



# University of Missouri

**General  
Catalog**

**Announcements  
for**

**1956 - 57**

**Bulletin**

## THE UNIVERSITY OF MISSOURI BULLETIN

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VOLUME 57, NUMBER 16

GENERAL SERIES 1956, NUMBER 9

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APRIL 22, 1956



*The University of Missouri Bulletin*  
*General Catalog*  
*for 1956*

*Announcements for the academic year*  
*1956-57*

FOR THE DIVISIONS AT COLUMBIA:  
COLLEGE OF ARTS AND SCIENCE  
*including* SCHOOL OF SOCIAL WORK—  
DIVISIONS OF AGRICULTURAL SCIENCES,  
COLLEGE OF AGRICULTURE AND SCHOOL  
OF VETERINARY MEDICINE—SCHOOL OF  
BUSINESS AND PUBLIC ADMINISTRATION  
—COLLEGE OF EDUCATION—COLLEGE OF  
ENGINEERING—GRADUATE SCHOOL—  
SCHOOL OF JOURNALISM—SCHOOL OF  
LAW—SCHOOL OF MEDICINE *including*  
SCHOOL OF NURSING  
AND FOR THE DIVISION AT ROLLA: THE  
SCHOOL OF MINES AND METALLURGY

*The One Hundred Thirteenth report of the*  
*Curators of the University to the Governor*  
*of the State*

Cover Designed by  
Margaret Hendricks  
Olean, Missouri  
College of Education—Class of '56

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Columbia, Missouri

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TO HIS EXCELLENCY

THE HONORABLE PHIL M. DONNELLY

GOVERNOR OF MISSOURI

JEFFERSON CITY, MISSOURI

Your Excellency:

As required by statute (R.S. Mo. 1949, 172.220) I have the honor, on behalf of the Curators of the University, to submit this annual report of the activities and offerings of the University of Missouri.

Respectfully submitted,

JAMES A. FINCH, JR., President  
Curators of the University of Missouri

# .1956.

JANUARY							FEBRUARY							MARCH							APRIL						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
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MAY							JUNE							JULY							AUGUST						
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13	14	15	16	17	18	19	10	11	12	13	14	15	16	15	16	17	18	19	20	21	12	13	14	15	16	17	18
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# .1957.

JANUARY							FEBRUARY							MARCH							APRIL						
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MAY							JUNE							JULY							AUGUST						
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6	7	8	9	10	11	12	2	3	4	5	6	7	8	7	8	9	10	11	12	13	4	5	6	7	8	9	10
13	14	15	16	17	18	19	9	10	11	12	13	14	15	14	15	16	17	18	19	20	11	12	13	14	15	16	17
20	21	22	23	24	25	26	16	17	18	19	20	21	22	21	22	23	24	25	26	27	18	19	20	21	22	23	24
27	28	29	30	31	..	..	23	24	25	26	27	28	29	28	29	30	31	..	..	..	25	26	27	28	29	30	31
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SEPTEMBER							OCTOBER							NOVEMBER							DECEMBER						
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8	9	10	11	12	13	14	6	7	8	9	10	11	12	3	4	5	6	7	8	9	8	9	10	11	12	13	14
15	16	17	18	19	20	21	13	14	15	16	17	18	19	10	11	12	13	14	15	16	15	16	17	18	19	20	21
22	23	24	25	26	27	28	20	21	22	23	24	25	26	17	18	19	20	21	22	23	22	23	24	25	26	27	28
29	30	..	..	..	..	..	27	28	29	30	31	..	..	24	25	26	27	28	29	30	29	30	31	..	..	..	..
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# *University Calendar 1956-57*

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(For the Divisions at Columbia)

## *First Semester*

1956

September 17—Monday, New Student Orientation begins 8 a.m.

Convocation for all New Students, 7:15 p.m. (Attendance required)

September 18—Tuesday, Registration, 1-5 p.m.

September 19—Wednesday, Registration continued, 8-12 a.m., 1-5 p.m.

September 20—Thursday, Classwork begins, 7:40 a.m.

October 6—Saturday, New Students Parents' Day (Classes in session.)

November 21—Wednesday, Thanksgiving vacation begins 12:30 p.m.

November 26—Monday, Classwork resumed, 7:40 a.m.

December 20—Thursday, Christmas vacation begins, 12:30 p.m.

1957

January 2—Wednesday, Classwork resumed, 12:40 p.m.

January 26—Saturday, Examinations begin.

February 2—Saturday, First Semester closes, 5 p.m.

## *Second Semester*

February 4—Monday, Registration and Orientation, 8-12 a.m., 1-5 p.m.

February 5—Tuesday, Classwork begins, 7:40 a.m.

April 18—Thursday, Spring recess begins, 12:30 p.m.

April 23—Tuesday, Classwork resumed, 12:40 p.m.

May 30—Thursday, Final Examinations begin.

June 2—Sunday, Baccalaureate Exercises (See note below)

June 3—Monday, Final grades for candidates for graduation due, 12 noon.

June 6—Thursday, Second Semester closes, 5 p.m.

June 8—Saturday, Annual Commencement, 10 a.m.

## *Summer Session*

June 10—Monday, Registration and Orientation.

June 11—Tuesday, Classwork begins.

July 4—Thursday, Independence Day holiday.

August 2—Friday, Summer Session closes, 5 p.m.

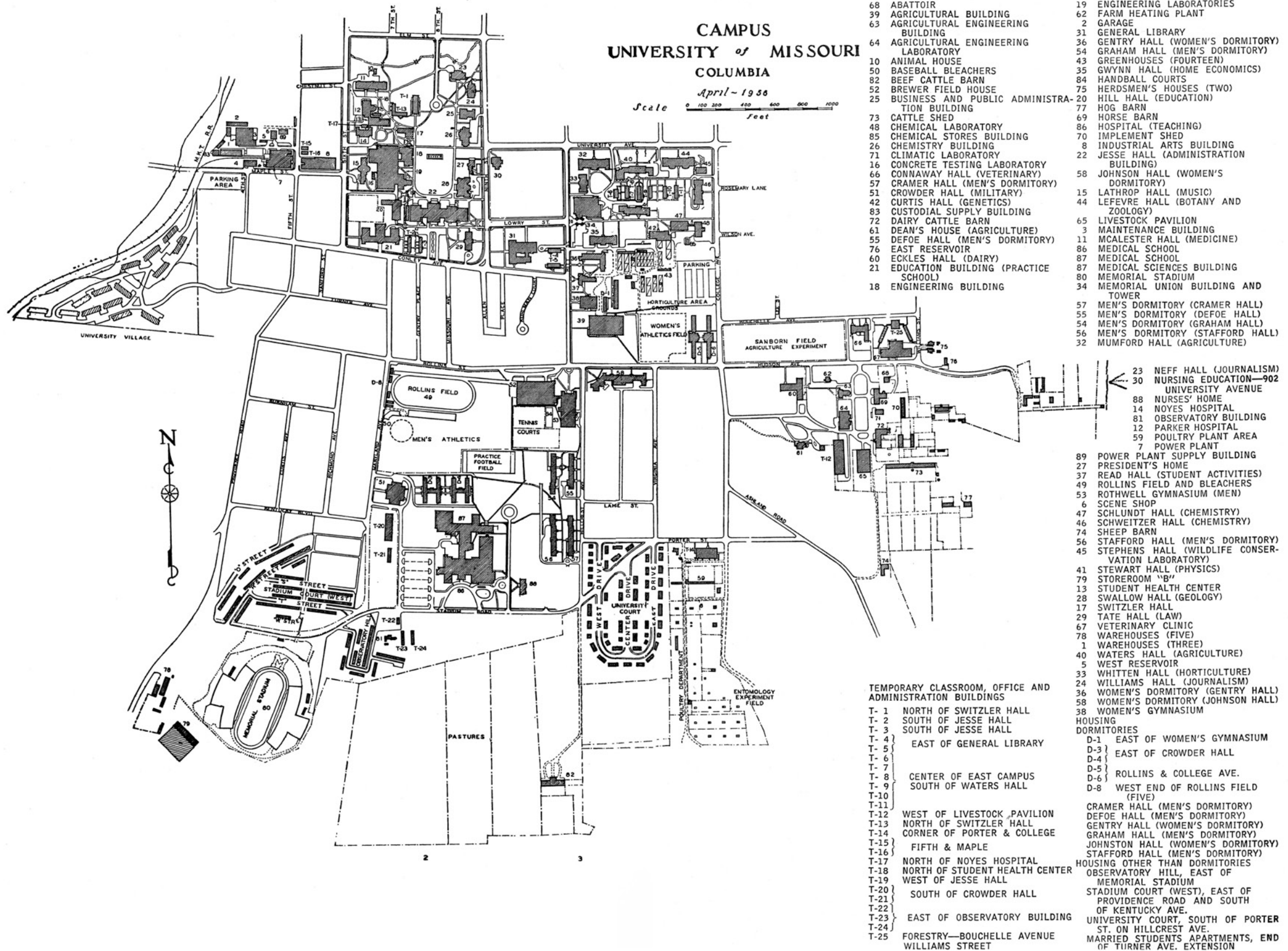
Summer Commencement, 8 p.m.

*Note:* The University offers its assistance and cooperation to the churches of Columbia which elect to hold Baccalaureate exercises for graduates in their student congregations.

# CAMPUS UNIVERSITY of MISSOURI COLUMBIA

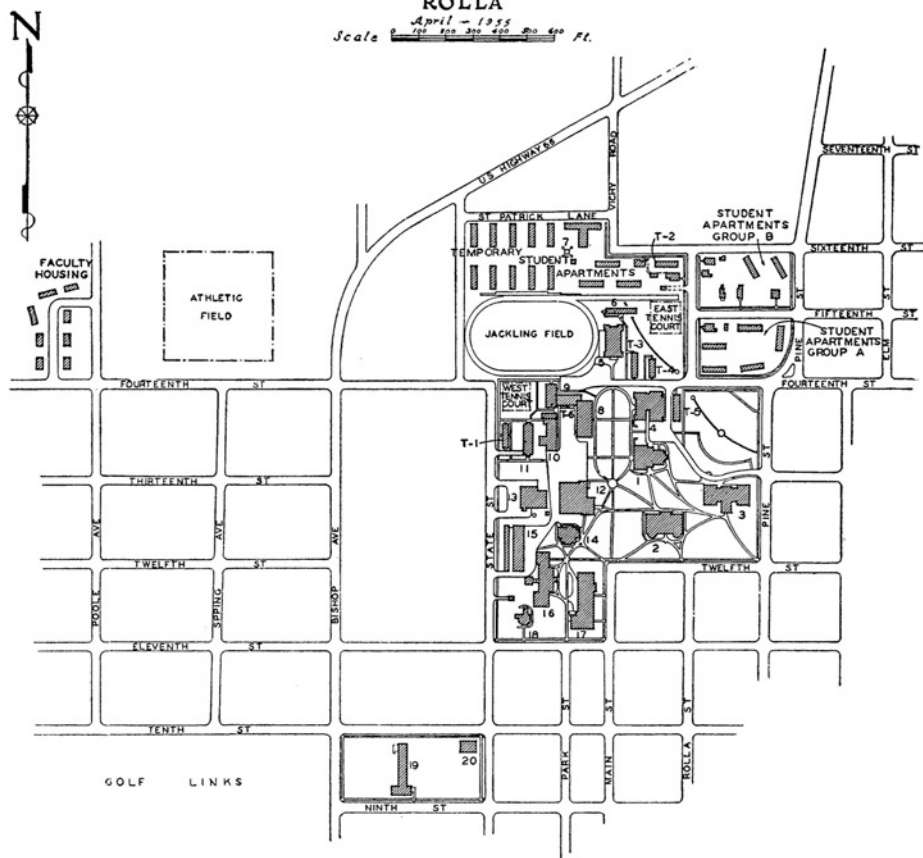
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CAMPUS  
UNIVERSITY of MISSOURI  
SCHOOL OF MINES & METALLURGY  
ROLLA

April - 1955  
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- 1 PARKER HALL
- 2 NORWOOD HALL
- 3 METALLURGY BUILDING
- 4 EXPERIMENT STATION
- 5 JACKLING GYMNASIUM
- 6 MILITARY BUILDING
- 7 WATER TOWER
- 8 MECHANICAL HALL
- 9 MINING BUILDING
- 10 CAFETERIA

- 11 HARRIS HALL
- 12 MECHANICAL ENGINEERING
- 13 POWER PLANT
- 14 ROLLA BUILDING
- 15 WAREHOUSE & SHOP
- 16 CHEMICAL HALL
- 17 CHEMICAL ENGINEERING
- 18 DEAN'S RESIDENCE
- 19 MEN'S DORMITORY
- 20 STUDENT INFIRMARY

- TEMPORARY HOUSING
- FACULTY HOUSING
- TEMPORARY STUDENT APARTMENTS
- STUDENT APARTMENTS GROUP A
- STUDENT APARTMENTS GROUP B
- T-1 TEMPORARY CLASS ROOM BUILDINGS
- T-2 STUDENT ACTIVITIES



# *Calendar, School of Mines and Metallurgy 1956-57*

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(The Division at Rolla)

## *Summer Field Work*

1956

August 27—Monday, Mine Surveying begins

September 8—Saturday, Mine Surveying ends

## *First Semester*

September 4—Tuesday, Examination for Credit in College Algebra and Trigonometry, 8:30 a.m. (Optional)

September 5—Wednesday, Freshman Registration, Placement Examinations and Orientation Lectures begin

September 7—Friday, Freshman Placement Examinations and Orientation Lectures end, 4:00 p.m.

September 10—Monday, Freshman Classes begin, 8:00 a.m.

September 10—Monday, Registration for three upper classes

September 11—Tuesday, Classwork begins for upperclassmen, 8:00 a.m.

November 22—Thursday, Thanksgiving Holidays begin, 8:00 a.m.

November 26—Monday, Thanksgiving Holidays end, 8:00 a.m.

December 20—Thursday, Christmas Holidays begin, 8:00 a.m.

1957

January 3—Thursday, Christmas Holidays end, 8:00 a.m.

January 17—Thursday, Final Examinations begin, 8:00 a.m.

January 23—Wednesday, First Semester closes, 8:00 a.m.

## *Second Semester*

January 28—Monday, Registration

January 29—Tuesday, Classwork begins, 8:00 a.m.

February 22—Friday, Washington's Birthday Holiday

March 14—Thursday, Spring Intermission begins, 8:00 a.m.

March 18—Monday, Spring Intermission ends, 8:00 a.m.

April 19—Friday, Easter Holiday begins, 8:00 a.m.

April 22—Monday, Easter Holiday ends, 8:00 a.m.

May 24—Friday, Final Examinations begin, 8:00 a.m.

May 26—Sunday, Baccalaureate Exercises, 10:00 a.m.

May 26—Sunday, Commencement 3:00 p.m.

May 29—Wednesday, Second Semester closes, 4:00 p.m.

## *Summer Session*

June 3—Monday, Registration

June 4—Tuesday, Classwork begins 7:00 a.m.

July 4—Thursday, Independence Day Holiday

July 27—Saturday, Summer Commencement

July 27—Saturday, Summer Session closes, 12:00 noon

# The Boards

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## The Board of Curators

*Term Expires January 1, 1957*

James Smith Bush .....	St. Louis
Lester E. Cox .....	Springfield
J. A. Daggs .....	Memphis

*Term Expires January 1, 1959*

James A. Finch, Jr. ....	Cape Girardeau
Fred V. Heinkel .....	Columbia
Mrs. Byron T. Shutz .....	Kansas City

*Term Expires January 1, 1961*

Oliver B. Ferguson .....	Fredericktown
Randall R. Kitt .....	Chillicothe
Powell B. McHaney .....	Clayton

## OFFICERS OF THE BOARD

James A. Finch, Jr., President .....	Cape Girardeau
Lester E. Cox, Vice-President .....	Springfield
Mary Robnett, Secretary .....	Columbia
R. B. Price, Treasurer .....	Columbia
F. A. Germann, Treasurer .....	Rolla

## THE EXECUTIVE BOARD AT COLUMBIA

Mr. McHaney, Chairman; Mr. Daggs, Mr. Heinkel

## THE EXECUTIVE COMMITTEE AT ROLLA

Mr. Bush, Chairman; Mr. Ferguson, Mrs. Shutz

## GENERAL COUNSEL FOR THE UNIVERSITY

Paul M. Peterson

## The Board of Visitors

Edmond R. Caldwell .....	Perry
John M. Dalton (Chairman) .....	Kennett
Oak Hunter .....	Moberly
James Sidney Rollins (Vice-Chairman) .....	Columbia
H. E. Slusher .....	Jefferson City

# *Faculty and Administration*

---

PRESIDENT—Elmer Ellis, Ph.D., LL.D.

PRESIDENT EMERITUS, DIRECTOR, UNIVERSITY OF MISSOURI DEVELOPMENT FUND—  
Frederick Arnold Middlebush, Ph.D., LL.D.

VICE-PRESIDENT IN CHARGE OF BUSINESS OPERATIONS—Leslie Cowan, B.S. in C.E. (on  
leave)

DEAN OF EXTRA-DIVISIONAL ADMINISTRATION—Thomas Allen Brady, Ph.D.

---

## COLLEGE OF ARTS AND SCIENCE

DEAN OF THE FACULTY—William Francis English, Ph.D.

DEAN EMERITUS OF THE FACULTY—Winterton Conway Curtis, Ph.D., Sc.D., D.S.

DEAN EMERITUS OF STUDENTS—Frank Fletcher Stephens, Ph.D., LL.D.

ASSOCIATE DEAN—Edward Marshall Palmquist, Ph.D.

