhD, Wayne State University

**Benson, Jerry Kenneth,** professor, sociology; PhD, University of Texas At Austin

**Benton, Mary Beth,** associate professor clinical, obstetrics & gynecology; MD, University of Missouri-Columbia

**Berg, Eric P,** assistant professor, animal science; PhD, Purdue University Main Campus

**Bergee, Martin,** associate professor, middle and secondary education; PhD, University of Kansas

**Berkenbosch, John W,** assistant professor clinical department, child health; MD, University of Calgary

**Bermudez, Alex J,** associate professor, veterinary pathobiology; DVM, University of Illinois Urbana Campus

**Berneche, Jerry D,** professor, art; MFA, Ohio University Main Campus

**Besch Williford, Cynthia Le,** associate professor, veterinary pathobiology; PhD, Louisiana St Univ & Agrl & Mech & Hebert Laws Ctr

**Bethea, Dorine,** adjunct instructor, editorial; BS, Ramapo College of New Jersey

**Bettencourt, B Ann,** associate professor, psychological sciences; PhD, University of Southern California

**Bettinghaus, Bruce A,** assistant professor, accountancy; PhD, Pennsylvania State University Central Office

**Bhullar, Hardeep,** associate professor, parks recreation & tourism; PhD, University of Georgia

**Bickel, John Thomas,** associate professor, pathology and anatomical sciences; MD, University of Missouri-Columbia

**Bien, Joseph Julius,** professor, philosophy; PhD, University of Paris

**Bienvenu, Richard Thomas,** professor, history; PhD, Harvard University

**Biers, William Richard,** professor, art history & classical archaeology; PhD, University of Pennsylvania

**Billings, Thomas E,** assistant professor, extension education; PhD, University of Missouri-Columbia

**Birchler, James A,** professor, biological science; PhD, Indiana University Bloomington

**Birkenholz, Robert J,** professor, agricultural education; PhD, Iowa State University

**Bishop Jr, Charles G,** clinical instructor, anesthesiology; MD

**Bishop, Sheilah Watson,** associate professor, graduate school of public affairs; PhD, University of Oklahoma Norman Campus

**Bjornson, Bruce N,** associate professor, agriculture economics; PhD, University of California-Davis

**Black, Cheryl D,** assistant professor, theatre; PhD, University of Maryland College Park Campus

**Black, Leslie A S,** assistant professor, music; PhD, Yale University

**Black, Lillian Wilkins,** professor, broadcast news; PhD, University of Oregon

**Blaine, Edward H,** director, physiology; PhD, University of Missouri-Columbia

**Blake Jr, Robert L,** professor emeritus, family & community medicine; MD, Washington University

**Blakely, Mary Kay,** associate professor, editorial; MA, Northern Illinois University

**Bland, Harold E,** assistant professor clinical department, child health; MD, University of Nebraska

**Blase, Melvin G,** professor emeritus, agriculture economics; PhD, Iowa State University

**Blevins, Dale Glenn,** professor, agronomy; PhD, University of Kentucky

**Bloch, Peter H,** professor, marketing; PhD, University of Texas At Austin

**Bloss, Jeffrey D,** associate professor, obstetrics & gynecology; MD, Thomas Jefferson University

**Blow, Constance A,** clinical instructor, hp/physical therapy; MS, University of North Carolina Chapel Hill

**Bluedorn, Allen C,** professor, management; PhD, University of Iowa

**Blums, Peter,** research assistant professor, fisheries and wildlife sciences; PhD, Latvian University

**Boggs, Kathy,** director, counseling center, education & counseling psychology; PhD, University of Utah

**Boggs, Kelly I,** instructor, international programs; MS

**Bolch, Dorothy H,** professor, editorial; MA, University of North Carolina Chapel Hill

**Boles, Keith Edwin,** associate professor, health management & informatics; PhD, University of Arizona

**Bondeson, William Blaine,** distinguished teaching professor, philosophy; PhD, University of Chicago

**Boote, Evan J,** research assistant professor, radiology; PhD, University of Wisconsin-Madison

**Booth, Frank W,** professor, veterinary biomedical sciences; PhD, University of Iowa

**Borcherding, Sharon Young,** clinical instructor, hp/occupational therapy; MA, George Peabody College For Teachers

**Borchert, Angela C D,** visiting instructor, german & russian studies; MA, Princeton University

**Borduin, Charles M,** professor, psychological sciences; PhD, Memphis State University

**Boren, Suzanne Austin,** clinical instructor, health management & informatics; MS

**Borgelt, Steven,** associate professor, biological engineering; PhD, Texas A&M University

**Bostick, Jane E,** clinical instructor, school of nursing; PhD, University of Missouri-Columbia

**Bothwell, Marcella R,** assistant professor, surgery; MD, University of Missouri-Columbia

**Bowders Jr, John J,** associate professor, civil/environmental engineering; PhD, University of Texas At Austin

**Bowles, Douglas K,** assistant professor, veterinary biomedical sciences; PhD, University of Texas At Austin

**Bowman, Katherine Gail,** clinical instructor, school of nursing; MS, University of Missouri-Columbia

**Boyd, Michael L,** research assistant professor, entomology; PhD, University of Tennessee-Knoxville

**Braddock, Stephen,** assistant professor clinical department, child health; MD, University of Missouri

**Bradley, Linda K,** visiting instructor, early childhood and elementary education; MED, University of Missouri-Columbia

**Branson, Keith Richard,** clinical assistant professor, veterinary medicine & surgery; DVM, Kansas State University of Agriculture And App Sci

**Bredahl, Maury E,** research professor, agriculture economics; PhD, University of Minnesota Twin Cities

**Bree, Robert L,** professor, radiology; MD, University of Michigan Ann Arbor

**Brekhus, Wayne H,** assistant professor, sociology; PhD, Rutgers The State University Central office

**Brennen, Bonnie Sue,** associate professor, editorial; PhD, University of Iowa

**Brent Jr, Edward Everett,** professor, sociology; PhD, University of Minnesota Twin Cities

**Brent, Ruth S,** professor, environmental design; PhD, University of Minnesota Twin Cities

**Brewer, Joyce Elaine,** assistant professor professional practice, broadcast news; MA, University of Missouri-Columbia

**Brinkman, Barbara L,** clinical instructor, hp/communication science and disorders; MS, University of Colorado

**Brooks, Brian Shedd,** professor, editorial; MA, University of Missouri-Columbia

**Brooks, Charles,** associate professor, internal medicine; MD, University of Missouri-Columbia

**Brooks, Constance W,** clinical instructor, school of nursing; MS(N), University of Missouri-Columbia

**Brooks, Phillips R,** associate professor, broadcast news; MA, University of Missouri-Columbia

**Brouk, Susan Jane,** extension instructor, extension education; MS

**Brown, Charles R,** assistant professor, veterinary pathobiology; PhD, University of Chicago

**Brown, Douglas Scott,** research assistant professor, agriculture economics; PhD, University of Missouri-Columbia

**Brown, Gordon Dean,** professor, health management & informatics; PhD, University of Iowa

**Brown, Larry G,** resident instruction instructor, geography; MA, University of Missouri

**Brown, Marybeth,** associate professor, hp/physical therapy; PhD, University of Southern California

**Brown, Olen R,** research professor, dalton cardiovascular research center; PhD, University of Oklahoma Norman Campus

**Browning, Gerald W,** clinical assistant professor, hp/physical therapy; PhD, University of Missouri-Columbia

**Broz, Robert Ray,** extension assistant professor, biological engineering; MS, University of Missouri-Columbia

**Brueggenjohann, Jean M,** associate professor, art; MFA, Indiana University Bloomington

**Bruhn, Johann N,** research associate professor, plant microbiology & pathology; PhD, University of California-Berkeley

**Bryant, Alison L,** assistant professor, education & counseling psychology; PhD, University of Michigan Ann Arbor

**Budd, John M,** associate professor, information science & learning technologies; PhD, University of North Carolina Chapel Hill

**Budds, Michael J,** associate professor, music; PhD, University of Iowa

**Buening, Gerald Matthew,** department chairman, veterinary pathobiology; DVM, Purdue University Main Campus

**Bullion, John Lewis,** professor, history; PhD, University of Texas At Austin

**Bullock, J Bruce,** professor, agriculture economics; PhD, University of California-Berkeley

**Bullock, Linda F C,** assistant professor, school of nursing; PhD, University of Otago

**Burch, Richard J,** assistant professor clinical department, psychiatry/ neurology; MD

**Burd, Randall S,** assistant professor, surgery; MD, Columbia University In The City of New York

**Burger, Robert C,** assistant professor clinical department, psychiatry/ neurology; MD, University of The East Philippines

**Burggraaff, Winfield J,** professor, history; PhD, University of New Mexico Main Campus

**Burgoyne, Suzanne,** professor, theatre; PhD, University of Michigan Ann Arbor

**Burke, Judith L,** associate professor emeritus, social work; PhD, Bryn Mawr College

**Burns, Cathleen S,** adjunct assistant professor, management; PhD, New Mexico State University

**Burns, Jack O,** vice provost, physics; PhD, Indiana University Bloomington

**Burns, Richard W,** assistant professor clinical department, internal medicine; MD, University of Missouri-Columbia

**Burns, Thomas Wade,** professor emeritus, internal medicine; MD, University of Utah

**Burton, Gera C,** extension instructor, extension education; EDS, University of Missouri-Columbia

**Burton, Russell K,** clinical instructor, anesthesiology; MD, University of Missouri-Columbia

**Buyanovsky, Gregory A,** professor emeritus, soil and atmospheric sciences; PhD, Rostov State University (Ussr)

**Byington, Keith Harlan,** associate professor, pharmacology; PhD, University of South Dakota

**Bynum, Robert L,** assistant professor clinical department, family & community medicine; DO, Kirksville College of Osteopathic Medicine

**Cairns, Scott,** associate professor, english; PhD, University of Utah

**Calcutt, Michael J,** research assistant professor, molecular microbiology and immunology; PhD, University of Leicester (England)

**Caldwell, Charles W,** professor, pathology and anatomical sciences; MD, University of Missouri-

Columbia
**Callahan, Richard J,** visiting instructor, religious studies; MS, University of California-Santa Barbara
**Calvin, James Halvorsen,** associate professor, art; MFA, Bowling Green State University Main Campus
**Camargo, Martin Joseph,** professor, english; PhD, University of Illinois Urbana Campus
**Cameron, Brooke B,** professor, art; MA, University of Iowa
**Cameron, Glen T,** professor, advertising; PhD, University of Texas At Austin
**Campbell, Benedict J,** professor emeritus, biochemistry; PhD, Northwestern University
**Campbell, James Davis,** associate professor, family & community medicine; PhD, University of Missouri-Columbia
**Campbell, Jean,** research assistant professor, missouri institute of mental health; PhD
**Campbell, Rex R,** professor, rural sociology; PhD, University of Missouri-Columbia
**Cannata-Winge, Karolyn,** assistant professor professional practice, editorial; MS, University of Missouri-Columbia
**Cannella, Amy,** assistant professor clinical department, physical medicine & rehabilitation; MD, University of Nebraska At Omaha
**Cannon, John F,** associate professor, molecular microbiology and immunology; PhD, University of Wisconsin-Madison
**Caplow, Julie A,** associate professor, educational leadership & policy analysis; PhD, University of Iowa
**Card, Jaclyn A,** associate professor, parks recreation & tourism; PhD, University of Utah
**Carlson, Gail,** extension assistant professor, extension education; PhD
**Carlson, Marcia Sue,** assistant professor, animal science; PhD, Michigan State University
**Carmignani, Sharon,** assistant professor clinical department, internal medicine; MD, University of Missouri-Columbia
**Carr, Deb,** clinical associate, education & counseling psychology; PhD, University of Missouri-Columbia
**Carrel, James Elliott,** distinguished professor, biological science; PhD, Cornell University-Nys Statutory Colleges
**Carroll, Mark M,** assistant professor, history; PhD, The University of Houston
**Carson, Charles Andrew,** professor, veterinary pathobiology; PhD, University of Pennsylvania
**Carson, William Lloyd,** professor emeritus, mechanical & aerospace engineering; PhD, University of Iowa
**Carstens, Vicki M,** assistant professor, english; PhD, University of California-Los Angeles
**Carter, Guy,** associate professor clinical, child health; MD, Indiana University
**Carver, Mary Heather,** assistant professor, theatre; PhD, University of Texas At Austin
**Casady, William W,** extension assistant professor, biological engineering; PhD, University of Illinois
**Casazza, Peter,** professor, mathematics; PhD, University of Iowa
**Casey, Gregory,** associate professor, political science; PhD, Georgetown University
**Cassels, John W,** assistant professor clinical department, obstetrics & gynecology; MD, University of Florida College of Medicine, Gainesville
**Cassidy, James T,** professor emeritus, child health; MD, University of Michigan Ann Arbor
**Casteel, Stan,** associate professor, veterinary pathobiology; DVM, University of Missouri-Columbia
**Catchings, Timothy Titus,** assistant professor clinical department, internal medicine; MD
**Cates, Michelle,** assistant professor clinical department, surgery; MD, University of Missouri
**Cavanagh, Joyce A,** assistant professor, consumer & family economics; PhD, University of Missouri-Columbia
**Cavanaugh, Joseph E,** associate professor, statistics; PhD, University of California-Davis
**Cavigioli, Rita C,** assistant professor, romance languages/literature; PhD, University of California-Los Angeles
**Cecil, Michelle A,** associate professor, law; JD, University of Illinois Urbana Campus
**Chambers Jr, Henry L,** associate professor, law; JD, University of Virginia Main Campus
**Champagne, Erin S,** clinical assistant professor, veterinary medicine & surgery; DVM, Louisiana State University At Baton Rouge
**Chan, Paul Chun Ho,** associate professor, chemical engineering; PhD, California Institute of Technology
**Chandrasekhar, Anand,** assistant professor, biological science; PhD, University of Iowa
**Chandrasekhar, H R,** professor, physics; PhD, Purdue University Main Campus
**Chandrasekhar, Meera,** professor, physics; PhD, Brown University
**Chang, Cheng Hsiung Alec,** associate professor, industrial/manufacturing systems engineering; PhD, Mississippi State University
**Chapman, David N,** assistant professor clinical department, surgery; DO, Kirksville College of Osteopathic Medicine
**Chapman, Linda Fleet,** associate professor, biological science; PhD, University of California-Los Angeles
**Chastain, Claud B,** professor, veterinary medicine & surgery; DVM, University of Missouri-Columbia
**Chatterjee, Arun K,** professor, plant microbiology & pathology; PhD, University of Guelph, Canada
**Chaudhury, Habib N,** visiting assistant professor, art; MS, Texas A&M University
**Cheek, Thomas R,** assistant professor clinical department, internal medicine; MD, University of Missouri-Columbia
**Chelini, Katherine,** clinical instructor, school of nursing; MN, University of Florida-Jacksonville
**Chellaboina, Vijay Sekhar,** assistant professor, mechanical & aerospace engineering; PhD, Georgia Institute of Technology Main Campus
**Chen, Chang Wen,** assistant professor, electrical engineering; PhD, University of Illinois Urbana Campus
**Chen, Chun Mei,** visiting instructor, german & russian studies; BA, National Normal University
**Chen, Jianqing,** research assistant professor, biochemistry; PhD,
**Chen, Shi Jie,** assistant professor, physics; PhD, University of California-San Diego
**Chen, Su Shing,** professor, computer engineering & computer science; PhD, University of Maryland College Park Campus
**Chen, Zhen,** associate professor, civil/environmental engineering; PhD, University of New Mexico Central office
**Chicone, Carmen Charles,** professor, mathematics; PhD, University of Wisconsin-Madison
**Childers, Martin K,** associate professor, physical medicine & rehabilitation; DO, College of Osteopathic Medicine of The Pacific
**Chin, David T,** research assistant professor, agriculture biochemistry; PhD, University of Utah-Salt Lake City
**Chippendale, George Michael,** professor, entomology; PhD, University of Wisconsin-Madison
**Cho, Dong Won,** associate professor, psychiatry/neurology; PhD, Washington University
**Cho, Uee Wan,** associate professor, mechanical & aerospace engineering; PhD, Brown University
**Chowdhary, Usha,** associate professor, textile and apparel management; PhD, Ohio State University Main Campus
**Christensen, Gordon,** professor, internal medicine; MD, Crichton College
**Christiansen, Tanya,** associate professor, mathematics; PhD, Massachusetts Institute of Technology
**Churchill, Robert,** professor, radiology; MD, Loyola University of Chicago
**Clark, David,** associate professor, internal medicine; MD, University of Colorado At Denver
**Clark, Frank I,** associate professor clinical, child health; MD, University of Colorado At Boulder
**Clarke, Andrew D,** associate professor, food science & nutrition; PhD, Colorado State University
**Clarke, Lane L,** associate professor, veterinary biomedical sciences; DVM, North Carolina State University At Raleigh
**Clarke, Robert Bede,** associate professor, art; MFA, University of Iowa
**Clart, Philip A,** assistant professor, religious studies; PhD, University of British Columbia-Vancouver
**Clevenger, Thomas Eugene,** associate professor, civil/environmental engineering; PhD, University of Missouri-Columbia
**Cockrell, Dan,** clinical associate, educational leadership & policy analysis; EDD, Oklahoma State University
**Cockrell, Karen S,** associate professor, educational leadership & policy analysis; EDD, Oklahoma State University Main Campus
**Cocroft, Reginald B,** assistant professor, biological science; PhD, Cornell University-Endowed Colleges
**Coe, Mary Kathryn,** assistant professor, anthropology; PhD, Arizona State University
**Coffman, Jewel H,** extension instructor, extension education; MS, University of Missouri-Columbia
**Cohn, Leah Ann,** assistant professor, veterinary medicine & surgery; DVM, North Carolina State University At Raleigh
**Colbert, Jan Louise,** associate professor, editorial; MA, University of Missouri-Columbia
**Cole, Judith Ann,** research assistant professor, pharmacology; PhD, University of Connecticut
**Cole, Shu Tian,** assistant professor, parks recreation & tourism; PhD, Texas A&M University
**Collins, Kent S,** assistant professor professional practice, broadcast news; BJ, University of Missouri-Columbia
**Collins, Robert Maurice,** professor, history; PhD, Johns Hopkins University
**Colwill, Jack M,** professor emeritus, family & community medicine; MD, University of Rochester
**Comas, James N,** assistant professor, english; PhD, University of Southern California
**Comfort, Kathleen A,** visiting instructor, romance languages/literature; PhD, University of Kansas Main Campus
**Concannon, Matthew J,** associate professor, surgery; MD, University of Missouri-Columbia
**Cone, Karen Camille,** associate professor, biological science; PhD, Duke University
**Conn, Vicki S,** professor, school of nursing; PhD, University of Missouri-Columbia
**Constantinescu, Gheorghe M,** professor, veterinary biomedical sciences; DVM, University of Bucharest
**Constantinescu, Ileana A,** clinical instructor, veterinary biomedical sciences; DVM, Cluj-Napoca, Romania
**Conway, Robert R,** associate professor clinical, physical medicine & rehabilitation; MD, University of Missouri-Columbia
**Cook, James L,** assistant professor, veterinary medicine & surgery; DVM, University of Missouri-Columbia
**Cook, Michael L,** professor, agriculture economics; PhD, University of Wisconsin-Madison
**Cook, Nada,** adjunct instructor, german & russian studies; PhD, University of California-Berkeley
**Cook, Paul,** associate professor, surgery; MD, University of Oklahoma Health Science Center
**Cook, Roger F,** professor, german & russian studies; PhD, University of California-Berkeley
**Cook, Tony D,** clinical instructor, family & community medicine; MS, University of North Carolina
**Cooke, Thomas D,** professor emeritus, english; PhD, University of Pittsburgh

Main Campus

**Cooney, Teresa M,** associate professor, human development and family studies; PhD, Pennsylvania State University Main Campus

**Cooper, Harris Martin,** professor, psychological sciences; PhD, University of Connecticut

**Cooper, M Lynne,** professor, psychological sciences; PhD, University of California-Santa Cruz

**Cooperstock, Michael Steven,** professor, child health; MD, University of Michigan Ann Arbor

**Cordones Cook, Juanamaria,** associate professor, romance languages/literature; PhD, University of Kansas Main Campus

**Correa, Aderbal C,** research associate professor, civil/environmental engineering; PhD, Stanford University

**Corwin, Barbara S,** extension assistant professor, plant microbiology & pathology; PhD

**Cott, Ronald K,** clinical assistant professor, veterinary medicine & surgery; DVM, University of Missouri-Columbia

**Cowan, Nelson,** professor, psychological sciences; PhD, University of Wisconsin-Madison

**Cowart, Ross Paul,** associate professor, veterinary medicine & surgery; DVM, University of Georgia

**Cowden, John W,** professor, ophthalmology; MD, University of Michigan Ann Arbor

**Cowell, Charles M,** associate professor, geography; PhD, University of Georgia

**Cowger, Charles D,** professor, social work; PhD, University of Illinois Urbana Campus

**Cox, Richard H,** professor, education & counseling psychology; PhD, University of Oregon

**Craft, Stephanie,** assistant professor, editorial; PhD, Stanford University

**Craven, Jo Annette,** assistant professor professional practice, editorial; MS, University of Missouri-Columbia

**Cravens, David D,** assistant professor clinical department, family & community medicine; MD

**Crespy, David A,** assistant professor, theatre; PhD, City University of New York

**Crist, William M,** dean, child health; MD, University of Missouri-Columbia

**Cropp Iv, Frederick William,** assistant professor, advertising; PhD, University of Missouri-Columbia

**Crowe, Thomas James,** associate professor, industrial/manufacturing systems engineering; PhD, Arizona State University