## DIVISION OF AGRICULTURAL SCIENCES

DIRECTOR OF THE DIVISION AND DEAN OF THE FACULTY OF AGRICULTURE; DIRECTOR OF  
THE AGRICULTURAL EXPERIMENT STATION—John Harwood Longwell, Ph.D.

DEAN EMERITUS OF THE FACULTY OF AGRICULTURE—Merritt Finley Miller, D.Sc.

ASSOCIATE DEAN OF THE FACULTY AND ASSOCIATE DIRECTOR OF THE AGRICULTURAL EX-  
PERIMENT STATION—Samuel Bryan Shirky, A.M.

DEAN OF THE FACULTY OF VETERINARY MEDICINE—Aaron Holland Groth, D.V.M.

## SCHOOL OF BUSINESS AND PUBLIC ADMINISTRATION

DEAN OF THE FACULTY—William Leonard Bradshaw, Ph.D.

## COLLEGE OF EDUCATION

DEAN OF THE FACULTY AND DIRECTOR OF THE SUMMER SESSION—Loran George Town-  
send, Ph.D.

ASSISTANT DEAN OF THE FACULTY AND DIRECTOR OF THE TEACHER PLACEMENT SERVICE—  
Louis Allen Eubank, Ph.D.

## COLLEGE OF ENGINEERING

DEAN OF THE FACULTY AND DIRECTOR OF ENGINEERING EXPERIMENT STATION—Huber  
Ogilvie Croft, M.S.

## GRADUATE SCHOOL

DEAN OF THE FACULTY—Henry Edward Bent, Ph.D.

## SCHOOL OF JOURNALISM

DEAN OF THE FACULTY—Earl Franklin English, Ph.D.

DEAN EMERITUS OF THE FACULTY—Frank Luther Mott, Ph.D. Litt.D., L.H.D.

## THE UNIVERSITY OF MISSOURI

## SCHOOL OF LAW

DEAN OF THE FACULTY—Glenn Avann McCleary, A.B., S.J.D.

## SCHOOL OF MEDICINE

DEAN OF THE FACULTY—Roscoe LeRoy Pullen, M.D.

## SCHOOL OF MINES AND METALLURGY

(The Division at Rolla)

DEAN OF THE FACULTY—Curtis Laws Wilson, Ph.D., D. Eng.

ASSISTANT DEAN OF THE FACULTY AND ASSOCIATE PROFESSOR OF CIVIL ENGINEERING—  
Vernon Arthur Charles Gevecker, M.S.

DEAN OF STUDENTS, ACTING DIRECTOR, STUDENT AFFAIRS FOR MEN—Jack Matthews,  
Ed.D.

AGRICULTURAL EDITOR—Elmer B. Winner, A.M.

AGRICULTURAL EDITOR EMERITUS—Arthur Allan Jeffrey, A.B.

ASSISTANT TO THE PRESIDENT OF THE UNIVERSITY IN CHARGE OF TELEVISION DEVELOPMENT AND OPERATION AND DIRECTOR OF THE UNIVERSITY OF MISSOURI EDUCATIONAL TELEVISION PROGRAM—Edward C. Lambert, Ph.D.

PROGRAM DIRECTOR OF TELEVISION STATION—Charles D. Sigsbee

NEWS DIRECTOR OF TELEVISION STATION—Philip E. Berk, M.A.

COMMERCIAL MANAGER OF TELEVISION STATION—John O. Conwell

CHIEF ENGINEER OF TELEVISION STATION—William J. Reagan

AUDITOR OF TELEVISION STATION—Urban E. Wussler, B.S. in Bus. Admin.

ADVERTISING AND PROMOTION DIRECTOR OF TELEVISION STATION—Frank Tuttle, B.J.

ASSISTANT DIRECTOR OF STUDENT AFFAIRS FOR MEN—Harry Briggs, B.A.

ASSISTANT TO THE COMPTROLLER—Talitha Gisler, A.M.

\*BUSINESS MANAGER OF THE SCHOOL OF MINES AND METALLURGY—Emmett Albert Klinkerman, A.B.

BUSINESS MANAGER OF THE UNIVERSITY—Dale Owen Bowling, B.S. in Bus. Admin.

ASSISTANT BUSINESS MANAGER—John Allen Lister, B.S. in Bus. Admin.

CASHIER—Fay McCray

COMPTROLLER—Ray Bezoni, B.S. in Bus. Admin.

ASSISTANT COMPTROLLER—Marvin T. Caldwell, Jr.

ASSISTANT COMPTROLLER—John Perry, B.S. in Bus. Admin.

DIRECTOR OF ADMISSIONS—Charles Willard McLane, Ph.D.

DIRECTOR OF ADULT EDUCATION AND EXTENSION SERVICE—Amos Jewell Snider, Ed.D.

DIRECTOR OF AGRICULTURAL EXTENSION SERVICE—James Willard Burch, A.M.

DIRECTOR OF ALUMNI ACTIVITIES—Guy Harold Entsminger, A.M.

DIRECTOR OF CONSTRUCTION—R.J. Martin, B.S. Ed., B.S. Ag.

\*DIRECTOR OF HEALTH SERVICE, SCHOOL OF MINES AND METALLURGY—Earl Everett Feind, M.D.

\*School of Mines and Metallurgy at Rolla.

DIRECTOR OF THE STUDENT HEALTH SERVICE—George X. Trimble, M.D.

DIRECTOR OF HOUSING—Robert P. Lee, B.A. in Bus. Admin.

DIRECTOR OF INTERCOLLEGIATE ATHLETICS AND HEAD FOOTBALL COACH—Donald Butrows Fautot, A.M.

DIRECTOR OF PURCHASING—Harry Johnson Fields, B.S. in Bus. Admin.

DIRECTOR OF STUDENT AFFAIRS FOR WOMEN—Gladys E. Koepke, A.M.

ASSISTANT DIRECTOR OF STUDENT AFFAIRS FOR WOMEN—Janet V. Simmons, A.B.

DIRECTOR OF STUDENT UNION BUILDING—A.C. Stotler, Jr., B.S. in Bus. Admin.

DIRECTOR OF THE OFFICE OF PUBLIC INFORMATION AND UNIVERSITY PUBLICATIONS—Thomas Cecil Morelock, A.M.

DIRECTOR OF THE UNIVERSITY TESTING AND COUNSELING SERVICES—Robert Callis, Ph.D.

DIRECTOR OF VETERINARY CLINICS—Edgar Frazier Elbert, D.V.M.

DIRECTOR OF WESTERN HISTORICAL MANUSCRIPTS COLLECTION—James Neil Primm, Ph.D.

ASSISTANT DIRECTOR, WESTERN HISTORICAL MANUSCRIPTS COLLECTION—Lewis E. Atherton, Ph.D.

DIRECTOR OF WOMEN'S RESIDENCE HALLS—Marita Monroe, M.S.

FOREIGN STUDENT ADVISER—Harry Briggs, B.A.

ACTING HEAD OF THE UNIVERSITY COUNSELING BUREAU—John McGowan, D.Ed.

INTERNAL AUDITOR—Carroll Chester Paulsmeier, B.S. in Bus. Admin.

\*LIBRARIAN, SCHOOL OF MINES AND METALLURGY—Earl Justen Randolph, A.M.L.S.

MANAGER OF PHYSICAL PLANT—Raymond Halbert.

MANAGER OF STUDENT FINANCIAL AID SERVICES—Mary Helen Jones, B.S. in Ed.

REGISTRAR AND SECRETARY OF THE FACULTIES—Silas Woodson Canada, A.B.

\*REGISTRAR AND DIRECTOR OF ADMISSIONS OF THE SCHOOL OF MINES AND METALLURGY—Noel Hubbard.

\*SUPERINTENDENT OF BUILDINGS AND GROUNDS OF THE SCHOOL OF MINES AND METALLURGY—Ernest Paul Hendrix.

SUPERINTENDENT OF CONSTRUCTION—Delbert Eugene Hill, B.S. in C.E.

UNIVERSITY LIBRARIAN—Ralph Parker, Ph.D.

## TEACHING AND RESEARCH

\*LAWRENCE ADLER, M.S., Assistant Professor of Mining Engineering.

WILLIAM ALBERT ALBRECHT, Ph.D., Professor of Soils.

ALICE MAE ALEXANDER, A.B., Extension Associate Professor of Home Economics.

JAMES W. ALLEE, M.D., Assistant Professor of Medicine.

DONALD EMERSON ALLEN, M.A., Lieutenant Colonel, USA, Associate Professor of Military Science and Tactics.

HELEN STILLMANKS ALLEN, M.S., Associate Professor of Home Economics.

OLLIE E. ALLEN, B.S., Extension Associate Professor of Agricultural Economics.

BOWER ALY, Ph.D., Professor of Speech.

GEORGIA MARIE AMICK, M.S., Associate Professor of Home Economics.

CONSTANTINE S. ANAST, M.D., Assistant Professor of Pediatrics.

EDMOND RALPH ANDERSON, JR., LL.B., Visiting Assistant Professor of Law.

GEORGE MYRON ARCAD, Ph.D., Assistant Professor of Chemistry.

A. STERL ARTLEY, Ph.D., Professor of Education.

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# *The University*

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The University of Missouri was created by the General Assembly of Missouri in 1839 under the provisions of a bill introduced by Henry S. Geyer, representative from St. Louis. The bill was approved on February 11 and the University thus became the first state university established in that vast area included in the Louisiana Purchase, acquired in the administration of Thomas Jefferson. The form of organization of the young university was influenced to a large degree by the philosophy of Jefferson, a vigorous advocate of public higher education.

Plans were soon under way for the erection of a suitable building, adequate, it was believed, to meet the needs of the University for years to come. The cornerstone for the new building was laid on July 4, 1840. In the meanwhile classes were held in Columbia College which had been included in Columbia and Boone County's bid to the General Assembly to locate the university in Boone County. The College building was the home of the university until July 4, 1843 when the new building, known as the University Edifice, was ready for use. Classes had only to move from the older building hardly more than two hundred yards away. The first commencement was held November 28, 1843, with two graduates. Except for a few months in 1862 when occupied by Federal troops, the Edifice continued in use until January 9, 1892, when it was destroyed by fire. Its columns still stand.

On the second school day following the fire all classes were resumed, meeting variously in churches, store buildings, the town's opera house, the courthouse, other University buildings which survived the fire, and even in the old Columbia College building.

Originally, the University, in common with most other American universities of the time, embraced a four years' course of study in the liberal arts, a typical classical curriculum. Subjects outside the traditional fields were added from time to time and in 1868 the Normal College, presently known as the College of Education, was formally established. Within the next decade other divisions followed—the College of Agriculture and Mechanic Arts in 1870, and in 1871 the School of Mines and Metallurgy at Rolla. In 1872 the School of Law was established. The same year, the School of Medicine was established at Columbia. (Earlier, the University had become associated with medical education when the Board of Curators, in 1846, accepted McDowell Medical College of St. Louis as the medical department of the University. This department, or school, was abandoned a few years later). In 1877 the School of Engineering, later renamed College of Engineering, was organized, although work in civil engineering was offered as early as 1849.

The School of Journalism was established in 1908, the School of Business and Public Administration in 1914, and the School of Veterinary Medicine in 1949.

The Graduate School was established as a separate division in 1910; post-graduate work, however, formally and systematically organized, had been offered for several years prior thereto.

The University also includes the Adult Education and Extension Service and several minor divisions, chief of which are the Agricultural Experiment Station,

the Engineering Experiment Station, the Missouri State Military School, and the Mining Experiment Station at Rolla.

Women were first admitted to the University in 1869.

### Location

All divisions of the University are located at Columbia, excepting the School of Mines and Metallurgy which is located at Rolla. Columbia, a city of approximately 32,000 is near the center of the state; Rolla, population approximately 10,000, is situated in the south central part of the state. Rolla and Columbia are about 100 miles apart.

### Presidents

Elmer Ellis, Ph.D., LL.D., member of the Faculty since 1930, was named acting president in 1954 and has been President of the University since 1955. The first president was John Hiram Lathrop, 1841-1849 and 1865-1866 (Chairman of the Faculty 1862-1865). Following Lathrop were James Shannon, 1850-1856; William Wilson Hudson, 1856-1859 (acting president 1849-1850); George Henry Matthews (Chairman of the Faculty) 1859-1860; Benjamin Blake Minor, 1860-1862; Daniel Read, 1866-1876; Samuel Spahr Laws, 1876-1889; Michael Montgomery Fisher (Chairman of the Faculty) 1889-1891; James Shannon Blackwell (Chairman of the Faculty) February-June, 1891; Richard Henry Jesse, 1891-1908; Albert Ross Hill, 1908-1921; John Carleton Jones, 1921-1923; Isidor Loeb (acting president) April-July 1923; Stratton Duluth Brooks, 1923-1930; Walter Williams, 1930-1935; Frederick Arnold Middlebush, 1935-1954.

### Memorials

On the campus are several memorials. The most famous and the most photographed are the Columns left standing from the disastrous fire of 1892. Others of interest include the Jefferson Monument, the North Gateway to the West Campus, and Memorial Tower.

*The Jefferson Monument.* This scarred and weather-beaten monument once stood at the grave of Thomas Jefferson at Monticello, Virginia. It was constructed from Jefferson's own design and bore the epitaph which he wrote. In 1883 when the Congress appropriated funds for another monument, Jefferson's living descendants donated this marker to the University of Missouri as the most appropriate location for it. It now stands to the right of the north entrance to Jesse Hall.

*The Gateway* is of interest for itself and as containing the cornerstone of the original University Edifice. The cornerstone was placed in its present position when the Gateway was constructed, with funds appropriated by the Congress in 1915 as compensation for damages resulting from the occupation of the Edifice by Federal troops in 1862. One pillar of the Gateway bears the bas-relief portrait of Major James S. Rollins who, in 1872 was given the title *Pater Universitatis Missouriensis* by the Curators, and the other the portrait of John Hiram Lathrop, the University's first president. The Gateway leads from the end of south Eighth Street to the campus.

*Memorial Tower.* The Tower was constructed with funds contributed by alumni, former students and friends in memory of those University students who lost their lives in the World War, 1917-18. A Memorial Student Union building connected with the Tower was completed and first used in September 1952. The Union is a memorial to students of the University who died in the Second World War.



## Art

*Missouri—Heart of the Nation*, an art collection consisting of ninety-nine paintings of Missouri scenes, painted by fourteen outstanding contemporary artists, was presented to the University in 1950 by the Scruggs-Vandervoort-Barney Corporation of St. Louis. The collection is on display on the first and second floors of Jesse Hall.

*The Missouri State Capitol Collection.* The University Library has on permanent display the preliminary sketches and paintings of original murals in the Missouri State Capitol. These picture scenes from Missouri history are valuable because of their intrinsic merit and as examples of evolving artistic conceptions.

*The State Historical Society* collections are open to the public and are located in the General Library Building. These collections include many valuable paintings, among which is the original "Order Number 11" and others by George C. Bingham; 1476 original drawings of cartoons by Daniel R. Fitzpatrick covering the period 1917-1952; "The Year of Peril" and others by Thomas Hart Benton; as well as the Fred Geary collection of wood cuts.

## Television

KOMU-TV, the University's commercial television station, operates on Channel 8 in Columbia with an experienced, professional staff, offering qualified students opportunities for instruction, training and experience in news, all phases of programming, and in commercial operation of an area television station affiliated with all four major networks and serving viewers throughout the Central Missouri area. The KOMU-TV local news room is located in Walter Williams Hall; studios, offices, transmitter and 774-foot tower are on the South Farm, near Columbia.



## *Libraries*

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The University Libraries provide facilities for course preparation and scholarly and creative work. They consist of a group of libraries: the General Library (558,000 v.) providing a basis for the work of the College of Arts and Science, the College of Education, School of Business and Public Administration; and the Libraries of Law (65,000 v.), Agriculture (39,000 v.), Medicine (26,000 v.), Engineering (21,000 v.), Journalism (11,000 v.), Biology (10,000 v.), Geology (10,500 v.), and Veterinary Medicine (3,000 v.), designed to meet the needs of the professional divisions at the University. The University Libraries possess a total of more than 745,000 volumes. More than four thousand periodicals are received currently.

The General Library, which contains Reference, Reserve Book, Periodical, Education, Social Science, Language, and Manuscript rooms, forms the core of the University Library system. Here are the facilities for undergraduate (seating capacity 1,125), graduate (161 carrels), and faculty reading and research. The University collections have been reinforced in recent years by gifts including the 3,000 volume mathematics library of the late Professor Luther M. Defoe, and the anatomy library of 1,200 volumes of Dr. C. M. Jackson, a former dean of the University School of Medicine. Dr. Franklin P. Johnson presented a collection of more than 1,700 volumes on philosophy and classical literature from the library of his father, the late Thomas Moore Johnson of Osceola, Missouri. The Irion collection, a professional library in education, was presented to the library several years ago and is being increased annually. The library has recently been increased by the addition of many complete files of domestic and foreign papers on microfilm. A map collection of historical value is in the making.

The General Library contains the Western Historical Manuscripts Collection which was established in the University Library in 1943 with the assistance of the Humanities Division of the Rockefeller Foundation, and which now contains a distinguished body of manuscript material in about 750 separate collections totaling 700,000 pieces. Most of the papers relate to the area of the Missouri River and Great Plains, and include interesting correspondence, account books, and diaries representing early and recent business, professional, political and social life. Photographic equipment is available for reproducing rare papers which cannot be acquired in the original. The Library and the Department of History are joint sponsors of the manuscripts project.

The Library of the State Historical Society of Missouri, which shares the General Library building, has an extensive collection of Missouriana and the early West. This collection comprises 134,556 volumes, including 24,136 bound volumes of Missouri newspapers and 3,726 bound volumes of Missouri magazines and college periodicals; 4,148 items in the Bay Collection of the Society which is a unit in itself; 171,142 duplicate volumes of Missouri official publications; 7,027,603 pages of Missouri newspapers on microfilm which are equal to 16,893 one-year volumes of an 8-page weekly newspaper; 207,345 pages of original manuscripts; 448,893 pages of manuscripts on microfilm; 120,771 items of Missouri state archives; 18,038 engravings, lithographs, paintings, photographs, pictures, portraits, and original drawings of cartoons; and 83,700 maps, scrapbooks, and World War I and II letters, records and clippings. The Library is available to faculty and students.

The branch libraries situated on the campus, so that they can serve conveniently the faculty and students of the various divisions, contain the most recent and useful material in their fields; the older and less used books and journals will be found in the General Library. The Agriculture Library consists of books and periodicals, particularly emphasizing agricultural economics, animal husbandry, entomology, forestry, horticulture, dairying, soils, and field crops. It is particularly strong in publications of the United States Department of Agriculture, State agricultural experiment stations, and of foreign countries. The Biology Library is strong in genetics and wildlife conservation. The Engineering Library, rich in publications of societies, governments, and trade organizations, includes a fine mathematics library. The Geology Library is significant for its complete holdings of publications of the United States Geological Survey and extensive holdings of State geological, mineral, and natural resource departments. The Journalism School houses a library strong in the history of Journalism, advertising, law of the press, news photography, typography and the history of printing, and radio and news reporting. The Law Library contains approximately 65,000 volumes and is one of the larger law school libraries. It includes, in addition to the reports of the United States Courts and of the courts of last resort of the several states, both the original and reprints of the English reports, and the reports of the British Commonwealth. Of particular interest to students engaged in research is the Lawson collection of criminal law. The Statutes of the Realm furnish invaluable materials to students doing research in the fields of English History, Government, Social Legislation and related subjects. Other collections include the latest statutory compilations of all the states, law reviews and professional journals, the necessary digests, standard treatises and encyclopedias found in all well-equipped law libraries. The growing Medical Library, to be located in the new medical center, is strong in the basic sciences, and is being rapidly developed in the clinical fields. The Veterinary Library is a small but select collection needed for veterinary practice and research.

# *Admission*

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Inquiries regarding entrance to all divisions of the University at Columbia should be addressed, Director of Admissions, 130 Jesse Hall, University of Missouri, Columbia, Missouri. Inquiries regarding admission to the School of Mines and Metallurgy should be addressed, Office of the Registrar, School of Mines and Metallurgy, Rolla, Missouri.

Students who wish to enter the University should write to the Director of Admissions where official determination of eligibility will be made after examination of application blanks and transcripts. No student should attempt to determine finally for himself his eligibility for admission to any division of the University from consideration of the material contained in this catalog.

## **Directions to New Students**

Before the opening of the term in which they wish to enroll, students entering the University of Missouri for the first time should submit official copies of their high school record and an official transcript from each college attended. Admission can be determined only after all credentials are on file.

In the case of those who have not attended college elsewhere, credentials consist of a high school transcript certified by the proper official of the school in which the credits were earned. In the case of undergraduate students who have attended college elsewhere, complete credentials include an official transcript of record bearing a statement of honorable dismissal from each college or university attended, an official high school transcript, and a health form. Graduate students must have transcripts sent from the institution conferring the baccalaureate degree and from each institution where graduate work was completed. Veterans must submit a photostatic copy of their separation papers and official records of all USAFI courses which they have completed. All new students are advised to submit their credentials as early as possible in order that they may be notified of possible deficiencies. In this way, it may be possible to make up these deficiencies before the opening of the term. When a student has been accepted and his credential file is complete, he will be furnished a permit to enroll, along with instructions for registration.

During the mid-summer months, a pre-registration period is set up for the convenience of new students being admitted to the University of Missouri for the fall semester. This period, usually extending from approximately July 1 to August 31, gives new students an opportunity to visit the campus and complete enrollment procedure before the beginning of the semester. New students may check on their housing accommodations, take freshman placement tests, physical examinations, meet their Deans and academic advisers and set up their schedules of courses for the fall semester. Students who wish to take advantage of this pre-registration period should check their admission status first with the Admissions Office to determine whether they have sufficient credentials on file to enable them to complete registration.

## **Admission to the Freshman Class**

The Colleges of Agriculture, Arts and Science, Education, Engineering, the School of Nursing at Columbia, and the School of Mines and Metallurgy at Rolla

are regularly open to freshmen. There are four plans for admission to the freshman class. Plan A provides admission by certificate; Plan B by examination. Plan C permits a student to satisfy admission requirements in part by certificate and in part by examination. Plan D permits a veteran to meet admission requirements by tests of general educational development.

*Plan A*—Graduates of fully accredited high schools may be admitted by certificate or transcript of record without examination. The applicant must have passed his high school course with satisfactory marks. Admission by certificate is restricted to graduates of schools accredited by the University of Missouri, by other state universities of similar rank, by the North Central Association, or by other recognized accrediting agencies. Out-of-state students, other than children of University of Missouri alumni or residents of the Kansas City and St. Louis metropolitan areas, must rank in the upper half of their high school graduating class in order to be eligible for admission by certificate.

Students wishing to enter the University by certificate from an accredited high school or academy may obtain the necessary application blanks from the Director of Admissions. The diploma will not be accepted in lieu of the official transcript signed by the proper school official.

The requirement for admission by certificate to the Colleges of Agriculture, Arts and Science, Education, Engineering, the School of Nursing at Columbia, and the School of Mines and Metallurgy at Rolla, is the satisfactory completion of a four-year high school course, including fifteen acceptable units. Missouri students who rank in the lower third of their graduating class may be admitted only on scholastic probation.

All courses, with the exception of physical education and military science, offered by an accredited high school for its diploma may be accepted toward entrance. However, not more than two units in diversified occupations may be accepted. The specific units required by each of the colleges are indicated elsewhere.

*Plan B*—A student who is unable to qualify for admission by certificate, as authorized under Plan A and who is a graduate of a four year high school, or who is at least 18 years of age may qualify for admission to the freshman class by examination. The examination will presume training and experience compensating for the lack of formal training to be had in an accredited high school. Examinations will include a general college aptitude test, an English vocabulary and reading test designed to determine a student's aptitude for mathematics and science, and a test in English usage or a test designed to determine his aptitude for the social studies. Students applying for admission under Plan B to the College of Engineering will be given an achievement examination in algebra and geometry. A student applying for admission by examination to the school of Mines and Metallurgy at Rolla should communicate with the Registrar of that school.

*Plan C*—A student who has completed part of a regular course in an accredited high school, or whose high school has not been fully accredited may establish entrance credit in specific subjects (e.g. English, algebra, American History, etc.) by examination.

*Plan D*—A man or woman who has been or is in military service and who may not have completed a high school program, may qualify for admission by satisfactorily passing the high school level General Educational Development tests prepared for the United States Armed Forces Institute, Madison, Wisconsin, or by passing comparable forms of the same tests after separation from the service. A veteran who wishes to qualify for admission by examination on the basis of tests

for General Educational Development must make special application. Further information may be obtained from the Director of Admissions.

### **Admission to the Undergraduate Schools**

The Schools of Business and Public Administration, Journalism, Law, Medicine, and Veterinary Medicine require for admission two years or more of college work including certain specific subjects. College subjects required for admission are designated in terms of semester hours or simply "hours." An "hour" is defined as a college subject pursued one period a week for a semester of at least sixteen weeks or for a minimum of sixteen periods for one term or quarter.

No deficiency in the total number of required hours of credit is permitted for admission to the Schools of Law, Medicine, Veterinary Medicine, or Journalism. Students lacking a small part of the requirements for admission to the School of Business and Public Administration may be admitted on condition. All entrance conditions must be removed within two semesters. The detailed admission requirements of each of the undergraduate schools are indicated elsewhere.

### **Transfer of Credit**

A student who has been regularly admitted to another college or university of recognized standing will be admitted to this University upon presentation of a certificate of honorable dismissal and official transcripts of records of high school and college work, provided his scholastic record has been satisfactory. However, all credentials submitted for admission become the property of the University of Missouri and are kept permanently in the files.

Credit in the form of advanced standing may be allowed for work satisfactorily completed in another college or university of recognized standing in so far as such work satisfies the particular requirements of the division of the University in which the student registers. Advanced standing for the work of the senior year will not be granted. Claims for advanced standing, in order to receive recognition, must be made by the student within one semester after entrance. If a student files with the Director of Admissions complete official transcripts at least six weeks before the opening of the semester, claims for advanced standing will be passed upon and the student notified before registration. Grades in accepted courses are not transferred; only credit in the course is recorded.

Graduates of accredited junior colleges will be admitted without examination to junior standing in the Colleges of the University provided, upon examination of official transcripts, they have satisfied the entrance requirements and have paralleled the work of the first two years of the particular college.

Junior College graduates will also be admitted to the Schools of Journalism and Business and Public Administration, provided they have completed entrance requirements in accordance with regulations of such divisions.

The University may not admit any student who is under suspension or dismissal, or whose previous record shows work of an inferior or unsatisfactory quality.

### **Credit for Military Service**

Upon evaluation of official military records, veteran students may be excused from the military and physical education requirement. Credit may be allowed for this course work and for many of the service training programs conducted by the various branches of the armed forces. The recommendations of the American Council on Education as set forth in "A Guide to the Evaluation of Educational

Experiences in the Armed Services" and its advisory service will serve, in general, as a basis for granting such credit. In order to be counted toward a degree the credit granted must be appropriate to the student's curriculum.

Provisions exist whereby veterans who served a year or more after September 1, 1940 may establish a limited amount of credit for self-directed study or other informal educational experience by the satisfactory completion of college level tests of General Educational Development prepared for the United States Armed Forces Institute. These General Educational Development tests include correctness and effectiveness of expression, interpretation of reading materials in the social studies, interpretation of reading materials in the natural sciences, and the interpretation of literary materials. These tests must be completed prior to registration. Applicants still in service may make arrangements for taking these tests in their military unit. Veterans who have not taken these tests while in service may do so through their Regional Veterans Administration Office, or through the University Counseling and Testing Service on this campus. Any credit granted for these tests is considered survey or elective.

### Special Students and Hearers

An applicant over twenty-one years of age who does not qualify for admission as a regular student, but who by reason of special preparation or attainment may be judged qualified to pursue certain courses, will be admitted as a special student though not as a candidate for a degree. Application blanks may be obtained from the Director of Admissions.

No person less than twenty-one years of age will be admitted to the status of a special student, but it is emphasized that attainment of this age does not in itself qualify one for admission to this status. The applicant may be required to pass such examinations as will demonstrate his fitness to pursue with profit the courses selected. A special student is required to take all regular examinations in a course and is expected to do at least average work; failure to live up to this expectation will result in his elimination by his dean. Special students are seldom candidates for degrees, but occasionally a special student may, if he has done satisfactory college work, qualify as a regular student and become a candidate for a degree. A person who is unable to satisfy the requirements for admission as a regular student will not be admitted to the Schools of Journalism, Law, Medicine, or Veterinary Medicine.

Individuals qualified for admission but who do not desire to work toward a degree may be admitted as unclassified students. With the consent of the faculty of the division in which he is registered and of the teacher concerned, a student may be admitted to any course as a hearer. Hearers shall be registered and shall be required to attend at least one half of the sessions of the course, but shall not be required to participate in any of the work of the course. They shall receive no credit toward a degree for work done.

### Students from Other Countries

*Abroad.* Prospective students living outside the United States and its possessions are advised to write the Foreign Student Advisor, Read Hall, University of Missouri, Columbia, Missouri, at least a year prior to the date of desired admission. Information and blanks concerning admission, scholarships, housing, and approximate expenses will be sent to the students. Application papers and official records of previous school work should be furnished the Director of Admissions, 130 Jesse Hall, University of Missouri, Columbia, Missouri. Upon the approval of these papers, the student will be notified by an official letter. No prospective student



should make plans to leave his country without first obtaining this permission to enter the University.

*In the United States.* Foreign students now studying in the United States may be admitted to the University only after the completion of at least 12 semester hours of M (C) or better quality work in the school whose letter of admission was the basis for issue of the student's visa. To complete his credential file, he must furnish original and official transcripts from each school attended, both in this country and abroad. No student should consider himself admitted to the University until an official letter has been received stating that he is eligible for admission.

### **Admission to the Graduate School**

Admission to the Graduate School requires graduation with a satisfactory record from a college or university accredited by the Missouri College Union, the North Central Association of Colleges and Secondary Schools, or other similar regional accrediting associations. Admission to the Graduate School does not in itself entitle the student to candidacy for a degree. Students who plan to do research in a laboratory science as a part of their graduate programs are advised, before registering in the Graduate School, to write the chairman of the department concerned for assurance that such laboratory facilities will be available to them. All prospective graduate students are urged to consult the chairman of the department in which they expect to do graduate work concerning their plans to undertake a program leading to an advanced degree in that area. See Graduate School elsewhere for additional information.

### **Registration**

Former students should file a request for permit to enroll with the Director of Admissions at least thirty days in advance of registration in order to receive their permits before the registration period.

A student who enters after the regular registration period may, because of closed courses, find difficulty in securing the subjects he desires; moreover, he is not permitted to carry the full amount of work but must enroll for a proportionately reduced amount of work depending on the date of entrance. Ordinarily no student will receive credit for work in any division of the University after the expiration of one-fourth of the scheduled time.

### **New Student Orientation**

All new students at the University are required to attend an orientation program scheduled annually before the opening of classes in the Fall semester. To determine the academic needs of the freshman student, Freshman Placement Tests are given to all freshmen who have not previously taken them. These tests are used in planning the student's course of study and include a test in the mechanics and effectiveness of expression in English and a test of general mental ability.

The Orientation Program includes meetings, lectures and social activities to acquaint the new student with facilities, services, personnel, activities and regulations; to assist him with study habits, social and personality development; and to make a quick and satisfactory adjustment to college life.

## *Fees and Expenses*

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All statements as to fees contained in this catalog are by way of announcement only for the school year covered by this catalog, and are not to be regarded as offers to contract on the basis of those statements, inasmuch as the University expressly reserves the right to change any and all fees and other charges at any time, without any notice being given in advance of such a change.

For the purpose of all rules regarding enrollment fees, courses taken as a hearer and courses taken for reduced credit will be counted at their normal credit value in computing the amount of fees to be paid. Students enrolling in zero credit courses are required to pay fees according to the equivalent credit of the course.

*Time of Payment:* All University fees must be paid in full at the time of registration, at the opening of each semester or term as a condition of admission to classes. Registration is not complete until all fees are paid.

*Personal Checks:* Personal checks in payment of fees or other obligations to the University will be accepted only when the check does not exceed the amount due from the student.

*Reinstatement Fee:* If a student's enrollment is terminated for any reason, and he later requests readmission within the same semester or term, he shall be required to pay a \$5.00 reinstatement fee in addition to regular fees. A student presenting a check to the University in payment of student fees, which is returned unpaid for any reason, shall be automatically suspended from the University and shall be required to pay a \$5.00 reinstatement fee in addition to the regular fees.

### **Tuition**

Tuition is free in all divisions of the University to any student who, at the time of registration for a particular semester or session, is a resident of Missouri and who has been such for not less than one year immediately preceding such registration. In addition, tuition is free or at a reduced amount in certain other cases of residents of Missouri, as provided in the detailed Regulations on Tuition. There is an additional requirement as to aliens who are Missouri residents, as provided in the detailed Regulations on Tuition.

Tuition is free to a non-resident student who has completed the requirements for a bachelor's degree at any college or university approved by the University and who is registered in the Graduate School and in no other division. Most other students who are not residents of Missouri are charged tuition, but in some cases non-residents are exempt from tuition or tuition is at a reduced amount, as provided in the detailed Regulations on Tuition.

It is the duty of each student to register under the proper residence and pay proper tuition fees and it is his duty to raise the question if there is a possibility that he is subject to such fees.

The Cashier, 116 Jesse Hall, or the Director of Admissions, 130 Jesse Hall, will furnish, on request, a copy of the Regulations on Tuition which cover in detail the various cases.



The amount of the tuition for those subject to it shall be:

For one semester of 18 weeks .....	\$112.50
For one session of 12 weeks .....	84.00
For one session of 8 weeks .....	56.00
For one session of 6 Weeks .....	42.00
For any session or term of from 1 to 5 weeks inclusive, for each credit hour or fraction thereof .....	7.00

For partial enrollments:

18 weeks semester	
1 to 9 hours .....	\$56.25
12 weeks session	
1 to 6 hours .....	42.00
8 weeks session	
1 to 4 hours .....	28.00
6 weeks session	
1 to 3 hours .....	21.00

### Library, Hospital and Incidental Fee

All students in the University are required to pay a library, hospital and incidental fee as follows:

For one semester of eighteen weeks .....	\$67.50
For one term of eight weeks .....	38.00

For any other sessions not specified above or for which the Library, Hospital and Incidental fee is calculated on a per credit hour basis as hereinafter described, the Library, Hospital and Incidental fee will be calculated on a reduced basis proportionate to the Library, Hospital and Incidental fee for a regular semester.

Students who are permitted to carry work leading to credit of six to nine hours, inclusive, during a semester of eighteen weeks, and three to four hours inclusive during a term of eight weeks, shall pay a library and incidental fee of one-half the full library, hospital and incidental fee charged for those respective terms.

Students registering for work leading to credit of one to six hours but not including six hours during the semester of eighteen weeks and one to three hours but not including three hours during a term of eight weeks shall be required to pay a library and incidental fee of \$6.50 per credit hour or any fraction thereof. Students registering for work during the intersession shall pay a library and incidental fee of \$6.50 per credit hour or any fraction thereof.