**Crown, Patricia Dahlman,** professor, art history & classical archaeology; PhD, University of California-Los Angeles

**Cumbie, Billy G,** professor emeritus, biological science; PhD, University of Texas At Austin

**Cunningham, Billie M,** adjunct assistant professor, accountancy; PhD, North Texas State University

**Cunningham, J Thomas,** assistant professor, physiology; PhD, University of Iowa

**Curley, James Patrick,** resident instruction instructor, extension education; BS, University of Missouri-Columbia

**Curran, Edward Michael,** research assistant professor, veterinary pathobiology; PhD, University of Missouri-Columbia

**Curry, Randy D,** assistant professor, electrical engineering; PhD, University of St Andrews

**Curtis, Jackie J,** professor, surgery; MD, University of Tennessee-Knoxville

**Cutkosky, Steven Dale,** professor, mathematics; PhD, Brandeis University

**Cutter, Bruce Emery,** professor, forestry; PhD, University of Missouri-Columbia

**Dailey, F Duane,** professor emeritus, extension education; MS, University of Missouri-Columbia

**Dailey, Larry,** visiting assistant professor, editorial; MS, Syracuse University Central office

**Daily, Melody A R,** clinical associate professor, law; JD, University of Missouri-Columbia

**Dale, Philip S,** professor, hp/communication science and disorders; PhD, University of Michigan Ann Arbor

**Dale, William E,** research assistant professor, dalton cardiovascular research center; PhD, University of Missouri-Columbia

**Daniels, Deborah,** adjunct assistant professor, law; JD, University of Missouri-Columbia

**Danis, Fran S,** assistant professor, social work; PhD, Case Western Reserve University

**Darcy, Patricia,** assistant professor, chemical engineering; PhD, University of Iowa

**Dauve, Jan L,** resident instruction associate professor, agriculture economics; PhD, Colorado State University

**Davenport, Judith,** professor, social work; PhD, University of Wyoming

**David, John Dewood,** associate professor, biological science; PhD, Vanderbilt University

**David, Larry G,** professor emeritus, industrial/manufacturing systems engineering; PhD, Purdue University Main Campus

**Davidson, Kendrick C,** associate professor clinical, radiology; MD, University of Kansas

**Davidson, Sandra Ann,** associate professor, editorial; PhD, University of Connecticut

**Davis, Charles Nelson,** assistant professor, editorial; PhD, University of Florida

**Davis, Curt H,** associate professor, electrical engineering; PhD, University of Kansas Main Campus

**Davis, David,** professor emeritus, psychiatry/neurology; MD, University of Glasgow

**Davis, Doris Caroline,** clinical instructor, school of nursing; MS

**Davis, Georgia L,** assistant professor, agronomy; PhD, University of Wisconsin-Madison

**Davis, James R,** research assistant professor, rural sociology; PhD, Universityof California-Berkeley

**Davis, Joel Glenn,** extension assistant professor, biological engineering; PhD, Iowa State University

**Davis, John C,** adjunct instructor, environmental design; B ARCH, Kansas State University of Agriculture And App Sci

**Davis, Peter N,** professor, law; SJD, University of Wisconsin-Madison

**Davis, William Eugene,** professor, surgery; MD, University of Missouri-Columbia

**Day, Linda S.,** assistant professor, communication science and disorders; PhD, University of Missouri-Columbia

**Deal, Jon,** clinical associate professor, communication science and disorders; PhD, University of Southern Mississippi-Hattiesburg

**Dean, Kenneth D,** associate dean, law; JD, University of Missouri-Columbia

**Deaton, Brady James,** provost, agriculture economics; PhD, University of Wisconsin-Madison

**Defacio, Brian,** professor, physics; PhD, Texas A&M University

**Degraaff, Robert A,** clinical instructor, health management & informatics; MS, University of Pennsylvania

**Del Campo, Louis,** clinical instructor, anesthesiology; MD

**Delzell Jr, John E,** assistant professor clinical department, family & community medicine; MD, University of Missouri-Columbia

**Demmy, Todd L,** associate professor, surgery; MD, Thomas Jefferson University

**Deutscher, Susan L,** associate professor, biochemistry; PhD, Duke University

**Devaney, Michael Joseph,** professor, electrical engineering; PhD, University of Missouri-Columbia

**Devine, James Richard,** professor, law; JD, Seton Hall University

**Devlin, Albert,** professor, english; PhD, University of Kansas Main Campus

**Dhalla, Arvinder,** research assistant professor, veterinary medical sciences; PhD, University of Manitoba - Canada

**Diamond, Michael A,** professor, graduate school of public affairs; PhD, University of Maryland College Park Campus

**Diaz Arias, Alberto,** associate professor, pathology and anatomical sciences; MD, University of Missouri-Columbia

**Dickerson, Kitty G,** professor, textile and apparel management; PhD, Saint Louis University Main Campus

**Dillard, Betty L,** associate professor, textile and apparel management; PhD, University of Missouri-Columbia

**Dillner, Eric,** assistant professor, music; MM, Florida State University

**Dix, Jay Dee,** associate professor, pathology and anatomical sciences; MD, University of Missouri-Columbia

**Dixon, Joseph L,** research associate professor, dalton cardiovascular research center; PhD, University of Wisconsin-Madison

**Dobey, Tarilyn,** clinical instructor, hp/cardiopulmonary/diagnostic sciences; MED, University of Missouri-Columbia

**Dodam, John R,** assistant professor, veterinary medicine & surgery; DVM, North Carolina State University At Raleigh

**Dohrmann, Mary L,** clinical associate professor, internal medicine; MD, University of Missouri-Columbia

**Doisy, Kathleen M,** clinical assistant professor, child health; MD, University of Texas San Antonio

**Dolbashian, Edward,** associate professor, music; MMA, Yale University

**Doleys, Thomas J,** visiting instructor, political science; PhD, Vanderbilt University

**Dolezal, Darry L,** assistant professor, music; MM, Johns Hopkins University

**Dolliver, Robert Henry,** professor emeritus, psychological sciences; PhD, Ohio State University Main Campus

**Donald, Patricia A,** research assistant professor, plant microbiology & pathology; PhD, North Dakota State University

**Donaldson, Joe,** associate professor, educational leadership & policy analysis; PhD, University of Wisconsin-Madison

**Dorst, Stanley K,** associate professor clinical, family & community medicine; MD, Johns Hopkins University

**Doskocil, Eric J,** assistant professor, chemical engineering; PhD, University of Virginia

**Dostoglou, Stamatis,** associate professor, mathematics; PhD, University of Warwick

**Dougherty, Debbie S,** assistant professor, communication; PhD, University of Nebraska Central Admin System office

**Dougherty, Thomas Warren,** professor, management; PhD, University of Houston-University Park

**Dow, Jay K,** associate professor, political science; PhD, University of Texas At Austin

**Dowdy, Richard P,** associate professor, nutritional sciences; PhD, North Carolina State University At Raleigh

**Downey, Barbara S,** adjunct assistant professor, management; PhD, University of Missouri-Columbia

**Downs, Craig,** assistant professor clinical department, surgery; DO, Michigan State University

**Downs, H Willard,** professor, biological engineering; PhD, Oklahoma State University Main Campus

**Doyle, Catherine E,** clinical instructor, health professions; MS, University of Missouri-Columbia

**Dragich, Martha J,** director, law; JD, University of Minnesota Central office

**Drobnis, Erma Z,** clinical assistant professor, obstetrics & gynecology; PhD, University of California-Davis

**Dubois, David L,** associate professor, psychological sciences; PhD, University of Illinois Urbana Campus

**Duffield, Roger Carlton,** professor emeritus, mechanical & aerospace engineering; PhD, University of Kansas Main Campus

**Dunkerley, Gary B,** associate professor, pathology and anatomical sciences; PhD, University of Texas Medical Branch At Galveston

**Dunn, Michael,** director, fm station, broadcast news; PhD, University of Mississippi

**Dunn, Elizabeth G,** research assistant professor, agriculture economics; PhD, University of Wisconsin Centers

**Dunn, John H,** professor, horticulture; PhD, Rutgers University New Brunswick

**Durham, James B,** associate professor clinical, pathology and anatomical

sciences; MD
**Durham, Weldon Bruce,** professor, theatre; PhD, University of Iowa
**Dwyer, John P,** associate professor, forestry; PhD, University of Missouri-Columbia
**Dyer, James E,** assistant professor, agricultural education; PhD, University of Illinois Urbana Campus
**Early, Bridget P,** clinical instructor, family & community medicine; MD, University of North Carolina
**Early, Dayna S,** assistant professor clinical department, internal medicine; MD, University of Missouri-Columbia
**Easton, Stephen D,** associate professor, law; JD, Stanford University
**Ebert, Ronald,** professor emeritus, management; PhD, Indiana University Bloomington
**Edes, Thomas E,** associate professor, internal medicine; MD, University of Illinois Urbana Campus
**Edidin, Dan S,** associate professor, mathematics; PhD, Massachusetts Institute of Technology
**Eerkens, Jozef Willem,** research associate professor, nuclear engineering; PhD, University of California-Berkeley
**Eggener, Keith L,** assistant professor, art history & classical archaeology; PhD, Stanford University
**Eggers Jr, George W N,** professor emeritus, anesthesiology; MD, University of Texas Medical Branch At Galveston
**Ehlert, Mark,** research associate professor, early childhood and elementary education; PhD, University of Missouri-Columbia
**Eide, David J,** associate professor, nutritional sciences; PhD, University of Wisconsin-Madison
**El Gizawy, Ahmed S,** professor, mechanical & aerospace engineering; PhD, University of Waterloo
**El Zimmili, Zuhair,** clinical instructor, radiology; EDS, University of Missouri-Columbia
**Emerich, David William,** professor, agriculture biochemistry; PhD, University of Wisconsin-Madison
**Endersby, James W,** associate professor, political science; PhD, University of Texas At Austin
**Engel, Thomas G,** assistant professor, electrical engineering; PhD, Texas Tech University
**English, David M,** professor, law; JD, Northwestern University
**English, James T,** associate professor, plant microbiology & pathology; PhD, University of Florida
**Epstein, Joel,** research assistant professor, psychiatry/neurology; PhD, University of South Carolina
**Erb, Laurie Jane,** research assistant professor, agriculture biochemistry; PhD, University of Missouri-Columbia
**Erickson, Jeanne M,** research associate professor, plant microbiology & pathology; PhD, University of Michigan
**Esbeck, Carl H,** professor, law; JD, Cornell University-Nys Statutory Colleges
**Espinosa, Linda M,** associate professor, early childhood and elementary education; PhD, University of Chicago
**Esser, Linda R,** assistant professor, information science & learning technologies; EDD, University of Kentucky
**Estes, Don Mark,** associate professor, veterinary pathobiology; PhD, Texas A&M University
**Ethington, Raymond L,** professor emeritus, geological sciences; PhD, University of Iowa
**Evans, Carol J,** research assistant professor, psychiatry/neurology; PhD, University of Missouri-Kansas City
**Evans, Kenneth R,** professor, marketing; PhD, University of Colorado At Boulder
**Evans, Linda Kay,** clinical instructor, school of nursing; MS(N), University of Missouri-Columbia
**Everbach, Tracy,** ta/ra, editorial; MA, University of Texas At Austin
**Everett, Elwood D,** professor, internal medicine; MD, University of Oklahoma Health Science Center
**Ewigman, Bernard G,** professor, family & community medicine; MD, University of Missouri-Columbia
**Faaborg, John Raynor,** professor, biological science; PhD, Princeton University
**Fales, William Harold,** professor, veterinary pathobiology; MS, University of Idaho
**Farmer, Janet E,** associate professor, physical medicine & rehabilitation; PhD, University of Missouri-Columbia
**Favazza, Armando R,** professor, psychiatry/neurology; MD, University of Virginia Main Campus
**Feng, Zaichun Frank,** associate professor, mechanical & aerospace engineering; PhD, University of Minnesota Central office
**Ferris, Madonna L,** clinical instructor, health management & informatics; MS
**Ferris, Stephen P,** professor, finance; PhD, University of Pittsburgh Main Campus
**Fields, Lee Ann,** adjunct instructor, environmental design; MS, Southern Illinois University-Edwardsville
**Fine, Mark A,** professor, human development and family studies; PhD, Ohio State University Main Campus
**Finfgeld, Deborah,** assistant professor, school of nursing; PhD, University of Texas At Austin
**Finke, Michael S.,** assistant professor, consumer & family economics; PhD, Ohio State University Main Campus
**Firman, Jeffre D,** professor, animal science; PhD, University of Maryland College Park Campus
**Fisch, William Bales,** professor, law; JD, University of Freiburg, Germany
**Fischer, David Arnold,** professor, law; JD, University of Missouri-Columbia
**Fishel, Fred,** extension assistant professor, agronomy; PhD
**Fisher, Dale,** visiting assistant professor, art; MFA, University of Missouri-Columbia
**Fisher, Robert B,** assistant professor clinical department, anesthesiology; DO, Kansas City College of Osteopathic Medicine
**Fitzgerald, Gail,** associate professor, information science & learning technologies; PhD, University of Iowa
**Fitzsimmons, Anne B,** assistant professor clinical department, family & community medicine; MD, University of Missouri-Columbia
**Flader, Susan L,** professor, history; PhD, Stanford University
**Flaker, Greg,** professor, internal medicine; MD, University of Missouri-Columbia
**Fleisher, David,** clinical associate professor, child health; MD, SUNY Buffalo-Buffalo
**Fleming, David Avery,** associate professor clinical, internal medicine; MD, University of Missouri-Columbia
**Flenner, Louise R,** adjunct instructor, social work; MSW, University of Missouri-Columbia
**Flinn, Mark V,** associate professor, anthropology; PhD, Northwestern University
**Florey, Anna T,** assistant professor, health management & informatics; PhD, University of Texas At Arlington
**Floyd, Randall C,** assistant professor clinical department, obstetrics & gynecology; MD, University of Kentucky
**Flynn, Margaret A,** professor emeritus, family & community medicine; PhD, University of Missouri-Columbia
**Foley, John Miles,** curators professor, english; PhD, University of Massachusetts Boston
**Folk, William,** professor, agriculture biochemistry; PhD, Stanford University
**Folzenlogen, Darcy,** assistant professor clinical department, internal medicine; MD, University of Cincinnati College of Medicine
**Forgacs, Gabor,** professor, physics; PhD, Eotros Lorand University
**Forte Jr, Leonard R,** professor, pharmacology; PhD, Vanderbilt University
**Fosdick, Scott B,** assistant professor, editorial; PhD, Northwestern University
**Fowler, Laurie Blevins,** assistant professor clinical department, surgery; MD, University of Missouri-Columbia
**Fox, Patricia D,** assistant professor, romance languages/literature; PhD, Stanford University
**Fox, Roy F,** associate professor, middle and secondary education; PhD, University of Missouri-Columbia
**Francis, Corinna Barbara,** assistant professor, political science; PhD, Columbia University In The City of New York
**Francis, Jean E,** instructor, international programs; MS
**Francis, Jere R,** professor, accountancy; PhD, University of New England
**Francis, Larry Paul,** instructor, international programs; MS
**Franklin, Craig,** associate professor, veterinary pathobiology; DVM, University of Missouri-Columbia
**Franz, Charles,** associate professor, management; PhD, University of Nebraska-Lincoln
**Franz, Lori,** associate provost, management; PhD, University of Nebraska-Lincoln
**Frappier, Brian Lee,** clinical associate professor, veterinary biomedical sciences; DVM, Ohio State University Main Campus
**Fraser Ii, Robert Frederick,** assistant professor, obstetrics & gynecology; MD, University of Missouri-Columbia
**Fraser, Anna B,** assistant professor clinical department, obstetrics & gynecology; MD, University of Missouri-Columbia
**Frasier, Lori,** assistant professor clinical department, child health; MD, University of Utah
**Fredrickson, Leigh H,** professor, fisheries and wildlife sciences; PhD, Iowa State University
**Freelin, Tammy Lee W,** clinical instructor, social work; MSW, University of Missouri-Columbia
**Freeman Jr, Thomas J,** professor emeritus, geological sciences; PhD, University of Texas At Austin
**Freeman, Ronald H,** professor, physiology; PhD, Indiana University Bloomington
**Freyermuth, Robert W,** associate professor, law; JD, Duke University
**Freyermuth, Sharyn K,** resident instruction instructor, agriculture biochemistry; PhD, Duke University-Durham
**Friesen, Steven J,** associate professor, religious studies; PhD, Harvard University
**Frisby, Craig L,** associate professor, education & counseling psychology; PhD, University of California-Berkeley
**Frisby, Cynthia M,** assistant professor, advertising; PhD, University of Florida
**Fritsche, Kevin L,** associate professor, animal science; PhD, University of Illinois Urbana Campus
**Fritz, Dana R,** clinical instructor, hp/communication science and disorders; PhD, University of Missouri-Columbia
**Frohberg, Nora R,** assistant professor clinical department, psychiatry/neurology; MD, University of North Dakota
**Fry, Patricia B,** professor, law; JD, Southwestern University School of Law
**Fulcher, Christopher,** research assistant professor, agriculture economics; PhD, University of Missouri-Columbia
**Fulhage, Charles Duane,** professor, biological engineering; PhD, University of Missouri-Columbia
**Fulweiler, Howard Wells,** professor emeritus, english; PhD, University of North Carolina Chapel Hill
**Furbee, Nonnie Louanna,** professor, anthropology; PhD, University of Chicago
**Gable, Sara E,** assistant professor, human development and family studies; PhD, Pennsylvania State University Main Campus
**Gader, Paul,** associate professor, computer engineering & computer science; PhD, University of Florida
**Gafke, Roger A,** professor emeritus, broadcast news; MA, University of Missouri-Columbia
**Gahl, John Michel,** professor, electrical engineering; PhD, Texas Tech University
**Gaiko, Sylvia S,** associate professor, food science & nutrition; PhD,

Oklahoma State University Main Campus

**Gainor, Barry J,** professor, orthopaedic surgery; MD, State University of New York-Special F Unit

**Galen, Candace,** professor, biological science; PhD, University of Texas At Austin

**Galen, Jeffrey A,** clinical instructor, hp/cardiopulmonary/diagnostic sciences; BS, University of Missouri-Columbia

**Galliher, John,** professor, sociology; PhD, Indiana University Bloomington

**Gallimore, Rangira Bea,** associate professor, romance languages/literature; PhD, University of Cincinnati Main Campus

**Ganjam, Venkataseshu,** professor, veterinary biomedical sciences; PhD, Oklahoma State University Main Campus

**Ganley, Brian C,** resident instruction instructor, agriculture biochemistry; BS, University of Missouri-Columbia

**Ganong, Lawrence H,** professor, school of nursing; PhD, University of Missouri-Columbia

**Ganong, Marilyn Coleman,** professor, human development and family studies; PhD, University of Missouri-Columbia

**Gantzer, Clark J,** associate professor, soil and atmospheric sciences; PhD, University of Minnesota Twin Cities

**Gao, Ting,** assistant professor, economics; PhD, University of Michigan

**Garcia Pinto, Magdalena,** associate professor, romance languages/literature; PhD, University of Texas At Austin

**Gardner, David Willmark,** associate professor, internal medicine; MD, University of Missouri-Columbia

**Garrad, Richard C,** research assistant professor, agriculture biochemistry; PhD, Miami University, Oxford

**Garrett, Elizabeth,** professor of clinical department, family & community medicine; MD, University of Missouri-Columbia