Candidates for an advanced degree who have completed in a previous semester or term all requirements but the final examination and the submission to the Graduate faculty of a thesis (if required) and who are not regularly enrolled in the Graduate School, must enroll in the Graduate School before the examination may be given or the thesis read. Such students must enroll for "examination" for no hours credit and pay an incidental fee of \$7.00. Students who enroll under this rule are not entitled to free hospital service.

### Student Union and Activities Fee

Each student registered for residence work in the University is required to pay a student union and activities fee as follows:

For one semester of 18 weeks (10 or more hours) .....	\$7.50
6 to 9 hours .....	\$3.75
For one term of 8 weeks (5 or more hours) .....	3.50
3 or 4 hours .....	\$1.75

Students carrying work leading to credit of less than six hours during a semester of 18 weeks and less than three hours during a term of eight weeks shall pay a student union and activities fee of .50 per credit hour or fraction thereof. Students enrolled in special intersessions shall pay a student union and activities fee of .50 per credit hour or fraction thereof.

### **Supplementary Medical School Fee**

Each first-year and second-year student registered in the School of Medicine, and each student registered in other schools or colleges taking more than one course in the School of Medicine for which credit is given toward a medical degree shall pay a supplementary medical school fee of \$20.00 per semester in addition to other regular fees. Each third and fourth year student registered in the School of Medicine shall pay in lieu of all course fees, a lump sum supplementary medical school fee of \$125.00 per semester in addition to other regular fees.

### **Course Fees**

A fixed charge is made for the individual courses which include laboratory work and for other courses in which material or equipment is furnished to the student. This fixed charge or fee is made for materials used and depreciation of equipment as ascertained by experience in each particular laboratory and course. The course charges for each term vary from \$1.00 to \$20.00 in accordance with the courses chosen.

Extra charges for breakage, et cetera, may be made in case the loss to the University is not covered by the regular charge.

### **Military Deposit**

Military equipment, including a uniform, is furnished to each student taking a course in Military. A deposit of \$10.00 is required for students enrolled in the basic courses. Students enrolled in the basic Field Artillery courses will have withheld at the end of their first year of enrollment in the Field Artillery basic course an amount equal to 50 per cent of the Army Quartermaster Corps price of the shoes (approximately \$2.75) which have been issued to the student. This amount withheld will be returned to the student upon his re-enrollment in the second year basic Field Artillery course. The balance of the deposit will be returned to the student upon the return of the uniform and equipment in satisfactory condition. All students enrolled in either basic or advanced courses are required to sign an agreement to reimburse the University for any loss or damage in excess of the deposit. Each basic cadet (Air Science I and Air Science II) will pay a fee of \$1.00 to the University at enrollment in each semester of basic Air Force ROTC to cover the cost of laundry and dry cleaning of his uniform at time of turn-in.

### **Music Fees**

In addition to the library, hospital and incidental fee there is a charge of \$30.00 per semester of eighteen weeks for each subject in applied music to cover private instruction of two half-hours per week, one half-hour, when approved, \$18.00.

### **Late Registration Fee**

Every student who files his study program after the close of the last day of registration must pay a fee of \$5.00 for late registration in addition to fees already provided for. This rule applies to all except "hearers."

**Fee for Change in Course**

A fee of \$1.00 must be paid for each petition for change in course which is filed in the Admissions Office after the last day of the regular registration period.

**Fees for Special Field Trips**

The fees charged for the various summer camps and field courses are listed below. Students who have not been bona fide residents of the State of Missouri for one year are required to pay in addition, an out-of-state fee.

*Field Problems in Archaeology*

Library and Incidental fee .....	\$2.00 per cr. hour
Camp and Laboratory fee .....	25.00

*Forestry Summer Camp.* The Forestry Summer Camp of 12 weeks is a requirement for the forestry degree in Curriculum "E" and the Forestry Summer Camp of 4 weeks is a requirement for the forestry degree in Curriculum "E-1". Fees for these camps are as follows:

*12-week Forestry Summer Camp*

Library and Incidental fee .....	\$24.00
Hospital fee .....	5.00
Camp fee .....	60.00

*4-week Forestry Summer Camp*

Library and Incidental fee .....	\$8.00
Hospital fee .....	2.00
Camp fee .....	20.00

Meals are furnished at cost, which is \$8.00 to \$9.00 per week.

*Geology Summer Field Trip*

Library and Incidental fee .....	\$2.00 per cr. hour
Hospital fee .....	5.00
Field Trip fee .....	70.00
Transportation to and from Camp Lander (optional) .....	20.00

The Department of Animal Husbandry also offers a field course. To secure information regarding the course, write direct to the Animal Husbandry Department.

**Automobile Registration Fee**

Students who are authorized to operate automobiles or other motor vehicles in Columbia, while attending the University, are required to register such vehicles for which a registration fee may be charged.

**Transcript Fee**

A fee of \$1.00 is charged for each official transcript of credits. A fee of 50 cents each is charged for all photostatic copies of credits.

**Fee for Diploma and Certificates**

A diploma fee of \$5.00 must be paid for each degree conferred by the University, and a fee of \$2.00 for each certificate except for the certificate for the completion of the two-year course in Agriculture for which the fee is \$1.00. Those granted Ph.D., or Ed.D. degrees are furnished hoods, the fee for which is \$20.00.

### Fees for Thesis or Dissertation

The following fees are charged in connection with the submission of a thesis or dissertation:

<i>Master's Degree</i>	<i>Doctor's Degree</i>
\$2.00 Thesis binding fee	\$25.00 Doctor's dissertation,
\$3.00 Microfilming fee	microfilming and binding fee

### Refund of Fees

Students leaving school or dropping courses for which they have paid fees, prior to the close of the first half of the term after their registration, will receive, upon written request to the Cashier's Office a refund of the fees paid in accordance with the following schedule.

<i>Time of Withdrawal</i>	<i>Amount of Fee to be Refunded</i>
Within the first one-eighth of term .....	80%
Within the second eighth of term .....	60%
Within the third eighth of term .....	40%
Within the fourth eighth of term .....	20%
After the first half of the term .....	No refund

Exceptions to this rule are: Library fines, reinstatement fees, transcript fees, petition fees, late registration fees, and other fees in those cases where excess laboratory materials or hospital services have been used by the student.

If a student who pre-registers or enrolls on the regular registration days and pays the regularly established fees, cancels his registration before the day class work begins at the opening of the semester or term, he shall be entitled to a full refund of fees paid, less a charge of \$5.00 to offset the costs of handling the registration.

If a student who pre-registers or enrolls on the regular registration days and pays the regularly established fees drops a course or courses before the day class work begins, he shall be entitled to a full refund of fees paid for the course or courses which he drops.

### Expenses

Students are advised to live simply and to avoid needless expense. Parents should not permit excessive expenditures for any purpose. The attempt to maintain one's self on a semi-luxurious scale of living is not only unnecessary but detrimental to good scholarship, conduct, and health. A number of students earn a part of their expenses while attending the University by means of clerical and stenographic work, housework, laboratory and library assistance, waiting tables, and many different forms of manual labor. Before coming to Columbia, the prospective student should attempt to provide himself with sufficient funds to cover at least one semester at the University so that it will not be necessary for him to work until he has become adjusted to his new environment. Former students should not attempt to reenter the University unless they have at least \$200.00 on hand or available during the semester and the prospect of securing sufficient part-time employment or assistance through some other source to cover their expenses for one semester. The following table gives an estimate of the necessary expenses for one semester of eighteen weeks:

*Estimated Necessary Expenses for One Semester*

	<i>Minimum</i>	<i>Average</i>
Fees .....	\$ 75.00	\$ 90.00
Books and Supplies .....	\$ 30.00	\$ 50.00
Room .....	\$ 95.00	\$ 95.00
Board .....	\$185.00	\$225.00
Total .....	\$385.00	\$460.00

Note: The expenses listed above are only the basic expenses each student will have. Other personal expenses will differ with the individual student. The item of books and supplies may vary depending upon the school in which the student is enrolled. Any student who will have a financial problem should read pp. 58-64, Sources of Financial Aid.

Non-resident students are required to pay an additional non-resident tuition fee. (See above)

# *Student Welfare*

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## **Living Accommodations**

*University Housing:* University owned and operated Residence Halls and food service are available to both men and women students enrolled in the University of Missouri. Students from Missouri are given preference on assignment to Residence Halls. Food services are supervised by Home Economics and institutional management trained personnel. University Residence Halls are individually supervised by head residents who, with the assistance of personnel assistants, carry out the residence halls' program. Application for housing should be made to the University Housing Office, Room 120, Jesse Hall. Students are urged to apply early. Contracts which cover the school year are executed several weeks in advance of the opening of school.

Freshman women unless excused by the Committee on University Residence Halls, are required to spend one year in University residence halls unless they have on record 24 hours of advanced standing. This requirement is made in order to assist freshman women in adjusting to campus life. Upperclass women may, if they desire, obtain room and board in University residence halls on a room and board contract basis.

Men students may choose between living in University residence halls or in rooming houses approved by the University. Men students contract for room and board when living in University residence halls. A limited number of students who do not live in the residence halls may purchase tickets for meals in University cafeterias.

The University has apartment facilities for married students. Families with children are given preference. Applications should be filed early with the University Housing Office, Room 120, Jesse Hall.

*Off-Campus Housing:* All students not accommodated in University owned housing are required to live in rooms approved by the Committee on Off-Campus Housing. Rooms must be engaged for an entire semester and written agreements are required. Information about approved rooming houses for both men and women may be secured by writing to the Secretary, Committee on Off-Campus Housing, Room 203, Read Hall. Unmarried students, or any married student living as a single student, may not live in an apartment without special permission from the Committee on Off-Campus Housing.

*Sororities and Fraternities:* Sororities and fraternities offer housing to both members and pledges of their organizations, with the exception of freshman women who are to be in University residence halls for one year. The average monthly charge for room, board, etc., varies from \$75.00 to \$80.00 per month on the nine months basis in sororities, and \$70.00 to \$80.00 per month in fraternities. These estimates do not include pledge fees, initiation fees, and building fees in case a new house is planned or a fee to retire the indebtedness on the existing house. A number of fraternities and sororities have their houses paid for and do not have a building fee.

*Co-operative House for Women:* The Campbell-Harrison House, maintained by the Home Economics Department, houses approximately 30 women students

enrolled in the College of Agriculture. Application may be made to the Campbell-Harrison House President, c/o Department of Home Economics, Gwynn Hall, Columbia, Missouri.

Templecrone I is a co-operative house for women which provides board and room. Inquiries should be addressed to Templecrone I, 713 Hitt Street, Columbia, Missouri.

Rochdale is a co-operative house for women and provides board and room. Inquiries should be addressed to Rochdale, 407 College, Columbia, Missouri.

*Co-operative Houses for Men:* The Crest Co-op House provides room and board for 24 men at the price of \$50.00 per month. Application may be made to the House President, Crest Co-op, 715 Missouri Avenue, Columbia, Missouri.

Three Squares Co-operative provides room and board for 35 men at the price of \$50.00 per month and board for an additional 25 men at \$40.00 per month. Application may be made to the House President, Three Squares Co-operative, 101 Stewart Road, Columbia, Missouri.

## Student Health Service

Students in residence at the University of Missouri at Columbia who are registered for more than one-half of the normal credit during any term and who have paid the full library, hospital and incidental fee for that term, are entitled without cost to full medical care by the Student Health Service during the term for which the library, hospital and incidental fee is paid. Full care includes care as an outpatient and a maximum total of thirty days professional service and hospital care in the Student Health Service at Columbia, subject to the rules and regulations of the Student Health Service which govern such care.

Students who register for less than one-half of the normal credit during any term and who pay less than a full library, hospital and incidental fee for that term, are entitled to outpatient clinic care without cost which includes consultation with the Health Service physicians and the performance of certain laboratory tests when recommended by the physician. These students are not entitled to hospital and other services without the payment of regular hospital charges.

This free hospital and medical service is granted only for illness or injuries covered by the rules and regulations of the Student Health Service. Hospital and medical services required on account of illnesses and injuries which do not come within the scope of the free services granted by the Student Health Service must be paid for at the regular rate.

During epidemics in which large numbers of students may become ill, it might not be possible to hospitalize in the Student Health Service proper every student who is ill. Under these circumstances the University provides such temporary facilities which in the judgment of the Health Service Director are deemed satisfactory for the hospitalization of the overflow of ill students. At all times during epidemics provisions are made to reserve regular hospital accommodations for more critically ill students.

Vaccination against smallpox is required of all students. Immunization against typhoid fever and tetanus is strongly advised and may be obtained without charge on request at the Health Service.

Students suffering from chronic illness or disability should arrange for medical care outside of the Student Health Service.

Any student whose mental condition prevents him from adjusting satisfactorily to the general pattern of University life or whose physical condition endangers

the health of other students will be required by the Director of the Student Health Service to withdraw from the University.

All new students are required to report to the Student Health Center for an appointment for a complete physical examination and vaccination as soon as they arrive at the University. Failure to make and keep an appointment for a physical examination may, in certain instances, hinder a male student's military deferment and may, in other instances, result in suspension from the University.

Detailed information concerning the rules and regulations of the Student Health Service may be found in the "M" Book, a deskbook of information.

### Testing and Counseling Service

College years should be satisfying, productive, rewarding years. The Counseling Service is designed to help students attain maximum benefits from attending college. Counselors can help students grow in self-understanding so they may use their assets effectively and plan intelligently for the future.

The Counseling Service is prepared to help students who—

- wonder in what fields of work they are most likely to be happy and successful,
- want help in choosing a major in college,
- want to improve their study skills, or
- want help in solving personal and social problems.

Counseling may include—

- consultation interviews with a counselor,
- tests of intelligence, vocational interest, personality and educational skills, or
- study of information about occupations.

The student should not wait for an "invitation" to consult a counselor because this service is available to students on a voluntary basis. The student may consult a counselor whenever he wishes to do so.

The Counseling Service is one of the several personnel services staffed by professionally trained persons which the university provides for students.

### Speech and Hearing Clinic

The Department of Speech and Dramatic Art conducts a clinic in which students may be examined and advised regarding the correction of minor as well as major speech or hearing defects. Students who think they need such assistance should consult the Director of the Speech Clinic, 331 Switzler Hall.

### Concerts and Recitals

Concerts and recitals by internationally acclaimed artists, orchestras, and musical organizations are given at intervals during the school year. Usually the University brings a concert series to the campus during the academic year. In addition the University's Little Symphony Orchestra, the University Singers, the Chorus, the University Band, and the artists on the staff give many concerts.



# *General Regulations and Requirements*

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## **Military Training Requirement**

Every male student enrolled in the University of Missouri, except those excused by the Faculty Committee appointed by the Executive Board, must pursue a basic two year course in military training during his freshman and sophomore years. The successful completion of the military courses required of him is a prerequisite for graduation. Enrollment and completion of four semesters' work in either Army, Naval, or Air Science and Tactics during the freshman and sophomore years fulfills the military training requirement of the University. (See also Physical Training, below.)

With the exception of the Regular Naval ROTC which is a four year program, enrollment in all ROTC courses beyond the required basic courses is purely voluntary. By order of the Board of Curators the completion of the Advanced Course in Army and Air Force ROTC, the entire Regular Naval ROTC and the last two years of the Contract Naval ROTC programs, enrollment in which at the outset is purely voluntary, once entered upon, shall be a prerequisite for graduation unless completion is excused by the appropriate agency of the United States Government. University officials are required to carry out this regulation.

## **Physical Training Requirement**

All students, men and women, are required to complete four semesters' work in physical training during their freshman and sophomore years.

A committee appointed by the Executive Board may, for satisfactory cause, excuse students from compliance with the military and physical training requirements. All applications for excuse from these requirements should be filed in the Admissions Office, 130 Jesse Hall, not later than two weeks after the beginning of a semester. Excuses because of physical disability will be granted only as a result of physical examination conducted by the Student Health Service.

## **Requirement in American History, Institutions, and National and State Constitutions**

Each student who expects an undergraduate degree in the University of Missouri must present as a requirement for graduation a course or courses in this area, taken at the University of Missouri or at other colleges or universities within the state of Missouri. The requirement can be satisfied by credit in one of the following courses: History 20, American History (5); Political Science 1, American Government (5); History 312, American Constitutional History (3); Political Science 320, The American Constitution (3); Law 123, Constitutional Law (4). If a student is working for two baccalaureate degrees, this requirement will apply to the first degree only. A transfer student should inquire at the office of the Dean of his division to determine whether he has satisfied this requirement.

## **Student Automobiles**

The operation of automobiles in Columbia by University students is discouraged. The University area is reasonably compact and conveniently located

with respect to the city's business district, churches and theaters, and few students have any real need for automobiles. It is recognized, however, that to some students, those having physical disabilities or those living at a considerable distance from the campus, for example, the use of automobiles is necessary. An undergraduate or graduate student who expects to operate an automobile or other motor vehicle in Columbia while attending the University should communicate with the Office of Traffic Safety, 1002 University Avenue, for the latest traffic regulations. Certain categories of students will not be permitted to operate automobiles in Columbia. If a student brings an automobile or other motor vehicle to Columbia he must register it with the Office of Traffic Safety within three days after bringing it to Columbia. These requirements also apply to students enrolled in the University whose homes are in Columbia and who operate automobiles or other motor vehicles. Students are expected to observe all city and state traffic ordinances and laws as well as all University traffic rules and regulations. Those who do not may be denied the privilege of operating a motor vehicle in or around Columbia and will be subject to other disciplinary action.

### **Program of Studies—Credit Hour**

No undergraduate student is permitted to carry in any semester courses aggregating less than twelve credit hours, exclusive of the required work in military training and physical training, without the special permission of his dean. The normal registration is fifteen or sixteen credit hours, exclusive of required work in military training and physical training, and sixteen is considered the maximum, unless the student's curriculum requires more than sixteen hours a semester, or unless the student's scholastic record is above average. Fifteen hours is the maximum registration permitted in the School of Law except under extraordinary circumstances.

The unit of credit given in the University, the semester or credit hour usually referred to only as the "hour," is the equivalent of a subject pursued one period per week for one semester of approximately sixteen weeks. Thus a course valued at two credit hours will meet two periods per week for a semester—a five hour course will meet five periods per week for a semester. The lecture or recitation period is fifty minutes in length, the usual laboratory period occupies an hour and fifty minutes.

### **Graduation**

The last year of work in any college or school must be done in residence, subject to such allowances and modifications as are indicated in the regulations of the separate colleges and schools.

In addition to the total amount of credit required for graduation, all schools and colleges of the University have a qualitative standard which must be met. This standard is usually expressed in terms of "honor points" or simply "points." Detailed information about the points requirement for a particular school or college is included in the statement of graduation requirements for the college or school.

Any faculty may decline to recommend a student for a degree because of lack of moral qualifications even though the student has completed all the formal requirements for the degree.

A student who has completed the requirements for one bachelor's degree may receive also a second bachelor's degree upon the completion of the curriculum prescribed for the second degree, provided the work completed includes at least twenty-four hours more than the minimum requirement for the first degree.

## Grading System

The following marks are used in grading undergraduate work: E, S, M, I, F. These are defined as follows: The grade of E indicates rank among the few most excellent students; that of S, rank among the superior students; the grade of M, rank among the medium students. The grade of I means that a student is somewhat below the average, and grade of F that he has not accomplished the minimum necessary for passing the subject.

The grades of graduate students in all courses which count toward an advanced degree are reported as A, B, C, or F. These grades are defined as follows: The grade A means that the student's work in a course is of outstanding merit and is an honor grade. The grade B means that the student's work in a course is entirely satisfactory. The grade of C means that the student's work in a course will be considered satisfactory to a limited extent in fulfilling the requirements for advanced degrees. The grade of F means that the student's work in the course has not satisfied the minimum necessary for passing the course and that the student has failed.

## Scholastic Deficiencies

Those students who do not maintain satisfactory scholastic averages may be required to withdraw from the University. Deficient students may become subject to either of two regulations. The first applies to a student who does not pass in a certain proportion of his work in any semester. The second is cumulative, and applies to any student who habitually falls behind in his work, even though his proportion of failure in any semester may not make him subject to the first rule.

A student who is ineligible to continue in any division of the University will not be admitted to any other division except under extraordinary circumstances.

## Graduate and Undergraduate Enrollment

Undergraduates who at the beginning of their last semester have a graduation requirement for the bachelor's degree of less than a full semester of work may be permitted with the approval of the appropriate deans to register simultaneously in the Graduate School for courses sufficient to make a full program. Students pursuing such a program are said to be dually enrolled.

Qualified undergraduates who do not avail themselves of the opportunity of dual registration will not receive credit in the Graduate School for credit earned in the undergraduate divisions above graduation requirements.

## Adult Education and Extension Service

This department of the University is provided partly for the convenience of students who wish to enroll in regular University subjects for college credit. Thousands of students enroll annually in Correspondence Courses or in Extension Center Courses offered in various towns and cities of Missouri. As much as one-fourth of the credit accepted toward the A.B. or B.S. in Education degrees may be completed by Correspondence or Extension courses, however, the last 24 hours generally are required to be completed in residence.

Credit may be earned by Correspondence and Extension Study and counted toward the Master's degree.

The Adult Education and Extension Service also operates the University Film Library where some 4,000 educational films (16mm) are on deposit.

This department of the University also houses a large collection of plays known as the Dramatic Play Service.

*For course bulletins or film catalogs write to: The Director, Adult Education and Extension Service, 23 Jesse Hall, University of Missouri, Columbia.*

## *Student Life and Activities*

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Opportunity for participating in a variety of extracurricular activities is offered to University students. There is a wide choice of activities in the fields of music, drama, religion, student forums, recreational athletics, Panhellenic and independent organizations, service clubs, publications, self-government association, and student activity committees. Many of the departments and divisions maintain societies in their special fields of interest and research. These furnish an excellent opportunity for joint faculty-student participation. To be eligible for participation in an activity the student must be doing satisfactory classroom work.

All organizations and activities on the campus are under the supervision of the Committee on Student Affairs, except those definitely under the divisional deans. Application for approval of any new organization or activity must be made to the Committee on Student Affairs through the Office of the Dean of Students, 200 Read Hall. No organization or activity may represent the University before the public, or use the name of the University in connection with its own name, or with its members as students, without consent of the proper Faculty Committee. Many campus organizations and activities are audited by an Auditing Committee consisting of faculty and student members.

*Student Government Association:* On enrollment in the University each student becomes a member of the Student Government Association, an association created to give students a voice in University affairs and to enable each student to fulfill his responsibility to the student community through participation in a system of student self-government.

The Student Council, the Association's elective legislative and policy making body, determines what activities and programs of the student community come under the jurisdiction of the Student Government Association and undertakes to promote the general welfare of both student and University. Officers, the president, the secretary, and the treasurer, elected by the members of the Association together with the members of the president's cabinet, form an executive board.

The third branch of the Association's governmental structure is the judicial branch. This branch is represented by a board known as the Board of Review, which is a joint student-faculty board composed of members chosen from the Student Council and the University Committee on Student Affairs. The Board of Review passes on violations of SGA laws and on the constitutionality of the laws made by the Council.

The activities of the Student Government Association present opportunities for students to enrich their college experience through a program of extracurricular activities which is designed to be of direct support to the academic program of the University. Through this Association, individuals are given opportunities for developing leadership and self-expression and for contributing to the general development of the individual and the University community in a manner which cannot be duplicated by any other student activity.

*Association of Women Students:* AWS is an organization to which all women students automatically belong as soon as they are registered in the University.

It is the organization that considers standards for women students and acts as their governing body. The Legislative Council, whose membership represents all the various women's groups on the campus, determines (1) regulations such as closing and opening hours in residence units for women, (2) a system of special permissions, (3) quiet hours in women's houses, (4) projects to be sponsored by AWS. Some of the special activities include a Careers Conference, two dances, publishing and sale of an AWS Calendar to provide funds for two \$250 scholarships for two outstanding women students.

The House Council, an organization sponsored by AWS for all house presidents of women's residence units, attempts to achieve coordination of AWS activities and regulations.

Violations of AWS rules and standards are considered by the AWS Judiciary Board; action taken by this group may be referred, at the student's request, to the AWS Board of Appeals. All disciplinary decisions are subject to the approval of the Dean of Students who with the Committee on Student Affairs authorizes the responsibility delegated to AWS.

*Student Union Activities:* The recreational program of the Memorial Student Union is planned and managed by the student committees, which function under the Student Union Activities Council and the Student Union Board. It is the purpose of the Student Union Activities to provide the campus with a well-rounded social, recreational and cultural program, and in doing so to provide opportunity for leadership training and community service. The appointment of students to committees, to the council, and to the board is controlled by a merit system.

The Union program is diversified. There are dances, square dances and other parties. Lessons are offered in ballroom dancing and square dancing. The game program includes table tennis, cards, chess and other games, with free-play, tournaments, lessons, and bridge and chess clubs which meet weekly.

Other weekly activities include a student-faculty coffee hour, with a different student organization serving as the host group each week; a "Film Classics" series, presenting an outstanding motion picture each week, and a forum featuring student and faculty speakers, with informal discussion following.

Variety characterizes the art and photography exhibits at the Union. An art center, equipped for leisure time activities in both fine arts and crafts, serves as a workshop for individual and organizational art activity, including the making of posters and decorations. Darkrooms are provided for photography, and the camera club sponsored by the Union presents a variety of programs and discussions, contests and exhibitions.

The Student Union music room has a collection of several hundred recordings of classical and concert music and is open on a regular schedule for listening. There is an annual barbershop quartet contest and Christmas Carol singing.

An amateur radio station is operated by the Student Union Amateur Radio Club, providing a hobby for amateur radio operators. Various other services are provided for the campus. A talent bureau serves for a variety of student and faculty events. The Union also publishes an activities calendar, carrying the events of all student organizations. A copy is available to every student on the campus.

Special events are offered during the year, the most ambitious of these being "Carousel," an annual variety show produced each spring, with original music, choreography, script, costumes and set designs.

The Union Committees serving under the Activities Council and the Board

are as follows. Activities Calendar, Announcements, Art, Promotion, Carousel, Coffee Hour, Dances, Decorations, Direct Mail, Exhibits, Films, Games, Literary, Music, News Releases, Office Staff, Posters, Special Projects, Talent Bureau, Union Forum, Research, and four clubs: Camera, Chess, Radio, and Bridge. A special organization is created for special events as they occur.

*Honor Societies:* There are many honorary societies in the University organized to improve scholastic and cultural standards in their areas of interest. Phi Eta Sigma (men), and Kappa Epsilon Alpha (women) are freshmen honor societies which recognize high scholastic attainment among first-year students. There are similar sophomore and junior honor societies. Other honorary societies include Phi Beta Kappa, Sigma Xi, and honor societies in Law, Engineering, Medicine, Journalism, Education, Business and Public Administration, Agriculture, Graduate School, and various departments in Arts and Science.

*Fraternities and Sororities:* At the University of Missouri there are chapters of twenty-nine social fraternities and fourteen social sororities, all of which have national affiliations. These organizations are all subject to certain rules and regulations of the Committee on Student Affairs. The fraternities are members of the Interfraternity Council, and the sororities are members of the Panhellenic Association, both of which are governing and coordinating councils for the member groups. The Office of the Dean of Students, through the Director of Student Affairs for Women and the Director of Student Affairs for Men, counsels with the officers of the fraternities and sororities on matters affecting the organizations.

*Student Publications:* With the exception of divisional student publications sponsored by the Dean of the Division, student publications are under the supervision of the Board of Student Publications. These publications are Savitar, the official student yearbook; Missouri Showme, campus humor magazine; and The Maneater, official student weekly newspaper. Two of the divisional publications are the Missouri College Farmer, sponsored by the Agricultural Club and printed monthly during the school year, and the Missouri Shamrock, also published monthly, which is the official publication of the Engineers' Club. Student publication experience is available to all students.

*Musical Organizations:* Students majoring in music or music education are expected to participate in either the University Chorus, University Orchestra or other listed ensemble unless excused by the Chairman of the Department of Music. The University Chorus rehearses once each week, and prepares large choral works for presentation with soloists and orchestra during the year. The University Orchestra rehearses once each week. Faculty, students, and players of orchestral instruments from the community are admitted to membership after conference with the director of the orchestra. The University Singers, an organization consisting of about sixty selected student singers, rehearses twice each week and gives frequent public performances.

The University Band is organized as a Concert Unit, a Marching Unit, and an R.O.T.C. or Regimental Unit. Membership in the Concert Band is open to women students.

*Forensics:* Every student in the University of Missouri is eligible to participate in forensic activities. Competitions for places in various debates and other programs are held throughout the year. Any student who is interested in any forensic



activity, either as a speaker or as a manager, is invited to register at the Student Forensic Office, 326 Switzler Hall.

*Dramatics:* The Missouri Workshop Theatre, now in its thirty-first season, offers a wide variety of opportunities to any student interested in dramatics. The plays selected for production give a cross-section representation of the best in the theatre from the past and present. Four major productions are presented each year. All students beyond the first semester of the freshman year are eligible to participate. These plays are designed, built, and managed under the supervision of faculty directors. Many other opportunities are offered in the one-act plays presented semi-monthly. In these programs new plays are produced, new talent tested, old plays revived and experimental theatrical work carried on. In addition, the Missouri Workshop sponsors an Intramural One-Act Play contest and an Original One-Act Playwriting contest. Television plays are presented over the University's station, KOMU-TV. In these dramas the students get first-hand experience in working on live television shows. Without being enrolled in any formal television course a student may secure a variety of practical experiences in television purely on an extracurricular basis. No extra fees are charged for this practical training. Any student who wishes to qualify for Workshop activities should consult the Director, Room 1, Jesse Hall.

*Religious Activities:* The many Columbia churches offer a full program of interest to the students in the University. Special consideration is given to make the Sunday services interesting to the student community, and provision is made for special activities for young people only. The Student Religious Council, which coordinates student religious work on the campuses of Christian College, Stephens College, and the University and the many church Student Centers of the City, affords opportunity for the student to work with the State Cancer Hospital Vesper Program, the Crippled Children's Sunday School, the Student Clinic, the annual Religion-in-Life-Week and other projects of need on campus and in the City.

The Young Men's Christian Association at the University of Missouri is a fellowship of student and faculty members that has had a continuous record of service on the campus since 1890. The program includes activities in the following areas: religious, national and world affairs, international relations, leadership training, social relations, community service and race relations. Through worship, study and action, individual members are encouraged to evolve a Christian faith adequate to meet life's problems. Membership is open to all male students and faculty of the University.

The Young Women's Christian Association at the University of Missouri is open to all University women who may be interested in its program of friendship, religious work, and service. The program is varied so that the membership may find a type of service of interest to each individual. There are small interest and discussion groups, and an active group in social service.

The Y.W.C.A.—Y.M.C.A. offices are located in Room 210, Read Hall. A program center, Huggins House, is maintained by the Y.M.C.A. at 720 Missouri Avenue.

*Athletics and Recreation:* For Men: Rothwell Gymnasium and the Field House contain facilities for most major indoor athletic activities.

Brewer Field House is built in connection with Rothwell Gymnasium and is planned for a general recreative program. It furnishes space and facilities for the program of physical education and athletics through the winter months and in inclement weather.



Rollins Field, adjacent to the Gymnasium and the Field House, is well equipped for recreational and intramural programs. It has a cinder track, several football, baseball, and other play fields, paved tennis courts, and handball courts.

Memorial Stadium has permanent seats for about 37,000 spectators. In addition to the football field, the stadium contains a 440-yard cinder track.

For Women: The women of the University have for their own use a gymnasium with facilities for indoor recreational activities, dressing and service quarters, and a swimming pool 30 x 60 with up-to-date chlorination and filtration equipment. Outdoor athletic facilities available for women include a field for softball, soccer, hockey and space for archery and other outdoor games for women.

# *Sources of Financial Aid*

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Financial aid to University of Missouri students enrolled in residence at Columbia is offered in the form of part-time employment, student loans, and fellowships, scholarships, assistantships, prizes and awards. In extending financial aid, the University through its officials and committees attempts to select as recipients of such financial aid those students who, by virtue of their need, character, and ability, can qualify for such assistance. It is the policy of the University to extend aid to those students who require such aid to furnish them with the actual necessities of life during the time they are enrolled in the University and not for items in addition thereto. Even with this restricted policy it is at times not possible to provide assistance for all students who need it and who are willing to make sacrifices to continue their education.

## **Employment**

A Student Employment office is maintained by the University for the purpose of obtaining work in the University and in the community for those students who find it necessary to earn a part of their expenses. This office guarantees no one part-time employment, but tries to help all those who apply. Information regarding employment may be secured by writing to the Manager of Student Financial Aid Services, Room 16, Jesse Hall, Columbia, Missouri. Women students desiring employment in private homes should write to the Director of Student Affairs for Women, Read Hall.

Various divisions of the University either on departmental funds or on funds provided by research grants employ graduate or advanced students as research teaching assistants. The graduate or advanced student desiring such employment should apply to the chairman of the department in which he is doing his major work.

## **Student Loan Funds**

There are several trust funds, administered for or by the Board of Curators, the income from which is available for loans to students enrolled in the University of Missouri who need to borrow money for essential expenses. Student loans are not usually approved for students during the first semester of their first year, except from two funds which have been designated for that purpose by the donors. Loans are made during the first year after the student shows his scholastic record merits such assistance. Real financial need, economy of expenditures, and good scholarship and conduct are necessary to secure consideration for a loan. Applications from students whose expenses exceed the average minimum will not be considered. Applications for loans should be filed with the Manager of Student Financial Aid Services at least two weeks in advance of the time the assistance is desired. Inquiries for further information should be addressed to the Manager of Student Financial Aid Services. Some funds allow temporary loans without investigation or security in emergency situations. A brief description of the funds follows:

*General Memorial Fund:* Established and contributed to by individuals who

choose to make their tributes to friends or relatives in the form of contributions to a memorial fund for financial aid to students. Loans from this fund are made to students of good character who have demonstrated ability to do college work and who show financial need.

*General Student Loan Fund:* Established and contributed to by gifts from individuals interested in assisting needy students to secure an education. Some donors are former students who received such assistance. Some donations come from anonymous sources. To date gifts have been received from William Bennett Lewis, Westmoreland Hills, Maryland; Sutton Christin, New York City; Mr. C. Orihuela, Tampa, Florida; Jamie Sandoval, Mexico City, Mexico; Eldon Weber Ellis, Paris, Texas; R. B. Wilson, Rio De Janeiro, Brazil; and R. C. Gans, St Louis, Missouri. Loans are made to deserving students who qualify for assistance on the basis of scholarship, character, conduct, and financial need.

*Alpha Epsilon Phi Loan and Scholarship Fund:* Established at the University of Missouri on July 5, 1930, by the Alpha Epsilon Phi Sorority as a part of the national project of the sorority. Loans are made to upperclass women on the basis of scholarship, responsibility and financial need.

*Lewis Dent Baker and Mabel Matthews Baker Scholarship Loan Fund:* Established by the sons and daughter of Lewis Dent Baker and Mabel Matthews Baker for the purpose of loans to deserving men and women who are residents of the State of Missouri, students at the University of Missouri at Columbia, Missouri, who are, preferably, graduates of the high school of Sikeston, Missouri, and who along with maintaining a good scholastic record in the University of Missouri are active in extracurricular activities.