**Garrett, Harold Eugene,** professor, forestry; PhD, University of Missouri-Columbia

**Garritson Ii, Paul W,** associate professor, music; MM, Yale University

**Garton, Bryan L,** assistant professor, agricultural education; PhD, Ohio State University Main Campus

**Garverick, Henry Allen,** professor, animal science; PhD, Purdue University Main Campus

**Gassmann, Walter,** assistant professor, plant microbiology & pathology; PhD, University of California-San Diego

**Gates, Kent S,** associate professor, chemistry; PhD, Northwestern University

**Gay, John W,** associate professor clinical, obstetrics & gynecology; MD, University of Iowa

**Gayer, Debra A,** assistant professor clinical department, school of nursing; PhD, University of Missouri-Columbia

**Gayou, Douglas,** resident instruction assistant professor, biological science; PhD, University of Missouri-Columbia

**Geary, David C,** professor, psychological sciences; PhD, University of California-Riverside

**Geen, Russell Glenn,** professor emeritus, psychological sciences; PhD, University of Wisconsin-Madison

**Geibel, Steven Randolph,** associate professor, music; MM, University of Missouri-Columbia

**Geiss, Charles Gordon,** associate professor, economics; PhD, University of North Carolina Chapel Hill

**George, Milon Fred,** associate professor, forestry; PhD, University of Minnesota Twin Cities

**George, Tracey E,** associate professor, law; JD, Stanford University

**Gerhardt Jr, Howard Carl,** professor, biological science; PhD, University of Texas At Austin

**Germann, Paul J,** associate professor, middle and secondary education; EDD, University of Maine

**Gerrish, James Ramsay,** research assistant professor, agronomy; MS, University of Kentucky

**Gesztesy, Friedrich,** professor, mathematics; PhD, University of Graz

**Geyer, Elizabeth O,** laboratory instructor, human development and family studies; MA, University of Missouri-Columbia

**Ghosh, Tushar K,** associate professor, nuclear engineering; PhD, Oklahoma State University Main Campus

**Giangiacomo, Joseph,** professor, ophthalmology; MD, University of Cincinnati Main Campus

**Gibbs, Finley P,** associate professor, pathology and anatomical sciences; PhD, University of Oregon

**Gibler, Michelle M,** clinical instructor, physical medicine & rehabilitation; MS

**Gibson, Kyle,** clinical instructor, hp/physical therapy; MA, University of Missouri-Columbia

**Giesel, Stephen Frederick,** resident instruction instructor, provost; MS

**Gilk, Tobias,** adjunct instructor, environmental design; M ARCH, University of Kansas

**Gilles, Carol,** assistant professor, middle and secondary education; PhD, University of Missouri-Columbia

**Gilles, Jere Lee,** associate professor, rural sociology; PhD, Cornell University-Nys Statutory Colleges

**Gillis, Kevin D,** assistant professor, electrical engineering; PhD, Washington University

**Glaser, Rainer Ernst,** associate professor, chemistry; PhD, University of California-Berkeley

**Glinskii, Vladislav,** research assistant professor, biochemistry; PhD

**Gnatz, Steven M,** professor of clinical department, physical medicine & rehabilitation; MD, University of Illinois At Chicago

**Gold, Michael A,** research associate professor, forestry; PhD, Michigan State University

**Goldberg, Herbert S,** research fellow, molecular microbiology and immunology; PhD, Ohio State University Main Campus

**Goldfarb, Joseph Michael,** assistant professor, early childhood and elementary education; MS, Indiana University Bloomington

**Goldschmidt, Michael,** adjunct instructor, environmental design; B ARCH, Kansas State University of Agriculture And App Sci

**Goldstein, David Evan,** professor, child health; MD, University of Pittsburgh Main Campus

**Golomb, Miriam W,** associate professor, biological science; PhD, University of California-Berkeley

**Good, Glenn E,** associate professor, education & counseling psychology; PhD, Ohio State University Main Campus

**Goodman, Judith C,** associate professor, hp/communication science and disorders; PhD, University of Chicago

**Gopalakrishna, Srinath,** associate professor, marketing; PhD, Purdue University Main Campus

**Gopalaratnam, Vellore S,** professor, civil/environmental engineering; PhD, Northwestern University

**Gordon, Matthew J,** assistant professor, english; PhD, University of Michigan Ann Arbor

**Gorsegner, Vida,** clinical instructor, school of nursing; MS, University of North Dakota

**Gotham, Heather J,** research assistant professor, psychiatry/neurology; PhD, University of Missouri-Columbia

**Gowdy, Mary Ann,** instructor, horticulture; PhD, Oklahoma State University

**Grafakos, Loukas,** associate professor, mathematics; PhD, University of California-Los Angeles

**Graff, Gavin R,** assistant professor clinical department, child health; MD, Temple University

**Graham, Steve,** associate professor, educational leadership & policy analysis; PhD, University of Iowa

**Granberg, Donald Owen,** professor, sociology; PhD, Pennsylvania State University Main Campus

**Grandbois, Michel,** visiting assistant professor, physics; PhD, Universite De Quebec A Trois-Rivieres

**Grando, Victoria T,** assistant professor, school of nursing; PhD, University of Kansas Medical Center

**Grant, Jacqueline H,** assistant professor clinical department, obstetrics & gynecology; MD, Morehouse School of Medicine

**Gray, Bruce C,** clinical instructor, anesthesiology; MD, University of Rome

**Green, James Robert,** associate professor clinical, obstetrics & gynecology; MD, University of Missouri-Columbia

**Greene, Walter B,** professor, orthopaedic surgery; MD, University of North Carolina Chapel Hill

**Greening, Daniel W,** associate professor, management; PhD, Pennsylvania State University Main Campus

**Greenlief, C Michael,** associate professor, chemistry; PhD, University of Texas At Austin

**Greenspan, Bennett S,** assistant professor clinical department, radiology; MD, University of Illinois At Chicago

**Greidinger, Eric,** assistant professor, internal medicine; MD, University of Michigan Ann Arbor

**Grider, Chris,** clinical instructor, school of nursing; MS(N), University of Missouri-Columbia

**Griffin, William Thomas,** professor emeritus, obstetrics & gynecology; MD, University of Missouri-Columbia

**Griffiths, Henry,** professor, radiology; MD, Guys Hospital Medical School

**Griffo, Mark D,** assistant professor clinical department, obstetrics & gynecology; MD, University of Maryland, Baltimore

**Grigsby, Mary,** assistant professor, rural sociology; PhD, University of Missouri-Columbia

**Grimes, Glenn A,** professor emeritus, agriculture economics; MS

**Groshong, Ted Donald,** associate professor, child health; MD, University of Missouri-Columbia

**Gross, Marjorie Ellen,** clinical associate professor, veterinary medicine & surgery; DVM, Oklahoma State University Main Campus

**Grove, Carol Jean,** visiting assistant professor, art history & classical archaeology; PhD, University of Missouri-Columbia

**Groves, James,** assistant professor, food science & nutrition; PhD, Kansas State University of Agriculture And App Sci

**Gruen, Ingolf U,** assistant professor, food science & nutrition; PhD, Virginia Polytechnic Institute And State Univ

**Guilfoyle, Thomas J,** professor, agriculture biochemistry; PhD, University of Illinois Urbana Campus

**Gulley, Pamela S,** assistant professor clinical department, psychiatry/neurology; MD, University of Missouri-Columbia

**Gunderson, Margaret S,** resident instruction instructor, extension education; PhD, University of Missouri-Columbia

**Gunnink, Brett W,** associate professor, civil/environmental engineering; PhD, Iowa State University

**Guntaka, Ramareddy V,** professor, molecular microbiology and immunology; PhD, Kansas State University of Agriculture And App Sci

**Gunter, Mary,** clinical instructor, hp/physical therapy; BHS, University of Missouri-Columbia

**Gupta, Bina,** professor, philosophy; PhD, Southern Illinois University-Carbondale

**Gupta, Nilakshi,** assistant professor clinical department, anesthesiology; MD, Hahnemann University

**Guthrie, Christopher P,** associate professor, law; JD, Stanford University

**Gutierrez, Maria Del,** research assistant professor, education & counseling psychology; PhD, University of California - Santa Barbara

**Guyette, Richard,** research associate professor, forestry; PhD, University of Missouri-Columbia

**Gysbers, Norman C,** professor, education & counseling psychology; PhD, University of Michigan Ann Arbor

**Hackley, Steven A,** associate professor, psychological sciences; PhD, University of Wisconsin-Madison

**Hagen, Gretchen,** research associate professor, agriculture biochemistry; PhD, University of Georgia

**Hager, Henry B,** assistant professor emeritus, advertising; BA, Yale University

**Hagglund, Kristofer,** associate professor, physical medicine & rehabilitation; PhD, University of Alabama At Birmingham

**Hahn Cover, Kristin,** assistant

professor clinical department, internal medicine; MD, University of Texas Southwestern Med Ctr Dallas

**Haibach, Helmut,** associate professor, pathology and anatomical sciences; MD, University of Dusseldorf, Germany

**Hainsworth, Dean P,** assistant professor, ophthalmology; MD, University of Kentucky

**Hakami, Nasrollah,** professor emeritus, child health; MD, University of Tehran, Iran

**Hale, Calvin C,** associate professor, veterinary biomedical sciences; PhD, University of Texas At Austin

**Halenda, Stephen P,** associate professor, pharmacology; PhD, Virginia College

**Hales, Joseph W,** assistant professor, health management & informatics; PhD, University of Utah

**Hall, Leslie W,** assistant professor clinical department, internal medicine; MD

**Hall, Melba R,** clinical instructor, family & community medicine; MSN, University of Wisconsin

**Hall, Peter M,** professor emeritus, sociology; PhD, University of Minnesota Twin Cities

**Hall, Robert Dickinson,** associate vice provost, entomology; PhD, Virginia Polytechnic Institute And State Univ

**Halstenson Bumby, Nancy A,** clinical assistant professor, psychiatry/ neurology; PhD, University of Nebraska-Lincoln

**Hamilton, Donna Pollock,** laboratory instructor, international programs; MS

**Hamilton, Marc T,** assistant professor, veterinary biomedical sciences; PhD, University of South Carolina - Columbia

**Hammer, Richard D,** professor, soil and atmospheric sciences; PhD, University of Tennessee-Knoxville

**Hammerli, Barbara A,** laboratory instructor, human development and family studies; MS, Kansas State University of Agriculture And App Sci

**Handlin, Larry,** clinical assistant professor, internal medicine; MD

**Hannink, Mark,** associate professor, biochemistry; PhD, University of California-San Diego

**Hanson, Brenda M,** clinical instructor, school of nursing; MS(N), University of Missouri-Columbia

**Harcharras, Asma,** visiting assistant professor, mathematics; PhD, Universite Paris 6

**Hardin, Christopher D,** associate professor, physiology; PhD, University of Cincinnati Main Campus

**Hardin, Laura E,** clinical assistant professor, veterinary pathobiology; DVM, Mississippi State University

**Hardy, Richard J,** associate professor, political science; PhD, University of Iowa

**Harl, Sharon E,** adjunct assistant professor, editorial; MA, University of Missouri-Columbia

**Harlan, Laurel C,** adjunct instructor, social work; MSW, University of Missouri-Columbia

**Harmata, Michael,** professor, chemistry; PhD, University of Illinois Urbana Campus

**Harrell, Ann M,** associate professor, music; MM, University of Texas At Austin

**Harris, Gardenia L,** assistant professor, social work; PhD, University of Illinois Central office

**Harry, Bruce E,** associate professor, psychiatry/neurology; MD, University of Missouri-Columbia

**Hartman, Joel Arden,** associate professor emeritus, rural sociology; PhD, Pennsylvania State University Main Campus

**Hartsfield, Paula,** adjunct instructor, human development and family studies; PhD, University of Missouri-Columbia

**Haslag, Joseph H,** associate professor, economics; PhD, Southern Methodist University

**Hasser, Eileen Mary,** associate professor, veterinary biomedical sciences; PhD, University of Oklahoma Norman Campus

**Hawley, Jana M,** assistant professor, textile and apparel management; PhD, University of Missouri-Columbia

**Hay, Meredith,** associate professor, veterinary biomedical sciences; PhD, University of Texas Health Science San Antonio

**Hayward, Robert S,** associate professor, fisheries and wildlife sciences; PhD, Ohio State University Main Campus

**Hazelbauer, Gerald L,** professor, biochemistry; PhD, University of Wisconsin Centers

**Hdeib, Moses M,** clinical instructor, hp/cardiopulmonary/diagnostic sciences; MD, Carol Davila University of Medicine

**He, Hong S,** assistant professor, forestry; PhD, Chinese Academy of Sciences

**He, Zhuoqiong,** assistant professor, statistics; PhD, Purdue University Main Campus

**Heesch, Cheryl M,** associate professor, veterinary biomedical sciences; PhD, University of Texas Health Science San Antonio

**Heffernan, William D,** professor emeritus, rural sociology; PhD, University of Wisconsin-Madison

**Heiman, Suzette T,** associate professor professional practice, advertising; MA, Truman State University

**Heine, Anne Gray,** clinical instructor, school of nursing; MS(N), University of Missouri-Columbia

**Heinsz, Timothy J,** dean, law; JD, Cornell University-Nys Statutory Colleges

**Heitshusen, Valerie D,** assistant professor, political science; PhD, University of Stanford

**Helfer, Adam D,** associate professor, mathematics; PhD, Oxford University, England

**Hemke, Frederic J B,** assistant professor, music; MM, Northwestern University

**Hemme, Cheryl A,** assistant professor clinical department, psychiatry/ neurology; MD, University of Missouri-Kansas City

**Hendrickson, Mary,** extension assistant professor, rural sociology; PhD, University of Missouri-Columbia

**Henggeler, Joseph Charles,** extension associate professor, biological engineering; MS, Texas A&M University

**Henning, William Harold,** professor, law; LL.M., University of Illinois Urbana Campus

**Henry, Carolyn J,** assistant professor, veterinary medicine & surgery; DVM, Washington State University

**Henson, Susan K,** instructor, textile and apparel management; MS, Virginia Polytechnic Institute And State University

**Henzl, Michael T,** associate professor, biochemistry; PhD, University of Wisconsin-Madison

**Heppner, Mary Jean,** associate professor, education & counseling psychology; PhD, University of Missouri-Columbia

**Heppner, Puncky Paul,** professor, education & counseling psychology; PhD, University of Nebraska-Lincoln

**Heringman, Noah I,** assistant professor, english; PhD, Harvard University

**Hermsen, Joan M,** assistant professor, sociology; PhD, University of Maryland College Park Campus

**Herring, William O,** assistant professor, animal science; PhD, University of Georgia

**Herting Jr, Robert L,** clinical instructor, health management & informatics; MD, University of Illinois At Chicago

**Hess, Darla Bakersmith,** associate professor, internal medicine; MD, Tulane University of Louisiana

**Hess, Jonathan A,** assistant professor, communication; PhD, University of Minnesota Central office

**Hess, Leonard Wayne,** professor, obstetrics & gynecology; MD, Virginia Commonwealth University

**Hessler, Richard M,** professor, sociology; PhD, University of Pittsburgh Main Campus

**Hetrick, Jennifer E,** clinical instructor, family & community medicine; MD

**Hewitt, J Joseph,** assistant professor, political science; PhD, University of Maryland College Park Campus

**Heymann, Hildegarde,** professor, food science & nutrition; PhD, University of California-Davis

**Hicks, Lanis Lucille,** associate professor, health management & informatics; PhD, University of Missouri-Columbia

**Hightower, Randall D,** assistant professor, obstetrics & gynecology; MD, University of Arkansas At Little Rock

**Hile, Matthew G,** research associate professor, psychiatry/neurology; PhD, University of Kentucky

**Hillbrick, Julia R,** resident instruction assistant professor, music; DMA, University of Oklahoma

**Hillemann, Linda K,** clinical instructor, social work; MSW, University of Missouri-Columbia

**Hillman, Laura S,** professor, child health; MD, Yale University

**Hillman, Richard E,** professor emeritus, child health; MD, Yale University

**Himmelberg, Glen R,** professor, geological sciences; PhD, University of Minnesota Twin Cities

**Hinkebein, Joseph,** clinical assistant professor, physical medicine & rehabilitation; PhD, University of Missouri-Columbia

**Hinkel, Howard Hollis,** associate professor, english; PhD, Tulane University of Louisiana

**Hinkel, Lora,** clinical instructor, hp/ communication science and disorders; MA, University of Missouri-Columbia

**Hinnant, Charles Haskell,** professor emeritus, english; PhD, Columbia University In The City of New York

**Hinshaw Ii, S Lee Arthur,** adjunct assistant professor, law; JD, University of Missouri-Columbia

**Hinton, Pamela S,** assistant professor, nutritional sciences; PhD, University of Wisconsin-Madison

**Hipple, James D,** assistant professor, geography; PhD, University of Utah

**Hitzhusen, Gerald Lee,** associate professor, parks recreation & tourism; MS, University of Missouri-Columbia

**Ho, Dominic King Choi,** assistant professor, electrical engineering; PhD, Chinese University of Hong Kong

**Hoard, Adrienne Walker,** associate professor, art; EDD, University of Illinois Urbana Campus

**Hobbs, Daryl J,** professor emeritus, rural sociology; PhD, Iowa State University

**Hobbs, Joseph John,** professor, geography; PhD, University of Texas At Austin

**Hoberek, Andrew P,** assistant professor, english; PhD, University of Chicago

**Hocks, Richard A,** professor emeritus, english; PhD, University of North Carolina Chapel Hill

**Hodge, Robert H,** professor of clinical department, internal medicine; MD

**Hodge, Sandra S,** research assistant professor, forestry; PhD, Michigan State University

**Hodges, John Q,** assistant professor, social work; PhD, University of California-Berkeley

**Hoehne, John Albert,** extension assistant professor, biological engineering; MS, University of Missouri-Columbia

**Hoffman, Robert W,** professor, internal medicine; DO, Chicago College of Osteopathic Medicine

**Hoffman, Timothy,** research assistant professor, internal medicine; PhD

**Hofmann, Steven,** professor, mathematics; PhD, University of Minnesota

**Hogan, Rosemary Grace,** clinical instructor, hp/cardiopulmonary/ diagnostic sciences; MED, Central Missouri State University

**Hogg, John R,** clinical assistant professor, physical medicine & rehabilitation; PhD, Indiana University

**Holbert, Robert L,** assistant professor, communication; PhD, University of Wisconsin Centers

**Holland, Catherine A,** assistant professor, political science; PhD, New School For Social Research

**Holland, Lene J,** associate professor, physiology; PhD, University of California-San Francisco

**Holliday, Gregory A,** clinical assistant professor, education & counseling psychology; PhD, University of Missouri-Columbia

**Holt, Douglas L,** resident instruction

associate professor, food science & nutrition; PhD, University of Nebraska-Lincoln

**Holtsford, Timothy P,** associate professor, biological science; PhD, University of California-Riverside

**Hooley, Daniel M,** associate professor, classical studies; PhD, University of Minnesota

**Horisk, Claire S,** assistant professor, philosophy; PhD, University of North Carolina Chapel Hill

**Horner, William T,** visiting assistant professor, political science; PhD, University of Texas At Austin

**Horowitz, Gary M,** assistant professor, obstetrics & gynecology; MD, University of North Carolina Chapel Hill

**Horowitz, Steven H,** professor, psychiatry/neurology; MD, New York Medical College

**Horwitz, Ellen,** clinical assistant professor, child health; PhD, University of Missouri-Columbia

**Hosokawa, Michael Charles,** professor, family & community medicine; EDD, University of Oregon

**Hostetler, Douglas E,** clinical instructor, veterinary medicine & surgery; DVM, Ohio State University Columbus

**Houseman, Richard,** assistant professor, entomology; PhD, Texas A&M University

**Howe, John S,** professor, finance; PhD, Purdue University Main Campus

**Howenstine, Debra A,** assistant professor clinical department, family & community medicine; MD, University of Missouri-Columbia

**Hsieh, Fu Hung,** professor, biological engineering; PhD, University of Minnesota Twin Cities

**Huang, Hui Ming,** associate professor, pathology and anatomical sciences; PhD, University of California-Davis

**Huckaba, James Albert,** professor emeritus, mathematics; PhD, University of Iowa

**Hudson Weems, Clenora,** professor, english; PhD, University of Iowa

**Huelsbergen, Deborah L,** assistant professor, art; MFA, Iowa State University

**Hughes Jr, G Robert,** associate dean, human development and family studies; PhD, University of Texas At Austin

**Huneycutt, Lois L,** assistant professor, history; PhD, University of California-Santa Barbara

**Hunt, Douglas G,** associate professor, english; MA, Oxford University, England

**Huntze, Sharon Lee,** assistant professor, early childhood and elementary education; EDD, University of Missouri-Columbia

**Hunvald Jr, Edward H,** professor emeritus, law; JD, Harvard University

**Hurley, Thomas,** professor, physiology; PhD, Duke University

**Hurst, Robin D,** resident instruction assistant professor, biological science; PhD, University of Missouri-Columbia

**Husain, Syed Arshad,** professor, psychiatry/neurology; MD, University of Karachi - Pakistan

**Huxley, Virginia H,** professor, physiology; PhD, University of Virginia Main Campus

**Hwang, Tzyh Chang,** associate professor, physiology; PhD, Johns Hopkins University

**Ibrahim, Abdullahi A,** associate professor, history; PhD, Indiana University Bloomington

**Im, Jeong Hyok,** research assistant professor, molecular microbiology and immunology; PhD, University of North Carolina Chapel Hill

**Ingram, Ellis Andrew,** associate professor, pathology and anatomical sciences; MD, University of Michigan Ann Arbor

**Iosevich, Alex,** assistant professor, mathematics; PhD, University of California-Los Angeles

**Ispa, Jean Mona,** professor, human development and family studies; PhD, Cornell University-Endowed Colleges

**Israelsen, Craig L,** associate professor, consumer & family economics; PhD, Brigham Young University

**Israelsen, Tamara T,** adjunct instructor, consumer & family economics; MS, Utah State University

**Iverson, Jana M,** assistant professor, psychological sciences; PhD, University of Chicago

**Iverson, John R,** assistant professor, romance languages/literature; PhD, University of Chicago

**Jackson, Kristina M,** research assistant professor, psychological sciences; PhD, Arizona State University

**Jacobs, Lisa K,** assistant professor, surgery; MD, University of Missouri-Columbia

**Jacoby, William A,** assistant professor, chemical engineering; PhD, University of Colorado At Boulder

**Jago, Arthur G,** professor, management; PhD, Yale University

**James Kracke, Marilyn R,** associate professor, pharmacology; PhD, University of British Columbia, Canada

**James, Elizabeth Joan P,** professor, child health; MD, University of Missouri-Columbia

**James, Ronald C,** assistant professor clinical department, internal medicine; MD, University of Missouri-Columbia

**Jamtgoard, Keith,** research assistant professor, rural sociology; PhD, University of Missouri-Columbia

**Jang, Wooseung,** assistant professor, industrial/manufacturing systems engineering; PhD, University of California-Berkeley

**Janku, Anne M,** research assistant professor, social work; PhD, University of Missouri-Columbia

**Jeanetta, Steve,** state specialist - community development, rural sociology; M, University of Nebraska

**Jen, Philip Hung Sun,** professor, biological science; PhD, Washington University

**Jensen, Mark J,** assistant professor, economics; PhD, Washington University

**Jerry Ii, Robert H,** professor, law; JD, University of Michigan Ann Arbor

**Jesse, George William,** professor, animal science; PhD, University of Missouri-Columbia

**Jett, Lewis W,** assistant professor, horticulture; PhD, Virginia Polytechnic Institute And State Univ

**Jimenez, David F,** associate professor, surgery; MD, Temple University

**Johnson, Garry A,** assistant professor clinical department, anesthesiology; MD, University of California-Davis

**Johnson, Gary Steven,** associate professor, veterinary pathobiology; DVM, University of Minnesota Twin Cities

**Johnson, Gayle Christy,** associate professor, veterinary pathobiology; DVM, University of California-Davis

**Johnson, Joel O,** associate professor clinical, anesthesiology; MD, PhD, University of Iowa

**Johnson, Kandice K,** clinical professor, law; JD, University of Missouri-Columbia

**Johnson, Lenworth N,** professor, ophthalmology; MD, Albany Medical College

**Johnson, Paul C,** assistant professor, religious studies; PhD, University of Chicago

**Johnson, Philip J,** associate professor, veterinary medicine & surgery; MS, University of Bristol, England

**Johnson, Rebecca A,** associate professor, school of nursing; PhD, University of Iowa

**Johnson, Richard A,** associate professor, management; PhD, Texas A&M University

**Johnson, Robert N,** associate professor, philosophy; PhD, University of North Carolina Chapel Hill

**Johnson, Susan F,** clinical instructor, school of nursing; MS(N), University of Utah

**Johnson, Thomas G,** professor, agriculture economics; PhD, Oregon State University

**Johnson, William G,** assistant professor, agronomy; PhD, University of Arkansas-Fayetteville

**Johnston Jr, Joseph Andrew,** professor, education & counseling psychology; PhD, University of Michigan Ann Arbor

**Johnstone, George,** associate professor, physical medicine & rehabilitation; PhD, University of Georgia

**Jonassen, David H,** professor, information science & learning technologies; EDD, Temple University

**Jones, Allan William,** professor, physiology; PhD, University of Pennsylvania

**Jones, Bruce Anthony,** associate professor, educational leadership & policy analysis; PhD, Columbia University In The City of New York

**Jones, Elaine I,** visiting instructor, physiology; MD

**Jones, James W,** professor, surgery; MD, Tulane University of Louisiana

**Jones, John Richard,** professor, fisheries and wildlife sciences; PhD, Iowa State University

**Jones, Sherri,** assistant professor, surgery; PhD, University of Nebraska-Lincoln

**Jones, Tim A,** professor, surgery; PhD, University of California-Davis

**Jorgensen, Eric D,** assistant professor clinical department, anesthesiology; MD, University of Iowa

**Jurczyk, Michael,** assistant professor, computer engineering & computer science; PhD, University of Stuttgart

**Jurisson, Silvia S,** associate professor, chemistry; PhD, University of Cincinnati Main Campus

**Juzkiw, Irene Ann,** instructor, international programs; MS

**Kaiser, Edwin Michael,** distinguished teaching professor, chemistry; PhD, Purdue University Main Campus

**Kalaitzandonakes, Nicholas,** associate professor, agriculture economics; PhD, University of Florida

**Kallenbach, Robert L,** assistant professor, agronomy; PhD, Texas Tech University

**Kalton, Nigel J,** professor, mathematics; PhD, Trinity College

**Kamath, Ravishanker K,** assistant professor, surgery; MD, Kasturba Medical College

**Kane, Kevin Yurii,** assistant professor clinical department, family & community medicine; MD

**Kane, W Patrick,** adjunct instructor, social work; MSW, University of Missouri-Columbia

**Kantner, Larry A,** professor, middle and secondary education; EDD, Pennsylvania State University Main Campus

**Kaplan, Carl A,** associate professor clinical, internal medicine; MD

**Kardash, Carol A,** associate professor, education & counseling psychology; PhD, Arizona State University

**Karim, Ahamed,** clinical assistant professor, psychiatry/neurology; MD

**Karr Jr, Arthur Leslie,** associate professor, plant microbiology & pathology; PhD, University of Colorado At Boulder

**Katti, Kattesh V,** associate professor, radiology; PhD, Indian Institute of Science

**Katz, Martin L,** associate professor, ophthalmology; PhD, University of California-Santa Cruz

**Kauffman, John F,** associate professor, chemistry; PhD, University of Illinois Urbana Campus

**Kaussen, Valerie M,** assistant professor, romance languages/literature; PhD, University of California-Santa Cruz

**Kaylen, Michael S,** associate professor, agriculture economics; PhD, Purdue University Main Campus

**Keegan, Kevin G,** associate professor, veterinary medicine & surgery; DVM, University of Missouri-Columbia

**Keene, Michael Paul,** resident instruction instructor, food science & nutrition; MS, University of Missouri-Columbia

**Keiser, Lael R,** assistant professor, political science; PhD, University of Wisconsin-Milwaukee

**Keisler, Duane H,** professor, animal science; PhD, West Virginia University

**Keller, James M,** professor, computer engineering & computer science; PhD, University of Missouri-Columbia

**Keller, Barbara Page,** assistant professor clinical department, anesthesiology; MD, University of Missouri-Columbia

**Keller, Steven W,** associate professor, chemistry; PhD, University of California-Berkeley

**Kelley, Ronald,** director of student, alumni, and external relations, broadcast news; PhD, University of Missouri-Columbia

**Kelley, Cheryl A,** assistant professor, geological sciences; PhD, University of North Carolina Chapel Hill

**Kelley, Rebecca Buskill,** clinical instructor, family & community medicine; MD

**Kelly, Michael Joseph,** professor, social work; PhD, University of Texas At Austin

**Kemp, David J,** resident instruction instructor, food science & nutrition; BA, University of Missouri-Columbia
**Kendig, J Andrew,** extension assistant professor, agronomy; PhD,
**Kennedy, George,** professor, editorial; PhD, University of Missouri-Columbia
**Kenter, Keith,** assistant professor, orthopaedic surgery; MD, University of Missouri-Columbia
**Kerber, Caroline A,** assistant professor clinical department, internal medicine; MD, Texas A&M University
**Kerl, Marie E,** clinical assistant professor, veterinary medicine & surgery; DVM, Auburn University Main Campus
**Kerley, Monty S,** professor, animal science; PhD, University of Illinois Urbana Campus
**Kersey, Kimberly A,** visiting assistant professor, art; MFA, Boston University
**Kerwin, William J,** assistant professor, english; PhD, University of North Carolina Chapel Hill
**Ketter, Diane,** clinical instructor, school of nursing; MS(N), University of Missouri-Columbia
**Key, Elisabeth E,** associate professor, law; JD, Northwestern University
**Khan, Shahzad,** assistant professor clinical department, psychiatry/neurology; MD, Dow Medical College Karachi, Pakistan
**Khanna, Ramesh,** professor, internal medicine; MD, University of Bombay, India
**Khanna, Sanjeev K,** associate professor, mechanical & aerospace engineering; PhD, University of Rhode Island
**Khurana, Inder K,** associate professor, accountancy; PhD, Arizona State University
**Kiger, Sam A,** professor, civil/environmental engineering; PhD, University of Illinois Urbana Campus
**Kim, Hoon,** visiting instructor, statistics; PhD, University of Missouri-Columbia
**Kim, Hyun Dju,** professor, pharmacology; PhD, Duke University
**Kim, Kyung Sun,** assistant professor, information science & learning technologies; PhD, University of Texas At Austin
**Kim, Mikyong M,** assistant professor, educational leadership & policy analysis; PhD, University of California-Los Angeles
**Kim, Myungsun,** assistant professor, accountancy; PhD, Purdue University Main Campus
**King, Jonathan W,** assistant professor, psychological sciences; PhD, Carnegie Mellon University
**King, Paul,** associate professor clinical, internal medicine; MD, Pennsylvania State University Main Campus
**King, Wilma,** distinguished professor, history; PhD, Indiana University Bloomington
**Kinman, Edward L,** assistant professor, geography; PhD, University of Minnesota Central office
**Kinney, William C,** assistant professor, surgery; MD, Case Western Reserve University
**Kirk, Mark D,** associate professor, biological science; PhD, Rice University
**Kist, William B.,** research associate, hp/cardiopulmonary/diagnostic sciences; MS, University of Missouri-Columbia
**Kist, Sharon E,** clinical instructor, school of nursing; MS(N), University of Missouri-Columbia
**Kivlahan, Coleen H,** professor of clinical department, family & community medicine; MD, Medical College of Ohio
**Klachko, David M,** professor emeritus, internal medicine; MD, University of Witwatersrand, S Africa
**Kleiboeker, Steven B,** assistant professor, veterinary pathobiology; PhD, University of Missouri-Columbia
**Klein Trull, Meg A,** clinical associate professor, psychological sciences; PhD
**Klein, Cerry M,** professor, industrial/manufacturing systems engineering; PhD, Purdue University Main Campus
**Klein, John R,** associate professor, art history & classical archaeology; PhD, Columbia University In The City of New York
**Klinkenberg, William D,** research assistant professor, psychiatry/neurology; PhD, University of Missouri-St. Louis
**Kluever, Craig Allan,** associate professor, mechanical & aerospace engineering; PhD, Iowa State University
**Knipping, Nancy,** associate professor, early childhood and elementary education; PhD, Southern Illinois University-Carbondale
**Knudson, Dennis R,** assistant professor clinical department, surgery; MD
**Kochtanek, Thomas R,** associate professor, information science & learning technologies; PhD, Case Western Reserve University
**Koditschek, Theodore,** associate professor, history; PhD, Princeton University
**Koivunen, Debra G,** associate professor, surgery; MD, University of Michigan Ann Arbor
**Koldobsky, Aleksander,** professor, mathematics; PhD, Leningrad State University
**Koller, James P,** assistant professor clinical department, internal medicine; MD, University of Missouri-Columbia
**Koller, James Raymond,** professor, education & counseling psychology; PhD, University of Missouri-Columbia
**Kolostov, Linda S,** clinical instructor, school of nursing; MS(N), University of Missouri-Columbia
**Komatireddy, Geetha,** associate professor, internal medicine; MD, Osmania University
**Konig, Peter,** professor, child health; MD, Hebrew University Hospital
**Konkle, Maureen A,** assistant professor, english; PhD, University of Minnesota Central office
**Kopeikin, Sergei M,** associate professor, physics; PhD, Moscow State University
**Kornegay, Joe N,** dean, veterinary medicine & surgery; DVM, Georgia State University
**Kowal, Amanda Mary,** assistant professor, human development and family studies; PhD, University of Illinois Urbana Campus
**Kracke, George R,** associate professor, anesthesiology; PhD, University of Pennsylvania
**Kramer, Joanne,** clinical instructor, veterinary medicine & surgery; DVM, University of Minnesota At St. Paul
**Kramer, Michael,** associate professor, communication; PhD, University of Texas At Austin
**Krause Ii, William John,** professor, pathology and anatomical sciences; PhD, University of Missouri-Columbia
**Krause, Gary F,** professor emeritus, agronomy; PhD, Virginia Polytechnic Institute And State Univ
**Krawitz, Aaron David,** professor, mechanical & aerospace engineering; PhD, Northwestern University
**Kraxberger, Lynda S,** assistant professor professional practice, broadcast news; MA, University of Missouri-Columbia
**Kreeger, John Michael,** associate professor, veterinary pathobiology; DVM, Louisiana State Univ Alexandria
**Krentsel, Evguenii B,** research associate professor, chemical engineering; PhD, Mendeleev Institute of Chemical Engr., Moscow
**Kreps, Patricia C,** visiting assistant professor, art; MFA, University of Missouri-Columbia
**Kretschmann, John G,** instructor, psychiatry/neurology; MA, University of Missouri-Kansas City
**Kreuger, Larry,** associate professor, social work; PhD, Saint Louis University Main Campus
**Krieckhaus, Jonathan,** assistant professor, political science; PhD, Princeton University
**Krieckhaus, Jonathan T,** assistant professor, political science; PhD, Princeton University
**Krug, Jeffrey B.,** clinical instructor, hp/physical therapy; BS, University of Wisconsin
**Krull, Catherine E,** assistant professor, biological science; PhD, University of Arizona
**Krull, Jennifer L,** assistant professor, psychological sciences; PhD, Arizona State University
**Kruse, Robin L,** research assistant professor, family & community medicine; PhD
**Kuehn, Alice,** associate professor, school of nursing; PhD, University of Missouri-Columbia
**Kuehn, John,** adjunct associate professor, marketing; PhD, University of Missouri-Columbia
**Kultgen Jr, John Henry,** professor, philosophy; PhD, University of Chicago
**Kung, Ernest Chen Tsun,** professor emeritus, soil and atmospheric sciences; PhD, University of Wisconsin-Madison
**Kuntz, Robert R,** professor, chemistry; PhD, Carnegie Institute
**Kurtz, Stephen J,** assistant professor, civil/environmental engineering; PhD, Rutgers University New Brunswick
**Kurtz, William Boyce,** professor, forestry; PhD, University of Arizona
**Kurukulasuriya, Lilamani Rg,** clinical instructor, internal medicine; MD
**Kutz, David W,** resident instruction assistant professor, music; ABD, Northwestern University
**Kuvshinoff, Boris W,** assistant professor, surgery; MD, University of Maryland Baltimore County Campus
**Kvanvig, Jonathan,** professor, philosophy; PhD, University of Notre Dame
**Kyle, Greeley A,** assistant professor professional practice, broadcast news; MA, Memphis State University
**Lababidi, Zuhdi,** professor emeritus, child health; MD, American University of Beirut, Lebanon
**Laffey, James M,** associate professor, information science & learning technologies; PhD, University of Chicago
**Lafontaine, Thomas P.,** adjunct professor, nutritional sciences; PhD, University of Missouri-Columbia
**Lakritz, Jeffrey,** assistant professor, veterinary medicine & surgery; PhD, University of California-Davis
**Lal, Sunder M,** associate professor clinical, internal medicine; MD, University of India
**Lamberson, William R,** professor, animal science; PhD, University of Nebraska-Lincoln
**Lamberti, Joseph W,** associate professor emeritus, psychiatry/neurology; MD, University of Ottawa, Canada
**Lambeth, Edmund,** professor, editorial; PhD, American University
**Lan, Youran,** associate professor, computer engineering & computer science; PhD, Michigan State University
**Land Jr, Norman Earl,** professor, art history & classical archaeology; PhD, University of Virginia Main Campus
**Lande, John M,** associate professor, law; JD, University of California-Hastings
**Landhuis, Pauline Marie,** assistant professor, nutritional sciences; MS, University of California-Davis
**Landrum, Alice L,** associate professor clinical, anesthesiology; MD, University of Arkansas At Little Rock
**Langen, Timothy C,** assistant professor, german & russian studies; PhD, Northwestern University
**Langeneckert, Mark G,** visiting instructor, art; BFA, Art Center College of Design
**Lapan, Richard T,** associate professor, education & counseling psychology; PhD, University of Utah
**Larsen, David R,** associate professor, forestry; PhD, University of Washington
**Larvick, Karen,** visiting associate professor, music; MM, University of Wisconsin Centers
**Lasky, Michael,** clinical instructor, anesthesiology; MD
**Lattimer, Jimmy Christian,** associate professor, veterinary medicine & surgery; DVM, Washington State University
**Latushkin, Yuri,** professor, mathematics; PhD, Odessa University
**Latushkina, Nataliya,** adjunct instructor, mathematics; PhD, Odessa University
**Laughlin, Maurice Harold,** professor, veterinary biomedical sciences; PhD, University of Iowa
**Laur Jr, George Clark,** extension

instructor, extension education; BS, University of Missouri

**Lawless, Elaine,** professor, english; PhD, Indiana University Bloomington

**Lawless, Robert M,** associate professor, law; JD, University of Illinois Urbana Campus

**Lawson, Melissa,** assistant professor clinical department, child health; MD, University of Missouri-Kansas City

**Lawson, Noel W,** professor, anesthesiology; MD, University of Arkansas For Medical Sciences

**Lazos, Sylvia R,** associate professor, law; JD, University of Michigan

**Leavene Jr, Robert Warren,** associate professor, electrical engineering; PhD, University of Missouri-Columbia

**Ledoux, David R,** associate professor, animal science; PhD, University of Florida

**Lee, David R,** associate professor, molecular microbiology and immunology; PhD, University of Virginia Main Campus

**Lee, Ilhyung,** associate professor, law; JD, Boston College

**Lee, Sunggyu,** professor, chemical engineering; PhD, Case Western Reserve University

**Lefevre, Michael L,** professor, family & community medicine; MD, University of Missouri-Columbia

**Legarsky, Justin J,** assistant professor, electrical engineering; PhD, University of Kansas Main Campus

**Lehman, David E,** resident instruction instructor, agriculture economics; MBA, University of Missouri-Columbia

**Leigh, James Edward,** professor, early childhood and elementary education; PhD, University of Southern California

**Lemone, Sybil P,** associate professor, school of nursing; DSN, University of Alabama At Birmingham

**Lenau, Charles W,** professor emeritus, civil/environmental engineering; PhD, Stanford University

**Lentz, Christopher,** assistant professor, surgery; MD, University of North Carolina Chapel Hill

**Leonhard, Barbara H,** instructor, international programs; MS

**Leseur Brown, Geta J,** associate professor, english; PhD, Indiana University Bloomington

**Leshner, Glenn M,** associate professor, broadcast news; PhD, Stanford University

**Leuci, Mary Simon,** extension assistant professor, rural sociology; M, University of Missouri-Columbia

**Lever, John R,** research associate professor, radiology; PhD, North Carolina State University At Raleigh

**Lever, Susan Z,** associate professor, chemistry; PhD, North Carolina State University At Raleigh

**Lewis, Bernard J,** visiting assistant professor, forestry; PhD, University of Minnesota Twin Cities

**Lewis, Leonard Mark,** visiting assistant professor, music; DMA, University of Texas At Austin

**Lewis, Marvin A,** professor, romance languages/literature; PhD, University of Washington

**Lewis, Michael Robert,** assistant professor, veterinary medicine & surgery; PhD, City of Hope Grad Prgm Biological Science

**Lewis, Terri Lynn,** research assistant professor, psychological sciences; PhD, Bowling Green State University Central office

**Lewis, Timothy J,** associate professor, early childhood and elementary education; PhD, University of Oregon

**Lewis, Trudy Lynne,** associate professor, english; PhD, University of Illinois At Chicago

**Li, Huaiyin,** assistant professor, history; PhD, University of California-Los Angeles

**Li, Min,** research assistant professor, dalton cardiovascular research center; PhD, University of Pennsylvania - Philadelphia

**Li, Yadong,** research assistant professor, civil/environmental engineering; PhD, Tsinghua University, Beijing

**Li, Yanguang,** assistant professor, mathematics; PhD, Princeton University

**Libbus, Martha Kay,** associate professor, school of nursing; DRPH, University of Texas Health Science Center

**Liem, Timothy K,** assistant professor, surgery; MD, University of Southern California

**Lieman, Daniel B,** associate professor, mathematics; PhD, Brown University

**Lim, Robert W,** associate professor, pharmacology; PhD, Washington University

**Lin, Chun Shin,** associate professor, electrical engineering; PhD, Purdue University Main Campus

**Lin, Kevin M,** assistant professor, surgery; MD, Creighton University

**Lin, Yuyi,** associate professor, mechanical & aerospace engineering; PhD, University of California-Berkeley

**Lindaman, Susan,** clinical instructor, hp/physical therapy; BS, University of Missouri-Columbia

**Lindbloom, Erik J,** assistant professor, family & community medicine; MD, Northwestern University

**Lindsey, Candace C,** visiting instructor, early childhood and elementary education; MA, University of Texas

**Linetsky, Mikhail,** research assistant professor, ophthalmology; PhD

**Linit, Marc Jeffrey,** professor, entomology; PhD, University of Arkansas-Fayetteville

**Lipton, Emma E,** assistant professor, english; PhD, Duke University

**Liscum Iii, Emmanual,** assistant professor, biological science; PhD, Ohio State University Main Campus

**Little, Randie Raderman,** research associate professor, pathology and anatomical sciences; PhD, Florida State University