*William S. Baker Educational Loan Fund:* Established by William S. Baker of Sedalia, Pettis County, Missouri, with the provision that three-fourths of the income shall be loaned to needy students of Pettis County, Missouri.

*Nettie A. Barth Memorial Fund:* Established by Henry E. Hafer of New York City, from the estate of Paul A. Barth, to be used as a loan fund for the assistance of deserving students.

*William A. Blackwell Memorial Fund:* Established for the purpose of aiding worthy and needy students by the late Anne E. Blackwell of Pattonville, St. Louis County, Missouri, in honor of her husband, William A. Blackwell.

*John Homer Bothwell Educational Fund:* The sum of \$5,000.00 was left by John H. Bothwell of Sedalia, Missouri, as a trust fund. The principal now consists of one \$5,000, one \$500, four \$100 U.S.A. Treasury Series G 2½% bonds; shares (Totaling \$90.00) in two U.S.A. Treasury Series K 2.76% bonds; and a cash balance of \$78.70. The income account on January 1, 1956 consisted of cash in the amount of \$848.05, notes totaling \$350.00, and a temporary investment of \$2,000.00 in U.S.A. Treasury 2½% bonds. Three-fourths of the income from this fund is available for loans to students in the University of Missouri. Preference is given to students from Pettis County, Missouri.

*Boyer-Matthews Memorial Fund:* Established in 1954 by the Missouri Student Chapter of the American Veterinary Medical Association as a loan fund from which a student in the School of Veterinary Medicine who has a financial need may be assisted if he has the recommendation of the Dean of the School of Veterinary Medicine or the Faculty Adviser of the Chapter.

*Edwin Bayer Branson Memorial Fund:* Established by the family and friends of Edward Bayer Branson, who for many years was connected with the Department of Geology of the University of Missouri. This fund was established to provide student loans to students in the University of Missouri who are members of the junior and senior class or enrolled in the Graduate School, and who are majoring in the field of geology. The student's scholarship, character, promise, intellectual merit and financial need shall be considered in making loans.

*R. W. Brown Memorial Student Loan Fund:* Established by the Missouri Farm Bureau Federation in honor of Mr. R. W. Brown, for many years President of the Missouri Farm Bureau Federation. The fund is for loans to freshmen students, both men and women, enrolled in the College of Agriculture. Loans are approved on the basis of financial need, good scholarship and good character.

*Christine Hauschild Business and Professional Women's Club Loan Fund:* Established in 1944 by the Business and Professional Women's Club of Columbia, Missouri, for loans to junior and senior women students who upon leaving school intend to engage in some business or profession. Named in 1951 to honor Christine Hauschild, a member of the Club and for many years Manager of Student Financial Aid Services, University of Missouri.

*Loan Fund of the Classes of 1908, 1909, 1910:* Established for the purpose of extending financial assistance to needy and deserving students. Money for this fund was provided by donations from the classes of 1908-09-10.

*Loan Fund of the Class of 1912:* Available to students in all divisions of the University. The money in this fund is for the purpose of student loans and was given by the class of 1912.

*College Panhellenic Association Loan Fund:* Established in 1948 by the Women's Panhellenic Association of the University of Missouri. This fund is available to women students who are enrolled in any division of the University of Missouri who are members of any national sorority. Preference given to the groups represented in Columbia.

*Delta Sigma Pi Loan Fund:* Established in 1938 primarily for the benefit of students in the School of Business and Public Administration.

*Harry J. Diffenbaugh Fund for Deserving Students:* Established as a trust fund by Harry J. Diffenbaugh of Kansas City, Missouri, the income from which is loaned to worthy, deserving, and needy students attending the University of Missouri.

*Ella Victoria Dobbs Student Loan Fund:* Established by the late Ella Victoria Dobbs for many years a professor of Applied Arts in the University of Missouri. Loans from this fund may be made to students enrolled in the University of Missouri, preferably the College of Education, who are preparing themselves to teach young children the arts and crafts. Such students must have ability and interest in creative expression,

*Arthur Samuel Emig Memorial Loan Fund:* Established in 1954 by Constance Latshaw Emig, wife of Arthur Samuel Emig who for many years was a member of the faculty of Sociology in the University of Missouri. Loans from this fund may be made to students of either sex enrolled in any year of the School of Medicine.

*William Fearn Student Loan Fund:* Established by Marylee Margaret Fearn in honor of her husband, Lieutenant William Fearn, U.S.N., graduate of the School of Journalism in 1941, who was killed in action during World War II. Loans are limited to senior students enrolled in the School of Journalism.

*Federated Garden Clubs of Missouri Scholarship Loan Fund:* Established to assist needy students majoring in horticulture, floriculture, agriculture or forestry in the College of Agriculture.

*Fortnightly Emergency Loan Fund:* Established by the Fortnightly Club of Columbia, Missouri, in 1955 as a fund from which loans might be made to students who for some reason or another are in need of a small amount of cash for a short time. All students, including foreign students, may be assisted from this fund. No security is required and no interest is charged.

*Foundation of the College of Engineering Loan Fund:* Established to assist deserving students enrolled in the College of Engineering.

*Stevens Ganson Fund:* Established by Emma S. Ganson in memory of her son, Stevens Ganson, who was a graduate of the University of Missouri. Loans from this fund shall be made to students who have need for financial assistance to enable them to continue their studies. Students from Montgomery City or Montgomery County are to be given preference.

*The L. N. and Alice B. Gray Memorial Fund:* Established by L. N. Gray from the joint estate of L. N. and Alice B. Gray as a fund for loans to students who have attended the University for at least one half year and who have demonstrated good moral character, intellectual ability, and scholarship.

*The William Alexander Gregory Educational Fund:* Charles R. Gregory of St. Louis, Missouri, bequeathed approximately \$300,000.00 to the University of Missouri to create this fund, named in honor of his brother. The income from the fund is used for loans and scholarships for white students of either sex enrolled in any of the courses of the University.

*Richard M. Higgins Endowment Fund:* Established by Jennie C. Higgins of St. Louis, Missouri, in honor of her husband. Loans are made to needy and worthy men students who by their ability, character, and financial need shall deserve assistance.

*Home Economics Club Loan Fund:* For the loans to students in Home Economics who are active members of the Home Economics Club. This fund was established in 1946 with funds submitted by the Home Economics Club of the University of Missouri.

*May Scovern Hunt Loan Fund:* Established by May Scovern Hunt of Macon, Missouri, "to assist students financially so they may attend the University."

*Kappa Beta Student Loan Fund:* Established by the Delta Chapter of Kappa Beta (a Fellowship of University Women of the Christian Church). Preference is given to freshman and sophomore women.

*The W. K. Kellogg Foundation Loan Fund:* A loan fund for students enrolled in the School of Medicine or premedical students whose entrance to the School of Medicine has been approved. Established in 1942 with funds from the Kellogg Foundation.

*The Laughlin Student Loan Fund:* Established by Dr. George M. Laughlin, D.O., of Kirksville, Missouri, as a loan fund for students enrolled in the College of Agriculture, preferably for students majoring in Animal Husbandry.

*Lincoln County Student Loan Fund:* Established by the Lincoln County Extension Council for deserving students from Lincoln County.

*Richard Loeb Memorial Loan Fund:* Established by Mr. and Mrs. Loeb of New York City in memory of their son, Richard Loeb, who lost his life in Germany in World War II.

*A. J. Meyer Memorial Fund:* Established by the Missouri County Agricultural Agents Association in memory of A. J. Meyer, former director of agricultural extension Work in Missouri, for loans to students enrolled in the College of Agriculture. Students whose preparation, character and ability in general qualify them for efficient service should be given special consideration.

*E. L. Miller Loan Fund:* Provided by Dr. E. L. Miller of Kansas City, Missouri, to assist students enrolled in the School of Medicine.

*Missouri Alumnae Loan Fund:* Established by the Alumnae Association of St. Louis, Missouri, to extend financial assistance to women residents of Missouri preferably from St. Louis and St. Louis County.

*Missouri Bankers Association Loan Fund:* Established by members of the Missouri Bankers Association as a loan fund to undergraduate students who at the time of receiving the loan are regularly enrolled in the School of Business and Public Administration and pursuing a curriculum in which banking and finance subjects are required.

*Missouri Eastern Star Revolving Fund of 1945:* Established to provide emergency short-term loans to veterans of World War II and the Korean War enrolled in the University to tide them over the period before their subsistence allowances are received from the government and afterward, in cases of emergency.

*Missouri Homemaker's Association Loan Fund:* Provided by contributions from the rural women's clubs of Missouri for rural freshmen enrolled in the University. Preference is given to students coming from families affiliated with agricultural extension clubs.

*Missouri State Florists' Association Student Loan Fund:* For loans to students in the College of Agriculture whose major interest is in horticulture or floriculture.

*Mystical Seven Student Loan Fund:* Established in 1942 by the Mystical Seven organization of the University of Missouri as a fund for loans to needy students enrolled in the University at Columbia.

*The John D. Perry Fund:* Established by the late Mary E. Perry of St. Louis, Missouri, in memory of her father. In her will, Miss Perry stated the fund to be "for the financial assistance of such students . . . as shall appear . . . to need and deserve such assistance while pursuing their studies."

*Peter Potter Loan Fund:* Dr. Potter, class of '01 and '03, provided money for a loan fund for students enrolled in the School of Medicine who have an average or better scholastic record, are of good character and show financial need to borrow money to continue their training.

*The James C. Reid Loan Fund:* Established by James C. Reid of Columbia, the income of which is to be used "to educate poor, industrious, and worthy young men and women of Boone County, Missouri, in the State University."

*The Anthony W. Rollins Loan Fund:* This fund was established in 1845 by Dr. Rollins, who provided that the income therefrom be available for loans to students, preference being given to "such poor and indigent youths of Boone County, both male and female, as are unable to educate themselves" and to "such as evince an inclination to preach the gospel."

*Rotary Club of Columbia Loan Fund:* Established in 1933 by the Rotary Club of Columbia, Missouri, to be used as a loan fund for worthy and needy students of the University.

*Savitar Frolic Loan Fund:* Established from proceeds from the annual Savitar Frolic, a student production, for the purpose of short term loans to veterans of World War II enrolled in the University to tide them over the period before their subsistence allowances are received from the government.

*Harry I. Shaefer Loan Fund:* Established by the will of Dr. Harry I. Shaefer who died March 20, 1950. From this fund loans may be made to needy and deserving students seeking an education in the University at Columbia.

*Southwestern Missouri Student Loan Fund:* This fund has been established for loans to students in the University who can qualify on the basis of financial need, scholarship, and good character.

*James Evans Stowers Memorial Loan Fund:* Established by Mrs. Stowers and her sons, James and Robert, of Kansas City, Missouri, to assist students enrolled in the School of Medicine.

*St. Louis Florist Club Student Loan Fund:* For needy students enrolled in floriculture, preference being given to junior and senior students. The fund was established in 1941 with funds submitted by the St. Louis Florist Club.

*St. Louis Panhellenic Alumnae Association Loan Fund:* Established by the St. Louis Panhellenic Alumnae Association primarily for junior and senior women students enrolled in the University.

*St. Louis Republic Loan Fund:* This fund, established by a former newspaper of St. Louis, Missouri, through the efforts of the editor, Paul Brown, is loaned to worthy students in the College of Agriculture.

*E. A. Trowbridge Memorial Student Loan Fund:* Established by the Board of Trustees of the E. A. Trowbridge Memorial Fund. Assistance from this fund is available to an entering or enrolled student in the University of Missouri who is of good character and needs financial aid to continue in school.

*University of Missouri Fortnightly Club Loan Fund:* Established in 1932 by the Fortnightly Club for girls enrolled in the University who are graduates of one of the high schools of the state who need financial aid to continue their education.

*University of Missouri Medical School Foundation Fund:* Loans from this fund are available to graduates of the University who need financial assistance for the completion of the last two years of the medical curriculum in another school of medicine.



*The University of Missouri School of Veterinary Medicine Alumni Association Loan Fund:* Established by the Alumni Association of the School of Veterinary Medicine as a loan fund from which worthy Junior or Senior students in the School of Veterinary Medicine may be assisted when having a financial need.

*Thomas J. and Ruth B. Walker Loan Fund:* Established by Mrs. Thomas J. Walker, Pasco, Washington. (Mr. Thomas J. Walker was for many years Secretary of the Missouri State Teachers Association). Loans from this fund may be made to students enrolled in the College of Education who need financial assistance in order to complete their formal education.

*The Charles F. Ward Student Loan Fund:* Established by the family and friends of the late Charles F. Ward of Plattsburg, Missouri, a former member of the Board of Curators of the University of Missouri, as a student loan fund from which loans may be made to men or women students enrolled in any classes or any divisions of the University of Missouri at Columbia.

*Women's Extension Club Loan Fund:* Established in 1938 by the Women's Extension Club of Columbia, Missouri, as a fund for loans to seniors in the College of Agriculture on the basis of financial need, scholastic ability and character.

*Romaine Wood Panhellenic Loan Fund:* Established in 1941 by Columbia Alumnae Panhellenic Council as a fund for student loans to women students enrolled in the University who are members of a national sorority. In 1948 the fund was named in honor of Romaine Wood, one of the founders of the Columbia Panhellenic organization.

*The Yeater-Watson Loan Fund:* This fund consists of monies collected under the provisions of the Act of April 1, 1895, providing for the endowment of the University and for the establishment and endowment of free scholarships of merit. It is named in honor of Charles E. Yeater of Sedalia, who conceived the idea, and Drake Watson of New London, who introduced the bill in the legislature.

*Knights Templar Educational Foundation:* A student loan fund established to assist worthy students during the junior and senior years of their college course. Part of this fund is available to University of Missouri students. For further information write Knights Templar Educational Foundation, Box 353, Warrensburg, Missouri.

# *Fellowships, Scholarships, Awards*

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## **Graduate**

Graduate fellowships and scholarships available to students enrolled in the Graduate School of the University of Missouri, are limited to students of outstanding ability. The applicant must have completed, or expect to complete before the opening of the next academic year, the requirements for a Bachelor's Degree. Applications for fellowships and scholarships must be filed not later than March 1 in order to receive consideration for the following academic year. Detailed information and application blanks may be secured by writing to the Dean of the Graduate School, University of Missouri, Columbia, Missouri.

*E. M. Carter Memorial Award:* An award of \$100 to a student completing the first year of graduate work in the Department of Education. The student must have been a classroom teacher and shall be enrolled in the University for the purpose of continuing in that work. The award is made on the basis of past teaching experience, superior scholarship, and promise as a classroom teacher. Selection is made by the Faculty of Education. Established by the Missouri State Teachers Association in memory of E. M. Carter who served as Secretary of the Association during the years 1907-1909, 1912-1937.

*Curators Scholarships for Honor Graduates of Missouri Colleges:* Stipend, equal to the amount of the library, hospital and incidental fees. Offered annually to the honor graduate or to the student attaining the highest scholastic rank in the graduating class of the following fully accredited Missouri colleges and schools: Central College, Culver-Stockton College, Drury College, Lindenwood College, Lincoln University, Missouri Valley College, Park College, Rockhurst College, St. Louis University, College of St. Teresa, Tarkio College, University of Kansas City, Washington University, Westminster College, William Jewell College, Central Missouri State College, Warrensburg; Northeast Missouri State Teachers College, Kirksville; Northwest Missouri State College, Maryville; Southeast Missouri State College, Cape Girardeau; Southwest Missouri State College, Springfield; Harris Teachers College, St. Louis.

The scholarships are valid for the first two semesters of the school year immediately following the graduation of the student from college. In the event that the first-ranking graduate fails to accept the scholarship, it may become available for the graduate who stands second; or, eventually for the one who stands third, but no lower. Certification of the student's attainment is to be made by the proper official of the institution to the Secretary of the Board of Curators on forms furnished by the latter.

Established by the Board of Curators of the University of Missouri.

*Curators Summer Session Scholarships for Members of the Faculties of Missouri Colleges:* Stipend, equal to the amount of library, hospital and incidental fees. Awarded to five members of each faculty of accredited junior colleges of Missouri, state teachers colleges or state colleges, the Harris Teachers College (St. Louis) and the institutions which are members of the Missouri College Union. Applicants for these scholarships are required to be faculty members

actively engaging in teaching. Application forms may be secured from the president of each institution eligible. Established by the Board of Curators of the University of Missouri.

*Winterton Conway Curtis Scholarship in Zoology:* Stipend, \$100. Awarded annually by the Department of Zoology to a graduate student in zoology for use at the Marine Biological Laboratory during the summer. Established in 1932 by the students, colleagues and friends of Winterton Conway Curtis in honor of his completion of thirty years of service in the Department of Zoology at the University.

*Albert S. Eisenstein Prize:* At the time of the Spring Commencement an award of \$50 is made to an outstanding graduate student in physics. The prize was established in honor of Albert S. Eisenstein, Professor of Physics at the University, 1947-1953.

*Francis Scholarship in Public Affairs for Men:* Stipend, \$600. Awarded to a student with a degree from the University of Missouri, preferably a master's or doctor's degree. The purpose of the scholarship is to encourage the student to pursue graduate study in government, politics, or international relations. It was the hope and desire of the donor that a recipient of this scholarship not enter diplomacy or politics as a life work but that he apply the knowledge and experience gained from his studies in a career in business, and, in addition to his business activities, take an active part in public affairs. The recipient may study either in this country or abroad. Scholarship offered in alternate years, with the Francis Scholarship in Creative Writing. Established in 1927 under the will of Governor David R. Francis.