**Liu, Gseping,** research assistant professor, agriculture biochemistry; PhD, Washington State University

**Liu, Mian,** associate professor, geological sciences; PhD, University of Arizona

**Livengood, Matthew A,** resident instruction instructor, provost; MS

**Livingston, Robert S,** clinical assistant professor, veterinary pathobiology; DVM, University of Missouri-Columbia

**Lo Piccolo, Joseph,** professor, psychological sciences; PhD, Yale University

**Lo, Clarence Y,** associate professor, sociology; PhD, University of California-Berkeley

**Loch, Wayne Eugene,** professor, animal science; PhD, University of Missouri-Columbia

**Loehr, J Erik,** assistant professor, civil/environmental engineering; PhD, University of Texas At Austin

**Loeppky, Richard N,** professor, chemistry; PhD, University of Michigan Ann Arbor

**Loftin, Mitchell M,** clinical assistant professor, ophthalmology; OD, University of Alabama-Birmingham

**Logan, Robert A,** professor, editorial; PhD, University of Iowa

**Lombardo, Stephen J,** assistant professor, chemical engineering; PhD, University of California-Berkeley

**London, Roslyn M,** research assistant professor, pharmacology; PhD

**Long, Lois Jean Mcclellan,** assistant professor, health professions; MED, University of Missouri-Columbia

**Longo, Daniel R,** professor, family & community medicine; SC.D, Johns Hopkins University

**Lonis, Dale,** associate professor, music; PhD, University of Illinois

**Loory, Stuart H,** professor professional practice, editorial; MS, Columbia University Central office

**Lopez, Gerardo,** assistant professor, educational leadership & policy analysis; PhD, University of Texas At Austin

**Lorenzen, Carol L,** assistant professor, food science & nutrition; PhD, Texas A&M University

**Lorenzo, Alicia,** visiting instructor, romance languages/literature; MA, Universidad De Valladolio

**Lory, John A,** extension assistant professor, agronomy; PhD

**Lotano, Ramya,** clinical instructor, internal medicine; EDS, St George's University School of Medicine

**Loy, Timothy Scott,** associate professor, pathology and anatomical sciences; MD, Southern Illinois University-Carbondale

**Loyalka, Sudarshan Kumar,** professor, nuclear engineering; PhD, Stanford University

**Lubahn, Dennis Bryant,** associate professor, biochemistry; PhD, Duke University

**Lucy, Matthew C,** associate professor, animal science; PhD, University of Florida

**Ludwig, Gail S,** associate professor, geography; DA, University of Northern Colorado

**Luger, Alan M,** associate professor, pathology and anatomical sciences; MD, Duke University

**Luis Fuentes, Virginia,** assistant professor, veterinary medicine & surgery; DVM, Cambridge University

**Lupo, Anthony R,** assistant professor, soil and atmospheric sciences; PhD, Purdue University Main Campus

**Lyman, Richard Lee,** professor, anthropology; PhD, University of Washington

**Lyons, Timothy W,** associate professor, geological sciences; PhD, Yale University

**Ma, Hongbin,** assistant professor, mechanical & aerospace engineering; PhD, Texas A&M University

**Maakestad, Kirsten,** clinical instructor, family & community medicine; MD, University of Washington

**Macdonald, Ruth S,** professor, food science & nutrition; PhD, University of Minnesota Twin Cities

**Macleod, Kenneth G,** assistant professor, geological sciences; PhD, University of Washington

**Maclin, Edward L,** research assistant professor, psychological sciences; PhD, New York University

**Madsen, Richard William,** professor, statistics; PhD, Iowa State University

**Magliola, Lawrence,** research assistant professor, physiology; PhD, University of Missouri

**Mahmood, Atiya N,** adjunct instructor, environmental design; MS, University of Missouri-Columbia

**Mahmoud, Hazem,** associate professor clinical, child health; MD, Ains Shams University Medical School, Cairo, Egypt

**Maiorino, Renata,** instructor, early childhood and elementary education; MA, University of Iowa

**Makarov, Konstantin A,** associate professor, mathematics; PhD, Leningrad State University

**Mallinckrodt, Brent S,** assistant professor, education & counseling psychology; PhD, University of Maryland College Park Campus

**Malugani, Izelda,** adjunct instructor, dean of agriculture; PhD

**Manahan, Stanley Eugene,** professor, chemistry; PhD, University of Kansas Main Campus

**Mandy, David M,** associate professor, economics; PhD, University of Illinois Urbana Campus

**Mann, Tina,** adjunct instructor, environmental design; MS, University of Missouri-Columbia

**Mann, Fred Anthony,** associate professor, veterinary medicine & surgery; DVM, Ohio State University Main Campus

**Manring, Noah D,** assistant professor, mechanical & aerospace engineering; PhD, Iowa State University

**March, John Zachary,** instructor, veterinary pathobiology; MED, University of Missouri-Columbia

**Marek, Karen S,** professor of clinical department, school of nursing; PhD, University of Wisconsin-Milwaukee

**Market, Patrick S,** assistant professor, soil and atmospheric sciences; PhD, Saint Louis University Central office

**Markie, Peter Joseph,** vice provost, philosophy; PhD, University of Massachusetts At Amherst

**Marks, Raymond D,** assistant professor, classical studies; PhD, Brown University

**Markward, Martha J,** associate professor, social work; PhD, University of Illinois Urbana Campus

**Marra, Rose M,** assistant professor, information science & learning technologies; PhD, University of Colorado At Denver

**Marrero, T R,** professor, chemical engineering; PhD, University of Maryland College Park Campus

**Marrs, Mary Elizabeth,** visiting assistant professor, management; PhD, University of Missouri-Columbia

**Marsh, Antoinette Elisa,** assistant professor, veterinary pathobiology; PhD, University of California-Davis

**Marsh, Troy,** visiting assistant professor, music; MM, University of Missouri-Columbia

**Marshall, John Bryson,** professor, internal medicine; MD, University of Missouri-Columbia

**Martin, Gregg D,** adjunct assistant

professor, management; JD, University of Missouri-Columbia
**Martin, Mark E,** associate professor, biochemistry; PhD, University of Mississippi Medical Center
**Martin, Richard H,** clinical associate professor, internal medicine; MD, University of Rochester
**Maruniak, Joel,** associate professor, biological science; PhD, University of Texas At Austin
**Mashhoon, Bahram,** professor, physics; PhD, Princeton University
**Massey, Raymond E,** extension associate professor, agriculture economics; PhD, Oklahoma State University
**Materer, Timothy John,** professor, english; PhD, Stanford University
**Mathews, Michelle C,** laboratory instructor, human development and family studies; MS
**Mathews, Sarah L,** assistant professor, biological science; PhD, Montana State University
**Matsakis, Pascal,** assistant professor, computer engineering & computer science; PhD, University of Paul Sabatier - France
**Matsuda, Sandra,** assistant professor, hp/occupational therapy; PhD, University of Missouri-Columbia
**Matthews, Stephen Frank,** professor, agriculture economics; PhD, University of Missouri-Columbia
**Mauldin, Elaine G,** assistant professor, accountancy; PhD, University of Nebraska-Lincoln
**Mawhinney, Thomas Patrick,** associate professor, agriculture biochemistry; PhD, State University of New York-Special F Unit
**Mccallum, Karen L,** extension instructor, extension education; BS, University of Missouri-Columbia
**Mccallum, Robert Neill,** associate professor, psychiatry/neurology; PhD, University of Missouri-Columbia
**Mccamley, Francis Perle,** associate professor, agriculture economics; PhD, Iowa State University
**Mccartney, James Lee,** professor, sociology; PhD, University of Minnesota Twin Cities
**Mccathren, Rebecca,** assistant professor, early childhood and elementary education; PhD, Vanderbilt University
**Mccaw, Dudley Leroy,** associate professor, veterinary medicine & surgery; DVM, University of Illinois Urbana Campus
**Mcclellan, Andrew D,** professor, biological science; PhD, Case Western Reserve University
**Mcclure, Bruce A,** associate professor, agriculture biochemistry; PhD, University of Minnesota Central office
**Mccord, Emerson Scott,** associate professor emeritus, anesthesiology; MD, University of Missouri-Columbia
**Mccormick, John Pauling,** professor, chemistry; PhD, Stanford University
**Mcdaniel, Roxanne W,** associate professor, school of nursing; PhD, University of Texas At Austin
**Mcdaniel, Wayne Charles,** research assistant professor, surgery; PhD, University of Missouri-Columbia
**Mcdonald, Cynthia G,** assistant professor, finance; PhD, University of South Carolina - Columbia
**Mcdonald, David George,** professor, psychological sciences; PhD, Washington University
**Mcdonald, Gregory A,** associate professor, molecular microbiology and immunology; PhD, University of Virginia Main Campus
**Mcdonald, Kerry S,** assistant professor, physiology; PhD, Marquette University
**Mcelroy, Jan J,** clinical instructor, hp/physical therapy; BS, University of Missouri-Columbia
**Mcelroy, Sarah T,** clinical instructor, family & community medicine; MD, University of Missouri-Columbia
**Mcfarland, William Donald,** director extension technology & computing services, electrical engineering; PhD, University of Missouri-Columbia
**Mcgarraugh, Jay B,** assistant dean, civil/environmental engineering; PhD, Purdue University Main Campus
**Mcgraw, Robert L,** associate professor, agronomy; PhD, University of Florida
**Mcguire, Rick,** assistant professor, education & counseling psychology; PhD, University of Virginia
**Mcintosh, Mark Alan,** professor, molecular microbiology and immunology; PhD, University of Texas At Austin
**Mckean, Michael L,** associate professor, broadcast news; MA, Rice University
**Mckendry, Anne Leslie,** associate professor, agronomy; PhD, University of Manitoba, Canada
**Mckenney, William Thomas,** professor, music; PhD, University of Rochester
**Mckenzie Jr, Wayland N,** research associate professor, internal medicine; PhD, University of Missouri-Columbia
**Mckibben, Andrew,** assistant professor clinical department, internal medicine; MD, University of Illinois College of Medicine
**Mckinney, Mitchell S,** assistant professor, communication; PhD, University of Kansas Main Campus
**Mclaren, Robert Wayne,** professor emeritus, electrical engineering; PhD, Purdue University Main Campus
**Mclay, Barbara,** clinical instructor, hp/communication science and disorders; MA, University of Iowa
**Mclellan, Francis R,** resident instruction assistant professor, german & russian studies; PhD, Brown University
**Mcleod, John Dwight,** associate professor, music; MM, Manhattan School of Music
**Mcmahon, Lynne,** professor, english; PhD, University of Utah
**Meadows, Renee Y,** assistant professor clinical department, internal medicine; MD, Texas Tech University
**Meadows, Richard L,** clinical assistant professor, veterinary medicine & surgery; DVM, Texas A&M University
**Meese, Jon Michael,** professor, electrical engineering; PhD, Purdue University Main Campus
**Mehr, David R,** associate professor, family & community medicine; MD, University of California-San Francisco
**Mellen Jr, Robert Gregory,** adjunct instructor, editorial; MA, University of California-Santa Cruz
**Melnyk, Andrew,** associate professor, philosophy; PhD, Oxford University
**Mendenhall, Denice L,** clinical instructor, school of nursing; MN, University of Washington
**Menezes, Carmen Francis,** professor, economics; PhD, Northwestern University
**Mermelstein, Joanne,** associate professor, social work; PhD, Saint Louis University Main Campus
**Merrell, Arlene J,** clinical instructor, school of nursing; MS(N), University of Missouri-Columbia
**Meskimen, Sandra L,** clinical instructor, family & community medicine; MSN, University of Illinois
**Messer Iv, Nat T,** associate professor, veterinary medicine & surgery; DVM, Colorado State University
**Metcalf Wilson, Kristin,** clinical instructor, school of nursing; MS, Vanderbilt University
**Metzler Iii, Michael H,** associate professor, surgery; MD, State University of New York-Special F Unit
**Miceli, Paul,** associate professor, physics; PhD, University of Illinois Urbana Campus
**Micklich, Albie J,** assistant professor, music; DMA, Michigan State University
**Middleton, Michael,** deputy chancellor, law; JD, University of Missouri-Columbia
**Miedema, Brent,** associate professor, surgery; MD, Not Listed
**Mihail, Jeanne D,** associate professor, plant microbiology & pathology; PhD, University of Arizona
**Milanick, Mark,** professor, physiology; PhD, University of Chicago
**Miles, Charles Donald,** professor emeritus, biological science; PhD, Indiana University Bloomington
**Miles, Judith Helen,** professor, child health; MD, Indiana University Bloomington
**Miles, Randall J,** associate professor, soil and atmospheric sciences; PhD, Texas A&M University
**Miller Jr, Thomas W,** associate professor, finance; PhD, University of Washington
**Miller, James Madison,** professor, theatre; MFA, University of Southern Mississippi
**Miller, Kerby Alonzo,** professor, history; PhD, University of California-Berkeley
**Miller, Margaret A,** associate professor, veterinary pathobiology; DVM, University of Missouri-Columbia
**Miller, Michael B,** research assistant professor, psychological sciences; PhD, University of Wisconsin Centers
**Miller, Phillip Andrew,** resident instruction assistant professor, economics; PhD, University of Missouri-Columbia
**Miller, William Howard,** professor, nuclear engineering; PhD, University of Missouri-Columbia
**Mills, Rilla Dean,** dean, editorial; PhD, University of Illinois Urbana Campus
**Millspaugh, Joshua J,** assistant professor, fisheries and wildlife sciences; PhD, University of Washington
**Minor, Marian Adams,** associate professor, health professions; PhD, University of Missouri-Columbia
**Minturn, Neil B,** assistant professor, music; PhD, Yale University
**Mintz, Laurie Beth,** associate professor, education & counseling psychology; PhD, Ohio State University Main Campus
**Misfeldt, Michael Lee,** professor, molecular microbiology and immunology; PhD, University of Iowa
**Misra, Madhukar,** assistant professor, internal medicine; MD, University of Missouri-Columbia
**Mitchell Jr, William J,** assistant professor, veterinary pathobiology; DVM, Cornell University Medical Center
**Mitchell, Franklin L,** professor emeritus, surgery; MD, Johns Hopkins University
**Mitchell, Joyce,** professor, health management & informatics; PhD, University of Wisconsin-Madison
**Mitra, Ranadhir,** associate professor, health professions; PhD, University of Missouri-Columbia
**Mitrea, Dorina I,** assistant professor, mathematics; PhD, University of Minnesota Central office
**Mitrea, Marius,** associate professor, mathematics; PhD, University of South Carolina - Columbia
**Mobley, Michael,** assistant professor, education & counseling psychology; PhD, Pennsylvania State University Main Campus
**Moeller, Jennifer,** lecturer, editorial; MA, University of Missouri-Columbia
**Moen, Daryl R,** professor, editorial; MA, University of Minnesota Twin Cities
**Moesel, Douglas D,** assistant professor, management; PhD, Texas A&M University
**Monnier, Nicole M,** assistant professor, german & russian studies; PhD, Princeton University
**Monson, Michael J,** associate professor, agriculture economics; PhD, University of Florida
**Monson, Sandra J,** research assistant professor, agriculture economics; PhD, University of Florida
**Montgomery Smith, Stephen,** professor, mathematics; PhD, Cambridge University
**Montgomery, John H,** assistant professor clinical department, surgery; MD, St. Louis University
**Mooney, Brian P,** research assistant professor, agriculture biochemistry; PhD, University College of Dublin
**Moore, Cecil P,** department chairman, veterinary medicine & surgery; DVM, University of Missouri-Columbia
**Moore, Joi L,** assistant professor, information science & learning technologies; PhD, University of Georgia
**Moore, Kelly A,** clinical instructor, school of nursing; MS, University of Missouri-Columbia
**Moore, Kevin C,** associate professor, agriculture economics; PhD, Iowa State University
**Moosbrugger, Lorelei,** assistant professor, political science; PhD,

University of California-San Diego

**Morgan, William,** adjunct professor, environmental design; B ARCH, University of Houston

**Morgan, Ralph Speer,** professor, english; PhD, Stanford University

**Mori, Anatole,** assistant professor, classical studies; PhD, University of Chicago

**Morpurgo, Carlo,** visiting assistant professor, mathematics; PhD, Washington University

**Morrison, Johnetta W,** associate professor, human development and family studies; EDD, Syracuse University Main Campus

**Morrison, K C,** professor, political science; PhD, University of Wisconsin-Madison

**Morsi, Khaled,** assistant professor, mechanical & aerospace engineering; PhD, Oxford University, England

**Moscatelli, Ezio Anthony,** professor emeritus, biochemistry; PhD, University of Illinois Urbana Campus

**Moss, Kathryn Sue,** clinical instructor, hp/cardiopulmonary/diagnostic sciences; MED, University of Missouri-Columbia

**Motavalli, Peter P,** assistant professor, soil and atmospheric sciences; PhD, Cornell University-Nys Statutory Colleges

**Moxley, David E,** clinical instructor, health management & informatics; MA, University of Missouri-Columbia

**Mudrick, Stephen,** associate professor emeritus, soil and atmospheric sciences; PhD, Massachusetts Institute of Technology

**Mueller, Barbara,** lecturer, german & russian studies; MA, Munster University

**Mueller, Dennis Melvin,** professor emeritus, german & russian studies; PhD, Washington University

**Mueser, Peter,** associate professor, economics; PhD, University of Chicago

**Mullen Jr, Edward John,** professor, romance languages/literature; PhD, Northwestern University

**Mullen, Helen Cloy,** professor, internal medicine; PhD, Purdue University Main Campus

**Mulligan, Brian,** assistant professor clinical department, radiology; MD, University of Illinois At Chicago

**Multon, Karen D,** associate professor, education & counseling psychology; PhD, Loyola University of Chicago

**Muratore, Mary Jo,** professor, romance languages/literature; PhD, University of California-Davis

**Murfett, Margaret Jane,** research assistant professor, agriculture biochemistry; PhD, University of Melbourne, Australia

**Muruve, Nicolas A,** assistant professor clinical department, surgery; MD, University of Manitoba, Canada

**Muschany, Cathie,** lecturer, german & russian studies; MA, University of Kansas

**Musser, Dale,** research assistant professor, information science & learning technologies; PhD, Ohio State University

**Mustapha, Azlin,** assistant professor, food science & nutrition; PhD, University of Nebraska - Kearney

**Mustapha, Sherry L,** assistant professor clinical department, school of nursing; PhD, University of Kansas Central office

**Muzika, Rose Marie,** assistant professor, forestry; PhD, Michigan State University

**Nabelek, Peter I,** professor, geological sciences; PhD, State University of New York-Special F Unit

**Naegele, Daniel J,** assistant professor, environmental design; PhD, University of Pennsylvania

**Nair, Jyotsna,** assistant professor clinical department, psychiatry/neurology; MD, Amu India

**Nair, Satish S,** professor, mechanical & aerospace engineering; PhD, Ohio State University Main Campus

**Narfstrom, Kristina,** professor, veterinary medicine & surgery; PhD, Swedish University In Uppsala

**Nathan, Manjula,** extension assistant professor, agronomy; PhD

**Neal Jr, Durwood,** professor, surgery; MD, University of Texas Health Science San Antonio

**Neal, Steven Phelps,** associate professor, mechanical & aerospace engineering; PhD, Iowa State University

**Neely Iv, Alfred S,** professor emeritus, law; LL.B., Harvard University

**Neitz, Mary Jo,** professor, sociology; PhD, University of Chicago

**Nelson, Christy Leann,** clinical instructor, hp/occupational therapy; MS, University of Iowa

**Nelson, Curtis J,** professor, agronomy; PhD, University of Wisconsin-Madison

**Nelson, Kelly A,** research assistant professor, agronomy; PhD, Michigan State University

**Neth, Mary C,** associate professor, history; PhD, University of Wisconsin-Madison

**Neville, Helen,** associate professor, education & counseling psychology; PhD, University of California-Santa Barbara

**Newton, Kathleen J,** professor, biological science; PhD, Indiana University Bloomington

**Ni, Daxin,** adjunct instructor, german & russian studies; BA, Peking Foreign Languages University

**Ni, Xiaoguang,** associate professor, economics; PhD, University of Minnesota Twin Cities

**Niblack, Terry L,** associate professor, plant microbiology & pathology; PhD, University of Georgia

**Nichols, Walter Kirt,** professor, surgery; MD, University of Michigan Ann Arbor

**Nikolai, Loren Alfred,** professor, accountancy; PhD, University of Minnesota Twin Cities

**Nilon, Charles H,** associate professor, fisheries and wildlife sciences; PhD, State University of New York-Special F Unit

**Noble, James Stewart,** associate professor, industrial/manufacturing systems engineering; PhD, Purdue University Main Campus

**Nolan, Michael,** professor, rural sociology; PhD, Pennsylvania State University Main Campus

**Nolph, Georgia Bower,** associate professor, family & community medicine; MD

**Nolph, Karl D,** professor emeritus, internal medicine; MD, University of Pennsylvania

**Noltie, Douglas B,** associate professor, fisheries and wildlife sciences; PhD, University of Western Ontario

**Nothwehr, Steven F,** assistant professor, biological science; PhD, Washington University

**Nunnally, William C,** professor, electrical engineering; PhD, Texas Tech University

**Nygren, Pekka O,** assistant professor, forestry; PhD, University of Helsinki

**O'Brien, David J,** professor, rural sociology; PhD, Indiana University Bloomington

**Obrien, Dennis,** associate professor, veterinary medicine & surgery; PhD, University of Illinois Urbana Campus

**Obrien, Michael J,** professor, anthropology; PhD, University of Texas At Austin

**Occena, Luis G,** associate professor, industrial/manufacturing systems engineering; PhD, Purdue University Main Campus

**Oconnell, Robert M,** associate professor, electrical engineering; PhD, University of Illinois Urbana Campus

**Okamura, Lawrence,** associate professor, history; PhD, University of Michigan Ann Arbor

**Okker, Patricia,** associate professor, english; PhD, University of Illinois Urbana Campus

**Oliveira, Emanuelle K F,** visiting instructor, romance languages/literature; PhD, University of California-Los Angeles

**Olsen, Margaret M,** assistant professor, romance languages/literature; PhD, Tulane University of Louisiana

**Olson, K C,** extension assistant professor, animal science; PhD, Kansas State University

**Opatken, Clifford J,** assistant professor clinical department, anesthesiology; MD, University of Kentucky

**Organ, Jerome M,** associate professor, law; JD, Vanderbilt University

**Oro, John James,** associate professor, surgery; MD, University of Texas Medical Branch At Galveston

**Ortega, Suzanne T,** vice provost, sociology; PhD, Vanderbilt University

**Ortmann, Robert A,** assistant professor, internal medicine; MD, Case Western Reserve University

**Orton Howard, Dianne J,** clinical assistant professor, social work; MSW, University of Iowa

**Ortwerth, Beryl John,** professor emeritus, ophthalmology; PhD, University of Missouri-Columbia

**Osterlind, Steven J,** professor, education & counseling psychology; PhD, University of Southern California

**Ota, David M,** professor, surgery; MD, University of Chicago

**Overholser, Geneva,** professor, editorial; MS, Northwestern University

**Packard, Kerri S,** adjunct assistant professor, theatre; MFA, University of Iowa

**Packard, Raymond Dean,** adjunct assistant professor, theatre; MFA, University of Iowa

**Pai, P Frank,** associate professor, mechanical & aerospace engineering; PhD, Virginia Polytechnic Institute And State Univ

**Palaniappan, Kannappan,** associate professor, computer engineering & computer science; PhD, University of Illinois Urbana Campus

**Pallardy, Stephen Gerard,** professor, forestry; PhD, University of Wisconsin-Madison

**Palm, Harlan L,** research assistant professor, agronomy; PhD, University of Missouri-Columbia

**Palonsky, Stuart B,** director, middle and secondary education; PhD, Michigan State University

**Pamidimukkala, Jayabala,** research assistant professor, dalton cardiovascular research center; PhD, University of Houston, College of Pharmacy

**Pang, Michael Man Ho,** associate professor, mathematics; PhD, London University

**Papick, Ira Joel,** professor, mathematics; PhD, Rutgers University New Brunswick

**Parcell, Joseph L,** assistant professor, agriculture economics; PhD, Kansas State University of Agriculture And App Sci

**Pardalos, John A,** assistant professor clinical department, child health; MD, University of Missouri-Columbia

**Parke, Catherine Neal,** professor, english; PhD, Stanford University

**Parker Oliver, Debra,** assistant professor, social work; PhD, University of Missouri-Columbia

**Parker, Jerry Calvin,** clinical professor, physical medicine & rehabilitation; PhD, University of Missouri-Columbia

**Parshall, Lynn B,** clinical instructor, family & community medicine; MSN, University of Missouri-Columbia

**Pasley, Jeffrey L,** assistant professor, history; PhD, Harvard University

**Patel, Harsha N,** assistant professor clinical department, child health; MD, Government. Medical College, South Gujarat University, Surat, Gujarat, India

**Patel, Nitin,** assistant professor clinical department, psychiatry/neurology; MD, Jabalpur University Govt. Medical College, Jabalpue, India

**Patrick, Timothy Bowen,** assistant professor, health management & informatics; PhD, University of Missouri-Columbia

**Patterson, David J,** associate professor, animal science; PhD, Kansas State University of Agriculture And App Sci

**Paull Jr, Willis K,** professor, pathology and anatomical sciences; PhD, University of Southern California

**Payne, Thomas L,** vice chancellor & dean for agriculture/food/&natural resources, entomology; PhD, University of California-Davis

**Pearce, Ibitola,** associate professor, sociology; PhD, Brown University

**Pearsall, Deborah Marie,** professor, anthropology; PhD, University of Illinois Urbana Campus

**Pennington, Delilah,** clinical instructor, school of nursing; MS, University of Missouri-Columbia

**Pereira, Raynolde,** assistant professor, accountancy; PhD, University of Arizona

**Pereira, Susan Lynne,** assistant professor clinical department, family & community medicine; MD, University of Missouri-Columbia

**Peritore, Norman Patrick,** professor, political science; PhD, University of California-Santa Barbara

**Perkoff, Gerald T,** professor emeritus, family & community medicine; MD, Washington University

**Perna, Leslie,** assistant professor, music; MM, Boston University
**Perry, Joanne M,** clinical instructor, social work; MSW, St. Louis University
**Perry, Michael Clinton,** professor, internal medicine; MD, Wayne State University
**Peters Jr, Philip G,** professor, law; JD, University of California-Berkeley
**Petersen, George,** associate professor, educational leadership & policy analysis; PhD, University of California-Santa Barbara
**Peterson Homer, Lizette,** professor, psychological sciences; PhD, University of Utah
**Peterson, Catherine A,** assistant professor, nutritional sciences; PhD, University of Illinois-Urbana
**Peterson, Charles J,** associate professor, physics; PhD, University of California-Berkeley
**Peterson, Virginia E,** resident instruction associate professor, agriculture biochemistry; PhD, University of Maryland College Park Campus
**Peth Jr, Howard A,** assistant professor clinical department, surgery; MD, University of Santiago School of Medicine, Santo Domingo, Dominican Republic
**Petris, Michael J,** assistant professor, nutritional sciences; PhD, University of Melbourne
**Petrocik, John R,** professor, political science; PhD, University of Chicago
**Pettey, Dix Hayes,** professor, mathematics; PhD, University of Utah
**Pettway, Richard H,** professor, finance; PhD, University of Texas At Austin
**Peyton Jr, Robert Lee,** associate professor, civil/environmental engineering; PhD, Colorado State University
**Pfeifer, Peter,** professor, physics; PhD, Swiss Federal Institute of Technology, Zurich
**Pfost, Donald Lynn,** extension associate professor, biological engineering; PhD, Ohio State University Main Campus
**Pham, Lehuyen Thi,** adjunct assistant professor, law; JD, Harvard University
**Pham, Van Hoang,** assistant professor, economics; PhD, Cornell University-Endowed Colleges
**Phillips, Charlotte L,** assistant professor, biochemistry; PhD, North Carolina State University At Raleigh
**Phillips, Jeffrey M,** resident instruction instructor, biological science; PhD
**Phillips, Jeffrey O,** research associate professor, surgery; PHARMD, University of Utah
**Phillips, Ronald G,** associate professor, environmental design; ARCH D., University of Michigan Ann Arbor
**Phillips, Thomas E,** associate professor, biological science; PhD, Northwestern University
**Phillips, Waler R,** adjunct professor, law; JD, Emory University
**Phipps, Bobby J,** extension assistant professor, agronomy; PhD
**Piasecki, Thomas M,** assistant professor, psychological sciences; PhD, University of Wisconsin-Madison
**Pierce Ii, Robert A,** extension instructor, fisheries and wildlife sciences; PhD, University of Missouri-Columbia
**Pierce, Glenn Palen,** professor, romance languages/literature; PhD, University of California-Los Angeles
**Pierce, Vern L,** extension assistant professor, agriculture economics; PhD, University of Missouri-Columbia
**Pigg, Kenneth E,** associate professor, rural sociology; PhD, Cornell University-Nys Statutory Colleges
**Pike, Lynn Blinn,** associate professor, human development and family studies; PhD, Ohio State University Main Campus
**Pintel, David J,** professor, molecular microbiology and immunology; PhD, University of Illinois At Chicago
**Piper, Karen L,** assistant professor, english; PhD, University of Oregon
**Pippert, Wesley G,** associate professor, editorial; MA, Wheaton College
**Pitchford, Paul L,** research assistant professor, educational leadership & policy analysis; PhD, University of Missouri-Columbia
**Piva, Marta A,** research assistant professor, obstetrics & gynecology; PhD
**Placier, Peggy,** associate professor, educational leadership & policy analysis; PhD, University of Arizona
**Plain, Ronald L,** professor, agriculture economics; PhD, Oklahoma State University Main Campus
**Platt, Melvin C,** professor, music; PhD, University of Michigan
**Plummer, Patricia Lynne,** professor emeritus, chemistry; PhD, University of Texas At Austin
**Podgursky, Michael J,** professor, economics; PhD, University of Wisconsin-Madison
**Polacco, Joseph Carmine,** professor, agriculture biochemistry; PhD, Duke University
**Poor, Joel C,** visiting assistant professor, marketing; PhD, University of California-Irvine
**Pope, Eric R,** associate professor, veterinary medicine & surgery; DVM, Auburn University Main Campus
**Popejoy, Lori L,** clinical instructor, school of nursing; MS, University of Missouri-Columbia
**Porock, Davina C,** associate professor, school of nursing; PhD, Edith Cowan University
**Porter, Eileen W,** associate professor, school of nursing; PhD, University of Wisconsin-Milwaukee
**Porter, M Gilbert,** associate vice provost, english; PhD, University of Oregon
**Porter, Michael Joseph,** associate professor, communication; PhD, University of Iowa
**Porter, Rosemary Therese,** dean, school of nursing; PhD, University of Missouri-Columbia
**Powers, Ronald,** professor emeritas, rural sociology; PhD, Iowa State University
**Prager, Bradley J,** assistant professor, german & russian studies; PhD, Cornell University-Endowed Colleges
**Prahlad, Anand,** associate professor, english; PhD, University of California-Los Angeles
**Prather, Randall S,** professor, animal science; PhD, University of Wisconsin-Madison
**Prather-Kinsey, Jenice,** associate professor, accountancy; PhD, University of Alabama At Birmingham
**Prato, Anthony A,** professor, agriculture economics; PhD, University of California-Berkeley
**Prelas, Mark Antonio,** professor, nuclear engineering; PhD, University of Illinois Urbana Campus
**Presberg, Charles D,** assistant professor, romance languages/literature; PhD, Harvard University
**Prestigiacomo, C Chris,** adjunct instructor, accountancy; PhD, University of Missouri-Columbia
**Prewitt, Michael Wesley,** assistant professor, hp/cardiopulmonary/diagnostic sciences; PhD, University of Missouri-Columbia
**Preziosi, Diane E,** clinical assistant professor, veterinary medicine & surgery; DVM, University of Missouri-Columbia
**Price, Elmer M,** associate professor, veterinary biomedical sciences; PhD, University of Cincinnati Main Campus
**Price, Nancy Ann,** instructor, international programs; MS
**Procter, Brenda J,** extension instructor, consumer & family economics; MS, University of Missouri-Columbia
**Propeck, Tim,** assistant professor clinical department, radiology; MD, Boston University
**Prost, Evan,** clinical instructor, hp/physical therapy; BHS, University of Missouri-Columbia
**Puckett, Charles Linwood,** professor, surgery; MD, Wake Forest University
**Pullis, Michael,** associate professor, early childhood and elementary education; PhD, University of California-Los Angeles
**Pushaw Jr, Robert J,** associate professor, law; JD, Yale University
**Pye, Jonathan,** clinical associate professor, middle and secondary education; PhD, University of Missouri-Columbia
**Qin, Zhenbo,** associate professor, mathematics; PhD, Columbia University
**Qiu, Zeyuan,** research assistant professor, agriculture economics; PhD, University of Missouri-Columbia
**Quay, Catherine Charlet,** clinical instructor, hp/occupational therapy; M.O.T., University of Washington
**Quetsch, Joseph L,** clinical assistant professor, health management & informatics; MD
**Quinn, Thomas P,** associate professor, biochemistry; PhD, Saint Louis University Main Campus
**Quint, Andrew C,** assistant professor clinical department, internal medicine; MD, Tufts University
**Quirk, Thomas Vaughan,** professor, english; PhD, University of New Mexico Main Campus
**Raedeke, Maurine Darling,** resident instruction assistant professor, nutritional sciences; MS, University of Missouri-Columbia
**Ragland, Ellie,** professor, english; PhD, University of Michigan Ann Arbor
**Raitt, Jill,** professor emerita, religious studies; PhD, University of Chicago
**Rall, Kenneth L,** associate professor clinical, radiology; MD, University of Missouri-Columbia
**Ramos Vara, Jose A,** clinical assistant professor, veterinary pathobiology; PhD, University of Barcelona, Spain
**Randall, Douglas D,** professor, agriculture biochemistry; PhD, Michigan State University
**Randall, Linda Lea,** professor, agriculture biochemistry; PhD, University of Wisconsin Centers
**Rangnekar, Nitin Jaiwant,** clinical assistant professor, surgery; MD, University of Missouri-Columbia
**Ranly, Donald P,** professor, editorial; PhD, University of Missouri-Columbia
**Rantz, Marilyn J,** professor, school of nursing; PhD, University of Wisconsin-Milwaukee
**Ratti, Ronald Andrew,** professor, economics; PhD, Southern Methodist University
**Rautman, Marcus,** associate professor, art history & classical archaeology; PhD, Indiana University Bloomington
**Ray, Alpana,** research assistant professor, veterinary pathobiology; MS, University of Calcutta
**Ray, Bimal Kumar,** associate professor, veterinary pathobiology; MS, University of Calcutta, India
**Ray, Terry L,** assistant professor clinical department, anesthesiology; DO, Kirksville College of Osteopathic Medicine
**Raya-Carlton, Pamela,** assistant professor, human development and family studies; EDD, Harvard University
**Rayl, David,** professor, music; DMA, University of Iowa
**Raymon, Neil A,** associate professor, economics; PhD, University of Colorado At Boulder
**Read, David T,** assistant professor, english; PhD, University of Chicago
**Reddy, Chada Sudershan,** associate professor, veterinary biomedical sciences; PhD, University of Mississippi Main Campus
**Reddy, Hanumanth K,** associate professor, internal medicine; MD, Osmania Medical College - India
**Reed, Brian E,** associate professor, civil/environmental engineering; PhD, State University of New York
**Reed, Rita,** visiting associate professor, editorial; MS, University of Missouri-Columbia
**Reed-Adams, Johanna,** state specialist-community leadership development, rural sociology
**Reeder, Linda S,** assistant professor, history; PhD, Rutgers University New Brunswick
**Rees, David L,** associate professor professional practice, editorial; MA, University of Missouri-Columbia
**Reid Arndt, Stephanie A,** clinical assistant professor, physical medicine & rehabilitation; PhD, University of Arizona
**Reid, John Christopher,** professor, educational leadership & policy analysis; PhD, University of Missouri-Columbia
**Reilly, Thomas J,** research assistant professor, molecular microbiology

and immunology; PhD

**Reneker, Lixing W,** assistant professor, ophthalmology; PhD, University of Iowa

**Renner, Gregory J,** associate professor, surgery; MD, Southern Illinois University-Carbondale

**Retzloff, David George,** associate professor, chemical engineering; PhD, University of Pittsburgh Main Campus

**Reuben, Richard C,** associate professor, law; JD, Georgia State

**Revelle, Sara M,** clinical instructor, school of nursing; MS, University of Missouri-Columbia

**Reys, Barbara Bestgen,** professor, middle and secondary education; PhD, University of Missouri-Columbia

**Reys, Robert E,** professor, middle and secondary education; EDD, University of Missouri-Columbia

**Rhyne, James J,** professor, physics; PhD, Iowa State University

**Rice, Glenn P,** extension instructor, extension education; MS, University of Missouri-Columbia

**Richardson, Lillard E,** associate professor, graduate school of public affairs; PhD, University of Texas At Austin

**Richins, Marsha L,** professor, marketing; PhD, University of Texas At Austin

**Richman, Bruce W,** research instructor, surgery; MS, New York University

**Riddle, Donald Lee,** director, biological science; PhD, University of California-Berkeley

**Ridpath, Carlin A,** assistant professor clinical department, radiology; MD, University of Missouri-Kansas City

**Rieger Iii, Frank G,** assistant professor clinical department, ophthalmology; MD, Louisiana State University

**Ries, Lawrence D,** resident instruction assistant professor, statistics; PhD, University of Missouri-Columbia

**Rikoon, J. Sanford,** associate professor, rural sociology; PhD, University of Indianapolis

**Riley, Lyanne,** clinical assistant professor, communication science and disorders; PhD, University of Missouri-Columbia

**Riley, Anna,** assistant professor, sociology; PhD, Washington State University

**Riley, Jim R,** extension instructor, agricultural education; MS, University of Missouri-Columbia

**Riley, Lela K,** professor, veterinary pathobiology; PhD, University of Kansas Main Campus

**Ringdahl, Erika N,** assistant professor clinical department, family & community medicine; MD, University of Iowa

**Riskin, Leonard L,** professor, law; LL.M., Yale University

**Robb, Carol,** adjunct instructor, social work; MSW, University of Missouri-Columbia

**Robbennolt, Jennifer K,** associate professor, law; JD, University of Nebraska-Lincoln

**Robbins, Michael Cook,** professor, anthropology; PhD, University of Minnesota At Minneapolis

**Robert, Chris,** assistant professor, management; PhD, University of Illinois-Champaign/Urbana

**Roberts, Charlene,** assistant professor, hp/physical therapy; PhD, University of Missouri-Columbia

**Roberts, C David,** research associate professor, education & counseling psychology; PhD, University of Arizona

**Roberts, Craig,** associate professor, agronomy; PhD, University of Arkansas-Fayetteville

**Roberts, John Richard,** professor emeritus, english; PhD, University of Illinois Urbana Campus

**Roberts, Robert Michael,** professor, animal science; PhD, Oxford University, England

**Robertson, John D,** professor, chemistry; PhD, University of Maryland College Park Campus

**Robins, Arthur J,** professor emeritus, honors college; PhD

**Robinson, David Paul,** assistant professor clinical department, child health; MD, Vanderbilt University

**Robinson, Gregory C,** clinical instructor, hp/communication science and disorders; MA, Southwest Missouri State University

**Robinson, Richard David,** professor, early childhood and elementary education; EDD, University of Georgia

**Rodabaugh, Kerry Julene,** assistant professor, obstetrics & gynecology; MD, Duke University

**Roe, Pamela K,** extension instructor, extension education; MS

**Rogers, Marvin L,** instructor, political science; PhD, University of California-Berkeley

**Roland, William,** associate professor clinical, internal medicine; MD, University of Missouri

**Romero, Anna Marie,** assistant professor professional practice, broadcast news; BA, University of New Mexico

**Rose, Amanda J,** assistant professor, psychological sciences; PhD, University of Illinois Urbana Campus

**Rosenholtz, Mitchell Jay,** professor emeritus, pathology and anatomical sciences; MD, University of Minnesota Twin Cities

**Ross Jr, Gilbert,** professor emeritus, surgery; MD, University of Michigan Ann Arbor

**Rosser, Victoria Jayne,** assistant professor, educational leadership & policy analysis; PhD, University of Hawaii At Manoa

**Rottinghaus, Audrey Adrick,** clinical instructor, veterinary pathobiology; MS, Iowa State University

**Rottinghaus, George Edwin,** clinical associate professor, veterinary biomedical sciences; PhD, Iowa State University

**Rouder, Jeffrey N,** assistant professor, psychological sciences; PhD, University of California-Irvine

**Rovetto, Michael J,** professor, physiology; PhD, University of Virginia Main Campus

**Rowlett, Ralph M,** professor, anthropology; PhD, Harvard University

**Rubin, Leona Joyce,** associate professor, veterinary biomedical sciences; PhD, University of Colorado Health Sciences Center