*Francis Scholarship in Creative Literature for Women:* Stipend, \$600. A recipient shall hold a bachelor's degree from the University of Missouri or preferably the master's or doctor's degree from this institution. The recipient will study in the field of Creative Literature either in this country or abroad. Scholarship offered in alternate years, with the Francis Scholarship in Public Affairs. Established in 1927 under the will of Governor David R. Francis.

*A. P. Green Company Fellowship in Geology:* Stipend, \$1,250 paid in ten monthly installments. To be awarded to a graduate student doing his research in the general field of Missouri fire clays. Established 1947 by the A. P. Green Fire Brick Company, Mexico, Missouri.

*Gregory Fellowships and Scholarships:* Stipend; fellowship, \$700, scholarship \$500. A limited number of fellowships awarded to students irrespective of department, who have successfully completed at least one year of graduate study, satisfying the foreign language requirements, and have demonstrated their ability to render service in the form of research. Likewise, a limited number of scholarships open to graduate students of high promise in scholarship, irrespective of the type of work they may desire to pursue. It is expected that scholars will be qualified to do graduate work in the subjects which they elect and that they will devote themselves mainly to work in these subjects. Fellows and scholars are allowed to engage in outside work only with the consent of the Dean of the Graduate Faculty and the professor of the major subject that they elect. A student may be deprived of his fellowship or scholarship whenever it may appear that he is not devoting himself as he should to his work as fellow or scholar. Established in 1914 by Charles R. Gregory in honor of his brother, William Alexander Gregory.

*Charles Kiepe Scholarships:* Stipend, \$500. In the award of this scholarship, preference is given to those enrolled in Agriculture. Established in 1932 by the will of Charles Kiepe of Cape Girardeau, Missouri.

*Edward K. Love Fellowships:* Stipend, \$1250. Four fellowships in Wildlife Conservation are available. Preference will be given to graduates of accredited Missouri Colleges, and a fellowship may be continued for two years. In addition to the stipend, some provision is made for further expenses. Appointments for the fellowships are recommended by the Administrative Committee of the Missouri Cooperative Wildlife Research Unit Established by the Board of Governors of the Edward K. Love Foundation for Wildlife Conservation.

*McNeil Fellowship:* Stipend of \$100 per month to be awarded to a regularly enrolled graduate student or students in the field of Chemistry. The recipient is selected by the faculty of the Department of Chemistry and is to conduct research in the field of organic chemistry at the University of Missouri. Established in 1949 by the McNeil Laboratories Incorporated.

*Walter Miller Classical Fellowship:* Stipend, \$600. To be held by recipient for graduate study at the University of Missouri, or, upon the recommendation of the Department of the Classical Languages and Archaeology, at the American School of Classical Studies in Athens or the American School of Classical Studies in Rome. Established in 1951 on the basis of a gift made in 1933 by Dr. Walter Miller, formerly Professor of Classical Languages and Archaeology and Dean of the Graduate School.

*Missouri Poultry Council Fellowship:* Stipend, \$1,500.00. Available to a graduate student in Poultry. Established in 1952 by the Missouri Poultry Council.

*Peabody Scholarship in Education:* Stipend, \$200.00. Awarded to a student in Education, on the same conditions as the Gregory Scholarships. Established 1912, by the trustees of the Peabody Education Fund.

*E. Sydney Stephens Memorial Fellowship:* Stipend, \$1000. One fellowship available in Wildlife Conservation. In addition to the stipend, some provision is made for further expenses. Appointment for the fellowship is recommended by the Administrative Committee of the Missouri Cooperative Wildlife Research Unit. Established by the Missouri Conservation Commission, effective September 15, 1951.

*The O. M. Stewart Fellowships:* Stipend, \$800-\$1500, \$800 for beginning graduate students. Awarded to graduate students majoring or minoring in the Department of Physics. Application should be made to the Chairman of the Department of Physics, University of Missouri. Established by Oscar M. Stewart, Professor of Physics at the University from 1901 to 1944.

*Trenholme Prize Fund:* A prize of \$50 awarded for an outstanding master's thesis in history submitted during the year. Established by the Department of History at the University in honor of Norman Trenholme, Professor of History at the University, 1902-1925.

*Allen Cook White, Jr. Fellowship:* Stipend, \$375 per year to be awarded annually to a student who is to be enrolled during the following academic year as a graduate student in the field of History. The selection of the recipient is made upon the basis of intellectual merit and ability, quality of work, possible

promise and personality, integrity and character, without regard to his or her economic circumstances and employment. Established in 1949 by Mr. Allen Cook White and Mrs. Helen Hogan White, his wife, of Moberly, Missouri, in memory of their son Allen Cook White, Jr.

*Walter Williams Memorial Fellowship:* Stipend, \$1300 over a three year period. Fellowship available to a candidate with a Master of Arts Degree in Journalism who has passed his language examinations and is proceeding toward the degree of Doctor of Philosophy. The candidate should have spent his two preceding graduate years specializing in the field roughly defined as the international press. Established by the Walter Williams Memorial Foundation, in honor of Walter Williams, former Dean of the School of Journalism and President of the University of Missouri.

### Undergraduate Scholarships, Prizes and Awards

All undergraduate scholarships are assigned by the Curators on recommendation of the Committee on Aids and Awards, a divisional faculty, or some special committee appointed for the purpose. All undergraduate scholarships must be reported, for information purposes, to the Committee on Aids and Awards. Inquiries should be addressed to the Chairman of the Committee, 110 Jesse Hall, to the Deans of Divisions, the Dean of Students, or Director of Admissions.

#### A. FOR ENTERING FRESHMEN

##### *In Arts and Science, Agriculture, Engineering, Education and Nursing*

1. *Curators' Freshmen Scholarships and Awards:* Each year, the Committee on Curators' Scholarships issues a certificate of recognition to each senior graduating from High School with rank in the upper fourth in class average and on the statewide test. The graduate of highest promise in each school is offered a Curators' Scholarship worth the equivalent of the library, hospital and incidental fee or \$135 per year. All others who receive the Certificate of Recognition, if they are in need of financial assistance in order to attend college, may ask for the proper forms and apply for a Curators' Award of the same value as the Curators' Scholarship—\$135 per year.

The Curators' Scholarships and Awards may be used for enrollment in the University at Columbia or at Rolla under the following conditions: the scholarship or award must be used during the year following

graduation from high school;

graduates of accredited public and non-public high schools are eligible to be designated;

only residents of Missouri may hold a scholarship or award;

Curators' Awards for use at Columbia, are apportioned approximately on the basis of population to the counties in the state—this limitation does not apply to awards used at Rolla;

only one Curators' Scholarship is offered in each high school for use at Columbia or at Rolla and, if not accepted, it cannot be reassigned in that school;

Inquiries may be addressed to the Director of Admissions at Columbia, the Registrar at Rolla, or to the high school principal.

Curators' Scholarships and Awards were established in 1950 by the Board of Curators.

2. *Adult Education and Extension Service Scholarships:* Two scholarships are offered for entering freshmen, equivalent in value to the library, hospital, and incidental fee for two semesters in the University at Columbia or Rolla. High School graduates who are residents of Missouri and who have taken one or more of their high school units by correspondence from the University of Missouri Adult Education and Extension Service are eligible for consideration. Recipients will be recommended by the Adult Education and Extension Service to the Committee on Aids and Awards annually in March. Selection will be based upon high school grades, scores on the statewide test, and grades in correspondence subjects. Established in 1955 by the Adult Education and Extension Service.
3. *Scholarship in American Citizenship:* Annual stipend \$150.00. It is awarded for four years to the high school senior selected by the Committee on Aids and Awards on the basis of need, score on the statewide test, and high school rank. The recipient must be a graduate of a Missouri high school, preferably a woman, and must rank in the upper one-fourth on the statewide test and in high school average. It is required that satisfactory progress in the University be maintained in order to continue holding the award through four years. Established in 1908 by the National Society of the Colonial Dames of America in the State of Missouri. The next award is for the 1956-57 school year.
4. *Athletic Scholarships:* As provided for under regulations of the Missouri Valley Intercollegiate Athletics Association of which the University of Missouri is a member, there has been established a number of scholarships available to students with special interests in athletic competition. These scholarships are awarded by the Committee on Aids and Awards and, according to rules of the Conference, may be granted for only one academic year. Students may apply for renewal which will be decided on the basis of scholarship, athletic achievement, conduct, and need. There are four types of scholarships as follows:
  - Number 1—providing fees, books, board and room
  - Number 2—providing fees, books, and board
  - Number 3—providing fees, books and room
  - Number 4—providing fees and books.

The conference rules provide that a recipient may not receive income from jobs of more than \$135 above the No. 1 scholarship in any one academic year. Conference rules specifically provide that recipients of these scholarships may not accept any financial aid from sources other than the institution, the government, or those legally responsible for their welfare.

Applications and copies of Conference and Committee regulations are obtainable from the Registrar, 228 Jesse Hall. Most high school principals in Missouri will also have application blanks. Established in 1952 by the Committee on Intercollegiate Athletics.

5. *University Band Scholarships:* A stipend of \$50.00 per year is awarded to each member of the University Band who participates in the band program throughout the year. Members are chosen by audition and may or may not be enrolled in course Music 43, University Concert Band, for



credit. The band organization serves athletic, military and concert functions. Auditions for membership are held in Room 201 Lathrop Hall, telephone 5218. Established in 1910 by the Board of Curators.

6. *Frank P. Blair Scholarship*: The annual stipend is the income from \$7,400.-00. It is awarded for four years to the high school senior selected by the Committee on Aids and Awards on the basis of need, score on the statewide test, and high school rank. The recipient must rank in the upper one-fourth on the statewide test and in high school average. It is required that satisfactory progress in the University be maintained in order to continue holding the award through four years. The next award is for the year 1956-57. Established in 1911 by Mrs. C. B. Graham of St. Louis in memory of her father, Frank P. Blair.
7. *Farm Underwriters Association Scholarships*: Stipend, two scholarships at \$125; two at \$100. Scholarships are available to 4-H Club members for outstanding club work, including fire prevention activities. Established in 1946 by the Farm Underwriters' Association, Chicago, Illinois.
8. *Robert C. Fields Memorial Scholarship*: Annual income on the fund of \$1,000 or more. It is to be awarded to a boy or girl, resident of Laclede County, Missouri, for the purpose of attending the University. Financial need of the person is to be considered. Established in 1954 by the widow and son, Robert C. Fields, Jr. of Robert C. Fields, a former student and instructor in the University and a prominent attorney of Laclede County. Selection is made by a committee in Laclede County.
9. *General Motors Scholarship*. Two scholarships are offered for entering freshmen in any division of the University at Columbia or Rolla. Scholarships may be retained for a four-year period if academic progress is satisfactory. Recipients are selected by the Committee on Aids and Awards on the basis of scholastic achievement, promise and financial need, good character and merit. The amount of the stipend is determined each year by a national agency on the basis of need as established by information on financial resources filed by the recipient. These are intended to cover practically all student expenses. The award was established in 1955 by the General Motors Corporation.
10. *Grants-in-Aid to Foreign Students and Displaced Persons*: The Curators of the University of Missouri provide for a total of 10 Grants-in-Aid for foreign students and displaced persons desiring to enroll in the University of Missouri Graduate School and needing financial assistance in order to do so. This Grant-in-Aid is equal to the library, hospital and incidental fee, if one is assessed. For application blanks and detailed information, write the Foreign Student Adviser, Dean of Students' Office, University of Missouri, Columbia, Missouri, or the Dean of the Graduate School, 114 Jesse Hall.
11. *Scholarships in Interscholastic Events*: Stipend is the equivalent of the library, hospital and incidental fee for two semesters—currently \$135 per year. They are awarded to winners of high ratings in the interscholastic events held at Columbia each year, the recipients to be recommended to the Committee on Aids and Awards by the academic department concerned as follows:
  - a. one scholarship for high rating in each of the 18 music events, recipients to be recommended by the Department of Music;



- b. one scholarship for high rating in each of the FFA contests, recipients to be recommended by the Department of Agricultural Education;
- c. one scholarship for high rating in each of the five speaking events and two each in debate and drama, recipients to be recommended by the Department of Speech and Dramatic Art.

All recipients must meet the qualifications of scholarship, residence, and use of scholarship that are maintained for recipients of the Curators' Freshmen Awards. Established in 1935 by the Board of Curators.

12. *Lieutenant Harry Herrod Scholarship*: Stipend \$500 per year paid \$50 at the beginning of each year and \$25 every two weeks during each semester. The recipient is to be a man, designated by the faculty of the Joplin High School or in case the faculty fails to act, by the University of Missouri. In case the recipient fails to attain an average in his studies equal to the average of the entire student body of the University of Missouri, or if he fails to deport himself as a gentleman and in a manner consistent with the spirit of this scholarship, then upon recommendation of the University Faculty he is to be dropped as the recipient. The scholarship may be held for not more than four years. Established in 1955 by the will of Pearl Herrod of Joplin, Missouri.
13. *Edward K. Love Scholarships*: Stipend \$100 each. A limited number of scholarships is offered to entering freshmen. They are awarded by a special committee to the highest ranking boys or girls in the wild life conservation programs of the 4-H Clubs of Missouri, or to the highest ranking boys in the wildlife conservation program of the Missouri chapters of the Future Farmers Association. Established in 1939 by the Board of Governors of the Edward K. Love Conservation Foundation.
14. *National Dairy Products Corporation Scholarship*: Stipend, one of \$100, and one of \$50. These scholarships are awarded to youths in 4-H Dairy Club work in Missouri during the year, who plan to enter the University. Established in 1940 by the National Dairy Products Corporation.
15. *U. S. Naval ROTC Regular Program*: A four-year all expense scholarship (valued at approximately \$5000.00) paid by the U. S. Government to those male high school graduates and college freshmen between the ages of 17-21 who pass the nationwide competitive examination (given early in December each year) and who are selected for appointment. The recipients, upon graduation, are commissioned in the U. S. Navy or U. S. Marine Corps. Applications must arrive at the Education Testing Service, Princeton, New Jersey, prior to November 15 each year. For further information write the Professor of Naval Science, University of Missouri, or Navy Department, Washington 25, D. C. Established in 1946 by the United States Navy.
16. *La Verne Noyes Scholarships*: Usual stipend, an amount equivalent to fees. They are available to men and women who served in the Army or Navy of the United States of America, in the first world war, who were honorably discharged from such service, and to their descendants. The scholarships to be used in payment of fees in part or in full for deserving students needing financial assistance. Established in 1928 under the will La Verne Noyes, of Chicago.
17. *Santa Fe Scholarship*: For members of Future Farmers of America who attend the College of Agriculture or the School of Veterinary Medicine,

this \$250 scholarship is available. Any boy who is a member of FFA and a high school senior, may apply. He must attend college during the fall semester following high school graduation. Recipients are selected in the manner designated by the State Supervisor of Agricultural Education and may qualify on the basis of outstanding leadership, scholarship, and the applicants' supervised farming program while an FFA member. His scholastic rating for 3½ years must place him in the upper one fourth in his class. The award was established in 1955 by the Santa Fe Railway.

18. *Science Fair Scholarships—St. Louis and Greater Kansas City Science Fairs:* These are offered to winners of prizes for exhibits at the St. Louis and Greater Kansas City Science Fairs. The recipients must be residents of Missouri, enrolled as students in a Missouri High School, and ranking in the upper one-third of their high school class. Two scholarships each at St. Louis and Kansas City carry stipends of library, hospital and incidental fee for four years (8 semesters) at the University. Four scholarships each at St. Louis and Kansas City carry stipends of library, hospital and incidental fee for one year (2 semesters) at the University. Recipients may enter any division at Columbia that admits freshmen. Established in 1952 by the Board of Curators.
19. *Anthony W. Rollins Educational Aid Fund:* Stipend, amount not to exceed University fees. Aid from this fund is available from one to four years if the student's record is satisfactory. Recipients must be residents of Boone County. Preferences to be given to such students as need assistance and to "such as evince an inclination to prepare to preach the gospel." Established in 1845 by Anthony W. Rollins, M.D.
20. *J. R. Watkins Scholarship:* Stipend, \$100. Two scholarships are available for beginning freshmen; one to a boy and one to a girl who have done outstanding work in 4-H Clubs. Established in 1946 by the J. R. Watkins Company of Winona, Minnesota.

*In the College of Arts and Science*

21. *Applied Music Scholarships:* Fifteen scholarships are offered annually in Applied Music with a stipend equal to the Applied Music fee of \$30 a semester. The scholarships are awarded on recommendation of the Department of Music and may be awarded to a student in any year of his undergraduate program. Need, as well as musical talent, is an important consideration. Established in 1937 by the Board of Curators.
22. *Central Missouri Press Association Scholarship:* An annual scholarship of \$150, to be paid one half on registration day for each of the fall and winter semesters, the recipient to be selected by the Executive Committee of the Central Missouri Press Association in conjunction with the Faculty of the School of Journalism. Applications are accepted from high school seniors in the Central Missouri Press Association area who wish to enter the University and prepare for a career in Journalism. Holders may be considered for awards for successive years. This award was established in 1955 by the Central Missouri Press Association.
23. *O. M. Stewart Scholarships:* Stipend, \$150 to \$400. Awarded as undergraduate scholarships for students majoring or intending to major or minor in the Department of Physics. Application should be made to the Chairman of the Department of Physics of the University. Established in 1944

by the will of Oscar M. Stewart, Professor of Physics in the University from 1901 to 1944.

24. *Harold Swanberg Medical Journalism Scholarship of the American Medical Writers' Association*: Stipend, \$500 to be paid in five instalments. The recipient will be selected from applicants enrolled in medical writing program on the basis of scholarship, character, need and interest in the program. The selection is by the faculty of the School of Journalism and approval by the American Medical Writers' Association is required. Established in 1954 by the American Medical Writers' Association from funds provided by Harold Swanberg, M.D., of Quincy, Illinois.