**Rucker, Edmund B,** assistant professor, animal science; PhD, Texas A&M University

**Rudeen, Paul K,** professor, health professions; PhD, University of Texas Health Science San Antonio

**Rudel, Richard Kenneth,** associate professor, agriculture economics; PhD, Colorado State University

**Rudelson, Mark,** assistant professor, mathematics; PhD, Hebrew University of Jerusalem

**Rueda, Ana M,** associate professor, romance languages/literature; PhD, Vanderbilt University

**Ruffin, Clyde,** professor, theatre; MFA, University of Iowa

**Ruiz Garcia, Martha,** visiting instructor, romance languages/literature; MA, Institute Caroy Cuerro

**Ruplinger, Jacqueline,** assistant professor clinical department, family & community medicine; MD, University of Texas Medical Branch-Galveston

**Rupright, Jon,** assistant professor clinical department, physical medicine & rehabilitation; DO, Kirksville College of Osteopathic Medicine

**Ryan, Mark R,** professor, fisheries and wildlife sciences; PhD, Iowa State University

**Rymph, Catherine E,** assistant professor, history; PhD, University of Iowa

**Saab, Elias,** professor, mathematics; PhD, University of Illinois Urbana Campus

**Saab, Paulette,** professor, mathematics; PhD, University of Illinois Urbana Campus

**Saab, Youssef,** associate professor, computer engineering & computer science; PhD, University of Illinois Urbana Campus

**Sable, Marjorie R,** associate professor, social work; PhD, University of North Carolina Chapel Hill

**Safranski, Timothy J,** assistant professor, animal science; PhD, University of Missouri-Columbia

**Sahota, Pradeep K,** associate professor, psychiatry/neurology; MD, Christian Medical College - Ludhiana

**Salim, Hani A,** assistant professor, civil/environmental engineering; PhD, West Virginia University

**Sallee, Kimberley A,** visiting instructor, romance languages/literature; MS, University of New Mexico Central office

**Salter, Christopher L,** professor, geography; PhD, University of California-Berkeley

**Salzer, William L,** professor of clinical department, internal medicine; MD, University of Medicine & Dentistry of New Jersey

**Sampson, Charles L,** associate professor, graduate school of public affairs; PhD, University of Pittsburgh

**Sanders, Keith Page,** professor, editorial; PhD, University of Iowa

**Sanford Bernhardt, Kristen,** assistant professor, civil/environmental engineering; PhD, Carnegie Mellon University

**Sanford, Marilyn K,** clinical associate professor, hp/physical therapy; PhD, University of Missouri-Columbia

**Santos, Sherod,** professor, english; PhD, University of Utah

**Satpathy, Sashi,** professor, physics; PhD, University of Illinois Urbana Campus

**Sattenspiel, Lisa,** associate professor, anthropology; PhD, University of New Mexico Main Campus

**Saylor, Charles Fredrick,** professor, classical studies; PhD, University of California-Berkeley

**Scanlon, Thomas C,** adjunct assistant professor, pathology and anatomical sciences; PhD, University of Michigan

**Schachtman, Todd R,** associate professor, psychological sciences; PhD, University of California-San Diego

**Schadt, James Carney,** associate professor, veterinary biomedical sciences; PhD, Texas Tech University

**Scharf, Peter C,** assistant professor, agronomy; PhD, Virginia Polytechnic Institute And State Univ

**Schatten, Heide,** associate professor, veterinary pathobiology; PhD, University of Heidelberg

**Schawo, Alice,** extension instructor, extension education; EDD, University of Missouri-Columbia

**Scheer, Lisa K,** associate professor, marketing; PhD, Northwestern University

**Scheideberg, Donna,** associate professor clinical, school of nursing; PhD, State University of New York

**Schenker, David Joseph,** associate professor, classical studies; PhD, University of California-Berkeley

**Schmaltz, Richard Allen,** associate professor clinical, surgery; MD, University of South Dakota

**Schmidt, Francis John,** professor, biochemistry; PhD, University of Wisconsin-Madison

**Schneeberger, Kenneth C,** director, agriculture economics; PhD, Oklahoma State University Main Campus

**Schneller, John T,** assistant professor professional practice, editorial; BS, University of Missouri-Columbia

**Schnitzer, Patricia G,** research assistant professor, family & community medicine; PhD

**Schoelz, James E,** associate professor, plant microbiology & pathology; PhD, University of Kentucky

**Schoenleber, Dana B,** assistant professor clinical department, ophthalmology; MD, Kansas University, Kansas City

**Schoephoerster, Paul W,** assistant professor clinical department, family & community medicine; MD, University of Iowa

**Scholes, Robbie,** clinical associate, education & counseling psychology; PhD, University of Missouri-Columbia

**Schopp, Laura,** clinical assistant professor, physical medicine & rehabilitation; PhD, University of Missouri-Columbia

**Schrader, Keith William,** professor emeritus, mathematics; PhD, University of Nebraska-Lincoln

**Schroeder, Paul A,** assistant professor, romance languages/literature; PhD, Stanford University

**Schroeder, Walter Albert,** associate professor, geography; MA, University of Missouri-Columbia

**Schuchard Iii, Oliver A,** professor emeritus, art; MFA, Southern Illinois University-Carbondale

**Schuder, John Claude,** professor emeritus, surgery; PhD, Purdue University Main Campus

**Schul, Johannes,** assistant professor, biological science; PhD, University of Marburg, Germany

**Schumacher, Leon,** associate professor, biological engineering; PhD, Iowa State University

**Schwartz, Richard B,** dean, english; PhD, University of Illinois Central office

**Schwarz, Benyamin,** associate professor, environmental design; PhD, University of Michigan Ann Arbor

**Scott, James K.,** research assistant professor, rural sociology; PhD, University of Missouri-Columbia

**Scott, Byron T,** professor, editorial; MA, Ohio University Main Campus

**Scott, Michael A,** assistant professor, veterinary pathobiology; DVM, Michigan State University

**Scribner, Jay P,** assistant professor, educational leadership & policy analysis; PhD, University of Wisconsin-Madison

**Scroggins, Daniel C,** associate professor, romance languages/ literature; PhD, University of Michigan Ann Arbor

**Sebacher, Mary C,** assistant professor, hp/cardiopulmonary/diagnostic sciences; MED, University of Missouri-Columbia

**Segert, Ines L,** adjunct assistant professor, psychological sciences; PhD, Princeton University

**Segert, Jan,** associate professor, mathematics; PhD, Princeton University

**Seibert, James Franklin,** extension instructor, extension education; MS

**Selva, Thomas J,** assistant professor clinical department, child health; MD, University of Mississippi

**Semlitsch, Raymond,** professor, biological science; PhD, University of Georgia

**Sentilles Jr, F Dennis,** professor, mathematics; PhD, Louisiana St Univ & Agrl & Mech & Hebert Laws Ctr

**Sethi, Yash Pal,** clinical instructor, radiology; PhD, St Vincent's Med Center of Richmond-Sch of Nurs

**Settergren, Carl David,** professor, forestry; PhD, Colorado State University

**Shang, Yi,** assistant professor, computer engineering & computer science; PhD, University of Illinois Urbana Campus

**Shannon, James G,** professor, agronomy; PhD, Purdue University Main Campus

**Sharma, Krishna,** associate professor, ophthalmology; PhD, Mysore

**Sharp, Gordon Craig,** professor emeritus, internal medicine; MD, Johns Hopkins University

**Sharp, Paul R,** professor, chemistry; PhD, Massachusetts Institute of Technology

**Sharp, Robert E,** professor, agronomy; PhD, University of Lancaster

**Sharpe, Deanna L,** assistant professor, consumer & family economics; PhD, Iowa State University

**Sheldon, Kennon M,** assistant professor, psychological sciences; PhD, University of California-Davis

**Shelton, Kevin L,** professor, geological sciences; PhD, Yale University

**Sher, Kenneth,** professor, psychological sciences; PhD, Indiana University Bloomington

**Sherman, Byron W,** professor, electrical engineering; PhD, University of Missouri-Columbia

**Shi, Hongchi,** assistant professor, computer engineering & computer science; PhD, University of Florida

**Shin, Doh C,** professor, political science; PhD, University of Illinois Urbana Campus

**Shore, Maria Dawn,** clinical assistant professor, veterinary medicine & surgery; DVM, Oregon State University - Corvallis

**Short, Paula,** associate vice president for academic affairs, educational leadership & policy analysis; EDD, University of North Carolina-Chapel Hill

**Short, Rick J,** associate professor, education & counseling psychology; PhD, University of North Carolina Chapel Hill

**Shukla, Shivendra D,** professor, pharmacology; PhD, University of Liverpool

**Shyu, Chi Ren,** assistant professor, computer engineering & computer science; PhD, Purdue University Main Campus

**Sievert, Donald Edward,** professor, philosophy; PhD, University of Iowa

**Sievert, Mary Ellen,** professor, information science & learning technologies; PhD, University of Missouri-Columbia

**Silcock, B William,** instructor, broadcast news; MA, Brigham Young University

**Sill, Gerald M,** adjunct professor, health management & informatics; MD

**Silver, Donald,** professor emeritus, surgery; MD, Duke University

**Silvey, Yvette R,** clinical instructor, hp/ physical therapy; MS, Nova University

**Simonyi, Agnes,** research assistant professor, biochemistry; PhD

**Simpson, W Andrew,** associate professor, internal medicine; PhD, University of Tennessee-Knoxville

**Sims, Wendy L,** professor, music; PhD, Florida State University

**Singh, Amolak,** professor, radiology; MD, Medical College, India

**Sinha, Shantanu,** assistant professor clinical department, internal medicine; MD

**Sites, Robert W,** associate professor, entomology; PhD, Washington State University

**Situ, Peter D,** clinical instructor, hp/ cardiopulmonary/diagnostic sciences; BS, University of Missouri-Columbia

**Skinner, Jeremy B,** clinical assistant professor, psychological sciences; PhD

**Skubic, Marjorie,** assistant professor, computer engineering & computer science; PhD, Texas A&M University

**Slane, Kathleen W,** professor, art history & classical archaeology; PhD, Bryn Mawr College

**Slaughter, James R,** associate professor clinical, psychiatry/ neurology; MD, University of Missouri

**Sleper, David Allen,** professor, agronomy; PhD, University of Wisconsin-Madison

**Slight, Simon,** research assistant professor, veterinary biomedical sciences; PhD, University of Salford

**Slivinsky, Charles Robert,** professor emeritus, electrical engineering; PhD, University of Arizona

**Slutske, Wendy S,** assistant professor, psychological sciences; PhD, University of Minnesota Central office

**Smalley, Kristi D,** extension instructor, extension education; MS

**Smeda, Reid J,** assistant professor, agronomy; PhD, Purdue University Main Campus

**Smith, A Mark,** professor, history; PhD, University of Wisconsin-Madison

**Smith, Arnold L,** professor, molecular microbiology and immunology; MD, University of Missouri-Columbia

**Smith, Bea Burns,** dean, dean of human environmental sciences; PhD, University of Minnesota Twin Cities

**Smith, Brandi J,** assistant professor, psychological sciences; PhD, University of Vermont

**Smith, Cynthia Zoe,** professor, editorial; PhD, University of Iowa

**Smith, Dan A,** adjunct instructor, nutritional sciences; MS, University of Missouri-Columbia

**Smith, Daniel S,** associate professor, pathology and anatomical sciences; MD, Indiana University Bloomington

**Smith, Evan S,** extension instructor, extension education; PhD, Indiana University

**Smith, George P,** professor, biological science; PhD, Harvard University

**Smith, Jack J,** adjunct instructor, advertising; BA, University of Missouri-Columbia

**Smith, Michael Fielding,** professor, animal science; PhD, Texas A&M University

**Smull, Ronald E,** adjunct professor, law; JD, University of Missouri-Columbia

**Smythe, Mary Jeanette,** associate professor, communication; PhD, Florida State University

**Snively, Carol A,** assistant professor, social work; MSW, Ohio State University Central office

**Snyder Jr, Leon C,** associate professor, horticulture; MS, University of Michigan Ann Arbor

**Someshwar, Shiv,** assistant professor clinical department, child health; MD, University of India-Delhi

**Sommers, Margaret Paula,** professor, romance languages/literature; PhD, Stanford University

**Song, Qisheng,** assistant professor, entomology; PhD, University of Maryland College Park Campus

**Sosland, Jeffrey K,** visiting assistant professor, political science; PhD, Georgetown University

**Sowell, Jody,** assistant professor professional practice, editorial; MA, University of Missouri-Columbia

**Spadone, Donald P,** assistant professor clinical department, surgery; MD, State University of New York-Special F Unit

**Spain, James N,** associate professor, animal science; PhD, Virginia Polytechnic Institute And State Univ

**Speckman, Paul L,** professor, statistics; PhD, University of California-Los Angeles

**Spence, Marcia L,** assistant professor, music; DMA, University of North Texas

**Sperber, Jonathan,** professor, history; PhD, University of Chicago

**Spier, Robert F G,** professor emeritus, honors college; PhD

**Spiers, Donald E,** associate professor, animal science; PhD, University of Michigan Ann Arbor

**Spollen, Linda E,** associate professor, pathology and anatomical sciences; MD, University of Kansas Medical Center

**Springer, Gordon Kent,** associate professor, computer engineering & computer science; PhD, Pennsylvania State University Main Campus

**Srinivasan, Hema,** professor, mathematics; PhD, Brandeis University

**Stack, Frank H,** professor emeritus, art; MA, University of Wyoming

**Stadler, Michael Allen,** associate professor, psychological sciences; PhD, Purdue University Main Campus

**Stam, Antonie,** professor, management; PhD, University of Kansas Main Campus

**Stansfield, John J,** resident instruction assistant professor, finance; PhD, University of Missouri-Columbia

**Stanton, Anne R,** associate professor, art history & classical archaeology; PhD, University of Texas At Austin

**Starbuck, Christopher J,** associate professor, horticulture; PhD, Oregon State University

**Stark, James M,** assistant professor, molecular microbiology and immunology; MD, PhD, Case Western Reserve University

**Stealey, Josephine,** associate professor, art; PhD, University of Missouri-Columbia

**Steevens, Barry Jerome,** professor, animal science; PhD, Oklahoma State University Main Campus

**Steffen, Earl K,** research assistant professor, veterinary pathobiology; PhD, University of Missouri-Columbia

**Stephens, Clifford P,** assistant professor, finance; PhD, University of Arizona

**Stephenson, Michael T,** assistant professor, communication; PhD, University of Kentucky

**Sterling, James,** professor professional practice, editorial; BS, University of Missouri-Columbia

**Sternlight, Jean R,** professor, law; JD, Harvard University

**Stevens, Sharon F,** extension instructor, textile and apparel management; MS, University of Missouri-Columbia

**Stevens, William E,** extension assistant professor, agronomy; PhD

**Stevermer, James John,** assistant professor, family & community medicine; MD, Washington University

**Stewart, Bob R,** professor, middle and secondary education; EDD, University of Maryland College Park Campus

**Stockham, Steven Lloyd,** associate professor, veterinary pathobiology; DVM, Kansas State University of Agriculture And App Sci

**Stone Jr, Frederick C,** assistant professor clinical department, family & community medicine; MD, Georgetown University

**Stone, Tamara T,** assistant professor, health management & informatics; PhD, Saint Louis University Main Campus

**Stormont, Melissa,** assistant professor,

early childhood and elementary education; PhD, Purdue University Main Campus

**Stowe, John D,** professor, finance; PhD, University of Houston-University Park

**Stowe, Linda A,** adjunct instructor, computer engineering & computer science; MS, University of Missouri-Columbia

**Strathausen, Carsten,** assistant professor, german & russian studies; PhD, University of Oregon

**Straub, Vicki W,** clinical associate professor, family & community medicine; PhD, University of Arizona

**Stroud, Tracy Ann,** assistant professor clinical department, child health; DO

**Stubbs, Sue,** adjunct assistant professor, music; MM, University of Missouri-Columbia

**Stucky, Renee,** clinical assistant professor, physical medicine & rehabilitation; PhD, University of Missouri-Columbia

**Sturek, Michael Stephen,** professor, physiology; PhD, University of Iowa

**Sullivan, Margaret J,** research assistant professor, physiology; PhD, Washington State University

**Summers, Gerald F,** associate professor, biological science; PhD, University of Illinois Urbana Campus

**Sun, Albert Y,** professor, pharmacology; PhD, Oregon State University

**Sun, Dongchu,** associate professor, statistics; PhD, Purdue University Main Campus

**Sun, Grace Y,** professor, biochemistry; PhD, Oregon State University

**Sun, Jianguo,** assistant professor, statistics; PhD, University of Waterloo

**Sun, Ron,** associate professor, computer engineering & computer science; PhD, Brandeis University

**Sunde, Roger A,** professor, nutritional sciences; PhD, University of Wisconsin-Madison

**Sundet, Paul A,** associate professor emeritus, social work; PhD, University of Illinois Urbana Campus

**Sutherland, Stephen B,** assistant professor, english; PhD, University of Pittsburgh Main Campus

**Swan, Shanna H,** research professor, family & community medicine; PhD, University of California-Berkley

**Sweets, Laura E,** extension assistant professor, plant microbiology & pathology; PhD

**Swenson, John,** adjunct assistant professor, management; JD, University of Missouri-Columbia

**Swick, Marly A,** professor, english; PhD, The American University

**Swinfard, Ronald W,** associate professor clinical, internal medicine; MD, University of Missouri-Columbia

**Sykuta, Michael E,** assistant professor, agriculture economics; PhD, Washington University

**Szekely, Eva Diana,** professor, music; MS, Julliard School of Music

**Tainter, E Hunt,** clinical instructor, veterinary medicine & surgery; DVM, University of Missouri-Columbia

**Tan, Jinglu,** professor, biological engineering; PhD, University of Minnesota Central office

**Tang, Hui,** assistant professor, electrical engineering; PhD, University of Illinois Urbana Campus

**Tanner, John J,** assistant professor, chemistry; PhD, Brown University

**Tarkow, Theodore Alfred,** associate dean, classical studies; PhD, University of Michigan Ann Arbor

**Tarr, James E,** assistant professor, middle and secondary education; PhD, Illinois State University

**Taub, Haskell,** professor, physics; PhD, Cornell University-Endowed Colleges

**Teague, Julius L,** associate professor clinical, surgery; MD, Emory University

**Templer, Jerry Wayne,** professor, surgery; MD, University of Tennessee-Knoxville

**Terjung, Ronald L,** professor, veterinary biomedical sciences; PhD, University of Iowa

**Terry, Boyd Earl,** associate professor, surgery; MD, Washington University

**Tew, Patricia A,** clinical instructor, hp/cardiopulmonary/diagnostic sciences; MS, Colorado State University

**Thai, Louise,** adjunct assistant professor, molecular microbiology and immunology; MD, Sechenov Medical School-Moscow

**Thelen, Mark H,** professor emeritus, psychological sciences; PhD, Michigan State University

**Thiher Jr, Ottah Allen,** professor, romance languages/literature; PhD, University of Wisconsin-Madison

**Thomas, Maria,** assistant professor clinical department, psychiatry/neurology; MD, Federal University of Algoas

**Thomas, Robert E,** professor, extension education; PhD, University of Idaho

**Thomas, Tom R,** professor, nutritional sciences; PhD, University of Missouri-Columbia

**Thompson, Allen,** associate professor, biological engineering; PhD, University of Nebraska-Lincoln

**Thompson, Greig,** visiting assistant professor, art; MFA, University of Missouri-Columbia

**Thompson, James E,** dean, electrical engineering; PhD, Texas Tech University

**Thompson, Julius E,** professor and director of black studies, history; PhD, Princeton University

**Thompson, Richard Claude,** professor, chemistry; PhD, University of Maryland College Park Campus

**Thornburg, Kathy R,** professor, human development and family studies; PhD, University of Missouri-Columbia

**Thornburg, Larry Paul,** associate professor, veterinary pathobiology; DVM, Texas A&M University

**Thorson, Esther L,** associate dean, advertising; PhD, University of Minnesota

**Thurman, Laura M,** laboratory instructor, human development and family studies; MA, University of Missouri-Columbia

**Tillema, Herbert Kendall,** professor, political science; PhD, Harvard University

**Timberlake, Charles E,** professor, history; PhD, University of Washington

**Timms, Kathy L,** associate professor, obstetrics & gynecology; PhD, University of Tennessee-Knoxville

**Tipton, Peter A,** associate professor, biochemistry; PhD, University of Wisconsin-Madison

**Tobias, Joseph,** professor of clinical department, child health; MD, University of Missouri-Kansas City

**Todd, Jo Ella,** assistant professor, music; MM, New England Conservatory of Music

**Tomlinson, James Leroy,** associate professor, veterinary medicine & surgery; DVM, University of Minnesota Twin Cities

**Tompson Jr, Robert V,** associate professor, nuclear engineering; PhD, University of Missouri-Columbia

**Topolski, James Michael,** research assistant professor, psychiatry/neurology; PhD, St. Louis University

**Townsend, Barbara K,** professor, educational leadership & policy analysis; EDD, College of William And Mary

**Traudes, Mary Beth,** clinical instructor, school of nursing; MS

**Trauth, Kathleen M,** assistant professor, civil/environmental engineering; PhD, Texas Tech University

**Trinklein, David Herbert,** associate professor, horticulture; PhD, University of Missouri-Columbia

**Trivedi, Madhuri,** assistant professor clinical department, internal medicine; MD, University of Missouri-Columbia

**Troske, Kenneth R,** associate professor, economics; PhD, University of Chicago

**Trout, Dennis E,** associate professor, classical studies; PhD, Duke University

**Trull, Timothy J,** professor, psychological sciences; PhD, University of Kentucky

**Tse, Kenneth,** visiting assistant professor, music; MM, Indiana University Bloomington

**Tsika, Richard W,** associate professor, veterinary biomedical sciences; PhD, University of California-Irvine

**Tsoi, Allanus,** assistant professor, mathematics; PhD, University of Alberta

**Tucker, Sheryl A,** assistant professor, chemistry; PhD, University of North Texas

**Turban, Daniel B,** associate professor, management; PhD, University of Houston-University Park

**Turk, James Reid,** clinical associate professor, veterinary pathobiology; DVM, University of Missouri

**Turner, John Thomas,** professor, pharmacology; PhD, University of Missouri-Columbia

**Turnquist, Susan Ellen,** clinical assistant professor, veterinary pathobiology; PhD, University of Missouri-Columbia

**Twaddle, Andrew C,** professor emeritus, sociology; PhD, Brown University

**Twardowski, Zbylut,** professor emeritus, internal medicine; MD, University of Krakow, Poland

**Tyler, Jeffrey W,** associate professor, veterinary medicine & surgery; PhD, University of California-Davis

**Tyrer Jr., Harry Wakeley,** professor, computer engineering & computer science; PhD, Duke University

**Tzou, Robert D,** professor, mechanical & aerospace engineering; PhD, Lehigh University

**Uddin, Mohammed S,** professor, environmental design; PhD, University of Sheffield, England

**Ugarte, Michael,** professor, romance languages/literature; PhD, Cornell University-Endowed Colleges

**Uhlmann, Jeffrey,** assistant professor, computer engineering & computer science; PhD, Oxford University, England

**Ulbrich, Sherri,** clinical instructor, school of nursing; MS

**Underwood, Michael B,** professor, geological sciences; PhD, Cornell University-Nys Statutory Colleges

**Underwood, Tonja Rene,** adjunct instructor, environmental design; BS, University of Missouri-Columbia

**Unklesbay, Kenneth B,** professor, electrical engineering; PhD, University of Missouri-Columbia

**Unklesbay, Nan,** professor, food science & nutrition; PhD, University of Wisconsin-Madison

**Urban, Michael A,** assistant professor, geography; PhD, University of Illinois Urbana Campus

**Valdivia, Corinne B,** research assistant professor, agriculture economics; PhD, University of Missouri-Columbia

**Vale Jr, Joe D,** extension instructor, extension education; BJ, University of Missouri-Columbia

**Valentine, Jerry Wayne,** professor, educational leadership & policy analysis; PhD, University of Nebraska-Lincoln

**Van Doren, Steven R,** assistant professor, agriculture biochemistry; PhD, University of Illinois Urbana Campus

**Van Dyne, Donald L,** associate professor emeritus, agriculture economics; PhD, University of Maryland

**Van Ooyen, Julie,** visiting instructor, international programs; MS, West Virginia University

**Vasilyev, Oleg V,** assistant professor, mechanical & aerospace engineering; PhD, University of Notre Dame

**Vaughan, Charles Edwin,** professor, sociology; PhD, University of Minnesota Twin Cities

**Vaughn, Paul R,** associate dean, agricultural education; PhD, Ohio State University

**Vaught, David R,** resident instruction instructor, parks recreation & tourism; MS, University of Missouri-Columbia

**Venkataraman, Vijaya,** assistant professor clinical department, internal medicine; MD, University of Missouri-Columbia

**Verbitsky, Igor,** professor, mathematics; PhD, University of Kazan

**Vessell, Charles Randal,** associate professor, parks recreation & tourism; PhD, University of Iowa

**Veum, Trygve Lauritz,** professor, animal science; PhD, Cornell University-Nys Statutory Colleges

**Viessman, Sara S,** associate professor clinical, child health; MD, University of Missouri-Kansas City

**Vignale, Giovanni,** professor, physics; PhD, Northwestern University

**Vinson, Daniel C,** associate professor, family & community medicine; MD, University of North Carolina Chapel Hill

**Virkler, Mark Robert,** professor, civil/environmental engineering; PhD, University of Virginia Main Campus

**Viswanath, Dabir S,** professor emeritus, chemical engineering; PhD, University of Rochester

**Vogelsmeier, Amy,** clinical instructor, school of nursing; MS
**Vogt, Albert R,** professor, forestry; PhD, University of Missouri-Columbia
**Volkert, Wynn A,** professor, radiology; PhD, University of Missouri-Columbia
**Vomsaal, Frederick Stephen,** professor, biological science; PhD, Rutgers University New Brunswick
**Von Schoenborn, Alexander,** associate professor, philosophy; PhD, Tulane University of Louisiana
**Vultee, Frederick,** assistant professor professional practice, editorial; BA, University of North Carolina-Chapel Hill
**Wade, Jerry Lee,** associate professor emeritus, rural sociology; PhD, University of Missouri-Columbia
**Waganer, Karen,** clinical instructor, school of nursing; MS, University of Oklahoma Health Science Center
**Wagner Mann, Colette,** research assistant professor, surgery; DVM, Texas A&M University
**Waigandt, Alex,** associate professor, education & counseling psychology; PhD, University of Oregon
**Walker, Bruce J,** dean, marketing; PhD, University of Colorado At Boulder
**Walker, John Charles,** professor, biological science; PhD, University of Georgia
**Walker, Sara Ellen,** professor, internal medicine; MD, University of Texas At Austin
**Wall Jr, James Allen,** professor, management; PhD, University of North Carolina Chapel Hill
**Wall, Judy Davis,** professor, agriculture biochemistry; PhD, Duke University
**Wallace, Paul,** professor, political science; PhD, University of California-Berkeley
**Wallace, Richard Lee,** chancellor, economics; PhD, Vanderbilt University
**Wallach, Barbara Price,** associate professor, classical studies; PhD, University of Illinois Champaign-Urbana
**Walls, Joseph Thaddeus,** professor, surgery; MD, University of Arkansas-Fayetteville
**Wang, Ching H,** assistant professor, psychiatry/neurology; MD, Northwestern University
**Wang, Fengkwei,** assistant professor, information science & learning technologies; PhD, Indiana University Bloomington
**Wang, Margaret,** assistant professor clinical department, child health; MD, Northwestern University School of Medicine
**Wang, Richard J,** professor, biological science; PhD, University of Colorado At Boulder
**Wang, Shuguang,** associate professor, mathematics; PhD, Oxford University, England
**Wang, Xinghe,** associate professor, economics; PhD, University of Iowa
**Ward, Carol V,** associate professor, anthropology; PhD, Johns Hopkins University School of Medicine
**Ward, Dana S,** assistant professor clinical department, internal medicine; MD, University of Missouri
**Warmund, Michele Renee,** associate professor, horticulture; PhD, University of Missouri-Columbia
**Warner, Linda S,** assistant professor, educational leadership & policy analysis; PhD, University of Oklahoma Norman Campus
**Watson, Timothy B,** associate professor clinical, anesthesiology; MD, Indiana University
**Watt, J Wilson,** associate professor, social work; PhD, University of Illinois Urbana Campus
**Watts, Steven,** professor and chairman, history; PhD, University of Missouri-Columbia
**Weagley, Pamela N,** associate professor, textile and apparel management; PhD, Cornell University-Nys Statutory Colleges
**Weagley, Robert O,** associate professor, consumer & family economics; PhD, Cornell University-Endowed Colleges
**Weaver, Glenn D,** associate professor emeritus, parks recreation & tourism; MS, University of Missouri-Columbia
**Weaver, James L,** adjunct instructor, intercollegiate athletics; BS
**Webber, David J,** associate professor, political science; PhD, Indiana University Bloomington
**Webel, Richard R,** associate professor clinical, internal medicine; MD, Ohio State University Main Campus
**Weber Hardy, Lorilie,** clinical instructor, hp/cardiopulmonary/diagnostic sciences; MED, University of Missouri-Columbia
**Weber, Melvin R,** resident instruction instructor, food science & nutrition; MS, University of Missouri-Columbia
**Wechsler, Barton J,** director, graduate school of public affairs; PhD, Ohio State University Main Campus
**Wedding, Danny,** professor, psychiatry/neurology; PhD, University of Hawaii At Manoa
**Wedman, John,** associate professor, information science & learning technologies; PhD, University of Oklahoma Norman Campus
**Wedman, Judith,** associate professor, early childhood and elementary education; PhD, University of Oklahoma Norman Campus
**Weems Jr, Robert E,** professor, history; PhD, University of Wisconsin-Madison
**Weinberg, Steven Robert,** professor, editorial; MA, University of Missouri-Columbia
**Weinstein, Stephen H,** associate professor, surgery; MD, University of Chicago
**Weirich, Paul,** professor, philosophy; PhD, University of California-Los Angeles
**Weisbrook, Christa Moll,** adjunct assistant professor, mechanical & aerospace engineering; PhD, University of Missouri-Columbia
**Weisman, Gary A,** professor, agriculture biochemistry; PhD, University of Nebraska-Lincoln
**Welch, Sharon,** professor, religious studies; PhD, Vanderbilt University
**Wells, Christina E,** associate professor, law; JD, University of Chicago
**Wells, Jack,** assistant professor clinical department, surgery; MD, Ross University School of Medicine, Dominica, West Indies
**Welshons, Wade Vincent,** associate professor, veterinary biomedical sciences; PhD, Harvard University
**Wen, Dennis Y,** assistant professor clinical department, family & community medicine; MD, East Carolina University
**Wenger, Janice Kay,** professor, music; DMA, University of Missouri-Kansas City
**Werner, Samuel A,** professor emeritus, physics; PhD, University of Michigan Ann Arbor
**West, David Almond,** professor, finance; PhD, University of Arkansas-Fayetteville
**West, Nancy M,** assistant professor, english; PhD, University of North Carolina Chapel Hill
**Westbrook, James E,** professor emeritus, law; LL.M., Georgetown University
**Westhoff, Patrick,** research assistant professor, agriculture economics; PhD, Iowa State University
**Weston, Dana T,** associate professor, mathematics; PhD, University of Illinois Urbana Campus
**Wexler, Carlos,** assistant professor, physics; PhD, University of Washington
**Whelove, Richard T,** instructor, mechanical & aerospace engineering; MS, University of Missouri-Columbia
**White, Harry H,** professor of clinical department, psychiatry/neurology; MD, University of Missouri-Kansas City
**White, Henry W,** professor, physics; PhD, University of California-Los Angeles
**Whitenack, Joy W,** assistant professor, early childhood and elementary education; EDD, Vanderbilt University
**Whites, Leeann,** associate professor, history; PhD, University of California-Irvine
**Whitman, Dale A,** professor, law; LL.B., Duke University
**Whitman, Marjorie M,** clinical instructor, school of nursing; MS, University of Missouri-Columbia
**Whitmore, William J,** visiting assistant professor, marketing; PhD
**Whitt, Stevan P,** assistant professor, internal medicine; MD, University of Missouri-Columbia
**Wicks, Carol M,** associate professor, geological sciences; PhD, University of Virginia Main Campus
**Wiebold, William J,** associate professor, agronomy; PhD, University of Georgia
**Wigger, John H,** associate professor, history; PhD, University of Notre Dame
**Wikle, Christopher K,** assistant professor, statistics; PhD, Iowa State University
**Wilden, Peter A,** associate professor, pharmacology; PhD, University of Iowa
**Wildt, Albert R,** professor emeritus, marketing; PhD, Purdue University Main Campus
**Wilkinson, Richard,** clinical associate professor, middle and secondary education; PhD, University of Missouri-Columbia
**Wilkinson, Kelly Smith,** assistant professor, middle and secondary education; PhD, University of Missouri-Columbia
**Willett, Dan L,** associate professor, music; MM, Michigan State University
**Willett, Joseph Erwin,** professor, physics; PhD, Pennsylvania State University Main Campus
**Williams, Donna,** research assistant professor, school of nursing; PhD, Pennsylvania State University
**Williams, James E,** professor, animal science; PhD, West Virginia University
**Williams, Jeffrey,** associate professor, english; PhD, SUNY At Stony Brook
**Williams, Jeffrey R,** assistant professor, english; PhD, University of Missouri-Columbia
**Williams, Larry S,** clinical assistant professor, surgery; DDS, University of Missouri-Kansas City
**Williamson Jr, Harold A,** professor, family & community medicine; MD, Case Western Reserve University
**Williamson, Mary T,** clinical assistant professor, family & community medicine; PhD, University of Missouri-Columbia
**Wills, Theodore E,** clinical assistant professor, ophthalmology; MD, University of Nebraska
**Wilson, David Alan,** associate professor, veterinary medicine & surgery; DVM, University of Illinois Urbana Campus
**Wilson, Earl,** professor, accountancy; PhD, University of Missouri-Columbia
**Wilson, Laurel E,** associate professor, textile and apparel management; PhD, University of North Carolina - Greensboro
**Winfield, Betty Houchin,** professor, editorial; PhD, University of Washington
**Winge, Todd,** assistant professor professional practice, editorial; MA, University of Missouri-Columbia
**Wingert, Karen L,** clinical assistant professor, hp/physical therapy; MA, University of Kansas
**Wingo, Robin R,** clinical instructor, social work; MSW, University of Missouri-Columbia
**Winholtz, Robert Andrew,** associate professor, mechanical & aerospace engineering; PhD, Northwestern University
**Winkelmann, Susan E,** associate professor clinical, obstetrics & gynecology; MD, University of Missouri-Columbia
**Winship, Daniel H,** professor, internal medicine; MD, University of Texas Medical Branch At Galveston
**Wipke Tevis, Deidre D,** assistant professor, school of nursing; PhD, University of California-San Francisco
**Witte, H Douglas,** assistant professor, finance; PhD, University of Arizona
**Woelfel, Stacey,** news director/instructor, broadcast news; MA, University of Missouri-Columbia
**Wohleber, Curt,** assistant instructor, editorial; MA, Carnegie-Mellon University-Pittsburgh
**Womack Jr, William L,** assistant professor clinical department, surgery; DO, Kirksville College of Osteopathic Medicine
**Womack, Abner Willis,** professor,

agriculture economics; PhD, University of Minnesota Twin Cities

**Wong, Tuck C,** professor, chemistry; PhD, University of Michigan Ann Arbor

**Wood Turley, Sharon,** extension instructor, extension education; MS, University of Missouri-Columbia

**Wood, Matthew S,** adjunct instructor, statistics; PhD, University of California-Davis

**Wood, Phillip,** associate professor, psychological sciences; PhD, University of Minnesota Twin Cities

**Wood, W Raymond,** professor, anthropology; PhD, University of Oregon

**Woodbury, Karen L,** clinical instructor, social work; MSW, University of Missouri-Columbia

**Woodman, Christopher R,** research assistant professor, veterinary biomedical sciences; PhD, University of Arizona

**Wooldridge, James E,** assistant professor, internal medicine; MD

**Worcester, David L,** associate professor, biological science; PhD, Harvard University

**Word, Deborah L,** clinical instructor, social work; MSW, University of Missouri-Columbia

**Worth, Eugene R,** clinical assistant professor, anesthesiology; MD, University of Missouri-Columbia

**Worthington, Ian,** associate professor, history; PhD, Monash University, Australia

**Worthington, Roger L,** assistant professor, education & counseling psychology; PhD, University of California-Santa Barbara

**Wrather, James Allen,** professor, plant microbiology & pathology; PhD, University of Missouri-Columbia

**Wright, Dennis Charles,** associate professor emeritus, psychological sciences; PhD, University of California-Berkeley

**Wright, Edward,** assistant professor clinical department, physical medicine & rehabilitation; MD, University of Texas Health Sciences Center of San Antonio

**Wright, Farroll Tim,** professor, statistics; PhD, University of Missouri-Columbia

**Wright, Harley T,** assistant professor, family & community medicine; MS, University of Missouri-Columbia

**Wright, Sharon D,** associate professor, political science; PhD, University of Tennessee-Knoxville

**Wu, Kuang Ming,** adjunct instructor, german & russian studies; PhD, Yale University

**Wunder, Marjorie M,** visiting instructor, early childhood and elementary education; MA, Drake University-Des Moines Iowa

**Wung, Lynn M,** assistant professor clinical department, family & community medicine; MD, Northwestern University

**Xiao, Chengshan,** assistant professor, electrical engineering; PhD, University of Sydney

**Yan, Pearlly S,** research assistant professor, pathology and anatomical sciences; PhD, Iowa State University

**Yang, Hsiao Tung,** research associate professor, veterinary biomedical sciences; PhD, Brigham Young University

**Yanos, John,** associate professor, internal medicine; MD, University of Chicago

**Yasuda, Hirotsugu K,** professor, chemical engineering; PhD, State University of New York, Syracuse

**Yonkman, Carol Ann,** instructor, school of nursing; MS(N), University of Missouri-Columbia

**Youmans, Charles Gilbert,** professor, english; PhD, University of Wisconsin-Madison

**Young Iii, Robert E,** research associate professor, agriculture economics; PhD, University of Missouri-Columbia

**Young, Michelle,** clinical associate, educational leadership & policy analysis; PhD, University of Texas-Austin

**Young, Garry D,** assistant professor, political science; PhD, Rice University

**Young, Steven L,** assistant professor, obstetrics & gynecology; MD, PhD, University of Miami

**Youngquist, Robert Steven,** professor, veterinary medicine & surgery; DVM, Iowa State University

**Zahler, Warren Leigh,** associate professor, agriculture biochemistry; PhD, University of Wisconsin-Madison

**Zand, Debra H,** research assistant professor, psychiatry/neurology; PhD

**Zanetti, Lisa A,** assistant professor, graduate school of public affairs; PhD, University of Tennessee-Knoxville

**Zang, Barbara,** assistant professor, editorial; PhD, Indiana University Bloomington

**Zanol, Karen,** associate professor clinical, internal medicine; MD, University of Missouri

**Zayas Castro, Jose,** visiting professor, industrial/manufacturing systems engineering; PhD, Rensselaer Polytechnic Institute

**Zelenak, Melchior J,** associate professor, consumer & family economics; PhD, University of Iowa

**Zemke, John M,** associate professor, romance languages/literature; PhD, University of California-Davis

**Zephir, Flore,** associate professor, romance languages/literature; PhD, Indiana University Bloomington

**Zguta, Russell,** professor, history; PhD, Pennsylvania State University

**Zhang, Chuan Lun,** assistant professor, geological sciences; PhD, Texas A&M University

**Zhang, Donna D,** research assistant professor, biochemistry; PhD, New York University

**Zhang, Qi,** associate professor, mathematics; PhD, Duke University

**Zhang, Shufeng,** assistant professor, physics; PhD, New York University

**Zhang, Shuqun,** assistant professor, agriculture biochemistry; PhD, University of Texas San Antonio

**Zhang, Zhanyuan,** research assistant professor, agronomy; PhD, University of Nebraska-Lincoln

**Zhao, Yunxin,** associate professor, computer engineering & computer science; PhD, University of Washington

**Zhuang, Xinhua,** professor, computer engineering & computer science; PhD, Peking University

**Zhuang, Youlong,** assistant professor, management; PhD, University of Kentucky

**Zitsch Iii, Robert P,** associate professor, surgery; MD, University of Alabama At Birmingham

**Zou, Shaoming,** assistant professor, marketing; PhD, Michigan State University

**Zou, Xiaoqin,** research assistant professor, agriculture biochemistry; PhD, University of California-San Diego

**Zu Bolton Ii, Ahmos,** adjunct instructor, black studies program

**Zulovich, Joseph M,** extension assistant professor, biological engineering; PhD, University of Nebraska-Lincoln

**Zweig, Steve C,** professor, family & community medicine; MD, University of Missouri-Columbia

# Index

## A



## B



## C



## D

# E



# F



# G



# H



# I



# J



# K

# Index

# T



# U



# V



# W

University Libraries
University of Missouri

Digitization Information Page

| | |
|---|---|
| Local identifier | Catalog-Undergrad1997-1999 |

Source information

| | |
|---|---|
| Format | Book |
| Content type | Text with images |
| Source ID | Copy loaned from university archives, U of Missouri. |
| Notes | |

Capture information

| | |
|---|---|
| Date captured | July 2023 |
| Scanner manufacturer | Plustek OpticBook |
| Scanner model | A300 Plus |
| Scanning system software | Book Pavilion |
| Optical resolution | 600 dpi |
| Color settings | 24 bit color front cover; 8 bit grayscale |
| File types | tiff |
| Notes | |

Derivatives - Access copy

| | |
|---|---|
| Compression | Tiff: LZW compression |
| Editing software | Adobe Photoshop 2023 |
| Resolution | 600 dpi |
| Color | 24 bit color front cover; 8 bit grayscale |
| File types | pdf created from tiffs |
| Notes | Images cropped, straightened, brightened. |