*In the College of Agriculture*

25. *Farm Underwriters Association Scholarships*: See 7, above.
26. *Forney Foundation Scholarships*: Stipend \$250. Two scholarships are available to male freshmen entering the College of Agriculture or the College of Engineering. The scholarships are awarded primarily on the basis of the applicant's special interest in the development and use of mechanical equipment on the farm as demonstrated by the applicant's record in high school in mechanical training or farm shop courses. Special emphasis is placed on creative ingenuity in design and construction of farm machinery improvements. Emphasis is also placed on the applicant's participation in church and religious activities in his home community. Need and scholarship are also considered. Applicants are selected for recommendation to the Scholarship Committee by the Department of Agricultural Engineering. Established in 1953 by the Forney Foundation, Fort Collins, Colorado.
27. *Kroger Scholarships*: Stipend, \$150. A limited number of scholarships is available to students entering the College of Agriculture of the University as freshmen, for work in Home Economics or Agriculture. Scholarships are awarded on the basis of the applicant's need and his high school record. Applicants must be students in Missouri. For further information, address the Dean, College of Agriculture, University of Missouri, Columbia, Missouri. Established in 1947 by the Kroger Company.
28. *Eward K. Love Scholarships*: See 13, above.
29. *National Dairy Products Corporation Scholarship*: See 14, Above.
30. *Santa Fe Scholarship*: See 17, above.
31. *Sears, Roebuck Scholarships*: Usual stipend, \$150. A great number of scholarships is available to students entering the College of Agriculture of the University of Missouri for work in Agriculture or Home Economics. Students with advanced standing from other colleges or universities are not eligible. There are three requirements:
1. Need for financial help.
  2. A definite and sincere interest in Agriculture or Home Economics.
  3. Scholastic record in high school.

Applications should be made to the office of the Dean, College of Agriculture, University of Missouri, Columbia, Missouri. Established in 1936 by Sears, Roebuck and Company.

32. *J. R. Watkins Scholarship*: See 20 above.

*In the College of Education*

33. *Isaac Hinton Brown Scholarship*: The scholarship is awarded to a young woman of Caucasian parentage, a native Missourian from the rural Missouri Ozarks, a graduate of a Missouri high school enrolling as a freshman in the University of Missouri at Columbia in the College of Education and intending to prepare herself for the profession of teaching. It is payable from income on an investment of \$2,420 which is around \$135 per year. Established in 1950 by Mrs. Edith Brown Smith (Mrs. William Baldwin Smith II) of New York City who was the daughter of Isaac Hinton Brown, a former teacher of elocution in the University and Superintendent of the Columbia Public Schools who died in 1889.

*In the College of Engineering*

34. *Forney Foundation Scholarships*: See 26, above.

## B. FOR SECOND YEAR STUDENTS

40. *Alpha Tau Alpha Award*: Stipend, \$50. It is awarded to a sophomore with a major in Agricultural Education. Established in 1939 by Alpha Tau Alpha, honor society in Agricultural Education.
41. *Applied Music Scholarships*: See 21, above.
42. *Athletic Scholarships*: See 4, above.
43. *University Band Scholarships*: See 5, above.
44. *Grants-in-Aid to Foreign Students and Displaced Persons*: See 10, above.
45. *Association of Women Students Award*: Prize of \$25. Awarded annually to the woman student in the University who in her freshman year has attained high rank scholastically, who is personally worthy, and who needs financial assistance. Established by the Associated Women Students in 1938.
46. *Baird Classical Awards*: Two prizes of \$50 each are awarded annually; one to a freshman enrolled in Latin, and one to a freshman enrolled in Greek. Each award is made to the freshman who by his record in such classes, has given the best promise of achievement in Latin and Greek respectively, in his sophomore year. Payment of the prizes is made about November 1 of the winner's sophomore year providing he continues his work in Latin or Greek, respectively. Prizes established in 1937 by Mr. Charles Baird of Kansas City, former Chairman of the Board of Visitors of the University.
47. *Campus Chest Scholarships*: Each scholarship carries a stipend of \$100 and as many are offered as funds obtained from the Campus Chest Drive will permit—in 1955-56, nine were offered. They are awarded to men or women of sophomore standing (24-54 hours credit) who have a minimum grade average of 2.5 and on the basis of financial need, outside interest in school activities or community work, and self support. Recipients will be recommended by a committee composed of the Directors of Student Affairs, a representative of SGA, of the Men's Residence Halls Association and from AWS. The stipend is payable one half on registration days of the first and second semesters. The awards were established in 1955 by the Student Government Association. Application should be made to SGA or the Directors of Student Affairs.

48. *Rhodes Clay Scholarship*: Stipend, \$75. It is awarded to a member of the freshman class in the College of Arts and Science on the score of scholarship, deportment, and general worthiness. In making the award, scholarship and literary attainment are not considered alone, but moral character, physical constitution and general worthiness of the various candidates will be duly considered. Competition may for many reasons be extended to students enrolled in the divisions of the University at Columbia other than the College of Arts and Science. The student to whom the scholarship is awarded for any year must spend the following year pursuing work in the University. The scholarship is payable in ten equal instalments, the first payment to be made October 1, of the student's second year. Established in 1907 by Mr. Green Clay of Mexico, Missouri, in memory of his son Rhodes Clay.
49. *University of Missouri Engineer's Club Prize*: The stipend, a slide rule, is awarded to the freshman in the College of Engineering who attains the highest scholastic rank as determined by a committee. When the principal becomes large enough to yield an annual income of \$50, this prize shall become a scholarship to be awarded to the freshman in the College of Engineering who attains the highest scholastic rank. Established in 1929 by the University of Missouri Engineers' Club.
50. *Harry L. Kempster Scholarship in Poultry Husbandry*: Stipend \$200. It is to be awarded to a student or students working in the Department of Poultry Husbandry at the discretion of the department. Established in 1954 by F. M. Stamper Company.
51. *Lange Brothers Scholarship in Soils*: This fund is to provide a scholarship in the Department of Soils. The recipient must be an individual of practical judgment, a hard worker and preferably one who needs help. Established in 1951 by Lange Brothers, Inc., St. Louis, Missouri.
52. *Missouri Engineers of Chicago Scholarship*: The stipend of \$100 is awarded to an Engineering student of high scholastic standing and creditable participation in student activities. Established in 1925 by the Missouri Engineers of Chicago Alumni Association.
53. *Missouri Poultry Council Scholarship*: Stipend, \$150.00. This scholarship is available to a student of Poultry Husbandry recommended by the staff of the Poultry Department. Established in 1952 by the Missouri Poultry Council.
54. *Missouri Poultry Improvement Association Scholarship*: Stipend \$150.00 to be paid one half at the beginning of the first and one half at the beginning of the second semester. Awarded by the Department of Poultry Husbandry to a promising student in the freshman or sophomore class who is majoring in Poultry Husbandry and one who is in need of assistance to attend the University. The Department may choose the recipient from those enrolled in any year of undergraduate work. Established in 1954 by the Missouri Poultry Improvement Association.
55. *La Verne Noyes Scholarships*: See 16, Above.
56. *Anthony W. Rollins Educational Air Fund*: See 19, above.
57. *Ralston-Purina Scholarship*: The stipend of \$500 is to be paid \$50 on the opening of school in September and on the first of October, November, December, January, March, April, May and \$100 on February 1. The purpose

of the award, offered annually in each state and 3 in Canada in a Land Grant College of Agriculture, normally to an incoming senior, is to give recognition and assistance to outstanding undergraduate students in Agriculture. The recipient must qualify as follows:

Scholastically—upper 25% of the class.

Leadership—as evidence by special activities in which he is engaged.

Character—moral firmness and vigor in all relationships.

Extracurricular—a record demonstrating good citizenship.

Sincerity of purpose in Agriculture as his chosen field.

Financial need clearly demonstrated.

The recipient will be selected each year by May 1 for the following academic year beginning in September, by the Faculty of the College of Agriculture and the name will be submitted to the donor for approval. Established in 1955 by the Ralston-Purina Company of St. Louis.

58. *Sears, Roebuck Sophomore Scholarship*: A stipend of \$200 per year is to be awarded annually to a sophomore enrolled in the College of Agriculture who is the most outstanding student from among the freshman Sears scholars of the preceding year. Established in 1942 by Sears, Roebuck and Company.
59. *Soil Science Award by the National Plant Food Association*: A stipend of \$200 and an inscribed key are to be given annually to an outstanding undergraduate student majoring in Soils. Selection of recipient by the Department of Soils. Established in 1953 by the National Plant Food Association.
60. *O. M. Stewart Scholarships*: See 23, above.
61. *Harold Swanberg Medical Journalism Scholarship*: See 24, above.
62. *Harry Tidd Sigma Chi Scholarship Award*: An award of \$100 is given to the sophomore student in the Sigma Chi Fraternity who, during his freshman year, attained the highest rank of the current sophomore students. Established in 1941 by Mr. Harry Tidd of Hutchinson, Kansas, a graduate of the University and a member of the Sigma Chi Fraternity.
63. *Jacob Warshaw Scholarship in Spanish*: Stipend, \$50. It is awarded to an outstanding student enrolled in any division of the University, including the Graduate School, who has maintained a high scholastic record in a course or courses in Spanish and Portuguese, and who will agree to continue a study of that language at the University. Established in 1945 in honor of Dr. Jacob Warshaw, former Chairman of the Department of Spanish in the University, and his relatives and friends.
64. *Women's Auxiliary to the Boone County Medical Society Nurse's Scholarship*: The stipend of \$175 is paid one-half at the beginning of the first semester and one-half at the beginning of the second semester. The recipient shall be selected by a Committee from the faculty of the School of Nursing and a member of the Women's Auxiliary of the Boone County Medical Society. Recipients must have completed the first calendar year of nurse's training in the University; i.e. two semesters and one summer. The recipient shall be a girl with professional qualifications to be a good nurse, making satisfactory grades in her courses, a resident of Boone County, Missouri, and in need of financial aid in order to continue her nurse's training. Established in 1955 by the Women's Auxiliary of the Boone County Medical Society.



## C. FOR UPPERCLASSMEN

*For Third and Fourth Year Students in Any Division*

69. *American Institute of Chemists Award*: This is an award of a medal with associate membership in the Institute for one year, made on the basis of scholarship and personal qualities of integrity and leadership, each of which shall have equal weight. Recipients shall be chosen from the graduating class by the faculty of the Department of Chemistry in collaboration with the Chicago Chapter of the American Institute of Chemists. The award was established in 1955 by the American Institute of Chemists.
70. *Courtesy Award of the American Association of University Women*: The stipend is payment of national, state, and local dues for one year in any Missouri AAUW branch. It is awarded annually to an outstanding senior woman selected by a University Committee. Established in 1952 by the Missouri Division of the American Association of University Women.
71. *Athletic Scholarships*: See 4, above.
72. *University Band Scholarships*: See 5, above.
73. *Curators Junior College Scholarships*: The stipend is the equivalent of the library, hospital and incidental fee for the academic year of two semesters—currently \$135 per year. The Committee on Curators' Scholarships selects from the graduates of Missouri Junior Colleges up to 40 scholars each year. Recipients must be Missouri residents, recommended by the Junior College faculties, who need assistance, and have superior scholastic records in Junior College work. These scholarships may be used in any division of the University at Columbia or Rolla. Established in 1955 by the Board of Curators.
74. *Sarah Gentry Elston Scholarship*: The stipend of \$500 is to be awarded to a woman student who has completed at least one year of work at the University of Missouri. It is to be awarded for the junior or senior year at the University and is based on high scholarship, service to the University and need. Established in 1950 by the Association of Women Students.
75. *Grants-in-Aid to Foreign Students and Displaced Persons*: See 10, above.
76. *Eva Johnston Scholarship Award*: A prize of \$100. It is awarded to a junior girl in the University who is a graduate of a Boone County, Missouri high school, and whose scholarship and character are outstanding. Established in 1930 by the Columbia branch of the American Association of University Women.
77. *McDermand Scholarships for Men*: At present four scholarships of about \$300 each are usually awarded to men entering the junior year, having between 54 and 84 hours credit. Scholarship, need, and good character are important factors. Application may be made at the Office of the Dean of Students. The Committee may also invite students to apply. They are awarded in July-August for the following year. The stipend is paid one half at the beginning of the fall semester and one half at the beginning of the winter semester. Established in 1930 in the will of Frank B. McDermand, founder of the Columbian Hog and Cattle Powder Company of Kansas City, Missouri.
78. *Mortar Board Award*: Stipend, \$25. It is awarded to that woman student who is needy and worthy, and who in her sophomore year ranks highest in



scholarship, leadership, and service, Established in 1938 by Mortar Board, national honorary society for women.

- 79. *La Verne Noyes Scholarships*: See 16, above.
- 80. *Anthony W. Rollins Educational Aid Fund*: See 19, above.
- 81. *Jacob Warshaw Scholarship in Spanish*: See 63, above.

*For Upperclassmen in the College of Arts and Science*

- 82. *Applied Music Scholarships*: See 21, above.
- 83. *Sophronia H. Hastings Memorial Prize*: A prize of \$50 is awarded within the field of Applied Arts, to a woman student, preferably a junior, who gives promise of accomplishment in this field and who expects to continue such work at least during her senior year; and preferably to one whose interest is directed toward teaching. Established in 1945 by a grandnephew, W. C. Curtis, in appreciation of Miss Hastings, as a woman typical of the best traditions of old New England. Dr. Curtis is Professor Emeritus of Zoology and Dean Emeritus of the College of Arts and Science.
- 84. *Chi Omega Social Betterment Prize*: A prize of \$25 is awarded to an upper-class woman who manifests an interest in Social Service, and who has established a good scholastic record in sociology, history and economics. Established in 1916 by the Rho Alpha Chapter of the Chi Omega Sorority.
- 85. *Paulina Kuntze Music Award*: Two equal prizes consisting of books, parchment, or cash are awarded to two students, a man and a woman, candidates for degrees in music, who during the year have done work of exceptional merit in the field of original musical composition, to be judged on the basis of content rather than on technique. Established in 1929 by Harriet C. Hulick, a graduate of the University of Kansas in memory of Paulina Kuntze, a native Missourian.
- 86. *William B. Ittner, Sr., Fine Arts Prize*: A prize of \$25 is awarded for the most meritorious work in music or art. Established in 1930 by William B. Ittner, fellow in the American Institute of Architects of St. Louis, Missouri.
- 87. *Sigma Alpha Iota Scholarship*: The scholarship is to be paid to a woman student member of Iota Lambda Chapter of Sigma Alpha Iota, and to be made on the basis of ability, talent, and financial need. Established by the St. Louis Alumnae of Sigma Alpha Iota organization, 1950.
- 88. *Jonas Viles, Jr., Scholarship*: The stipend of \$100 is awarded by the Department of Zoology to an advanced student in zoology as an aid for study at the Marine Biological Laboratory or some similar institution. Established by Dr. and Mrs. Jonas Viles in memory of their son, Jonas Viles, Jr., of the class of 1925, at his suggestion and in part from his earnings.
- 89. *The Laws Astronomical Medal*: This was established in 1881 by Samuel Spahr Laws, President of the University 1876-1889. This medal is offered annually at Commencement to the student who stands highest in astronomy, and has at the same time attained a high average of general scholarship. An original thesis written on some astronomical subject and showing capacity for scientific investigation is required.
- 90. *Phi Mu Alpha Scholarship*: This award is known as a scholarship but at the present time consists of a medal and a certificate of achievement. This

is awarded annually to the student majoring in music who has made the highest scholastic record in the work of the junior year. The recipient of the scholarship is expected to spend his senior year in resident study in the department. Established in 1927 by the Zeta chapter of the Phi Mu Alpha musical fraternity, consisting of members of the faculty of the University of Missouri, Stephens and Christian Colleges and a few students of the University.

91. *James S. Rollins Scholarships*: Stipend \$50 each. A total of six scholarships may be awarded. One is awarded to a member of the junior class in the College of Agriculture; two to members of the junior class in the College of Arts and Science; one to a member of the junior class in the College of Engineering; one to a second year student in the School of Law; and one to a member of the first class in Medicine. They are awarded by the President and the Faculty for recognition of merit and character and are payable immediately after Commencement each year. Established in 1889 by James S. Rollins.
92. *O. M. Stewart Prize*: The O. M. Stewart Prize of \$100 is available annually to be awarded to a senior who is majoring in physics and whose grades and personal excellence meet with standards which the O. M. Stewart Fund Committee considers outstanding.
93. *O. M. Stewart Scholarships*: See 23, above.
94. *American Institute of Chemists Award*: A medal and scroll is presented each year to an outstanding senior in recognition of excellence of leadership, scholarship and character for the purpose of stimulating interest in the science of Chemistry and the profession of chemist. The recipient may be working in Chemistry or in Chemical Engineering and is recommended for selection by the Department of Chemistry. The award is made by the Chicago Chapter of the American Institute of Chemists and was established in 1954 at the University of Missouri.

*For Upperclassmen in the College of Agriculture*

95. *Borden Agricultural Award*: The stipend is \$300. In order to be eligible, a student must have completed in his curriculum at the beginning of his senior year, two or more courses in dairying. A scholarship will be awarded to the eligible student having the highest average grade in all preceding college work. The scholarship is to be paid to the recipient on registration in the College of Agriculture for his senior year. Established in 1944 and provided by the Borden Company Foundation of New York City.
96. *Borden Home Economics Award*: The stipend is \$300. In order to be eligible, students must have completed in their curricula at the beginning of their senior year, two or more courses in Food Nutrition. A scholarship will be awarded to the eligible student having the highest average grade in all preceding college work. The scholarship is to be paid to the recipient on registration in the College of Agriculture for his senior year. Established in 1944 and provided by the Borden Company Foundation of New York City.
97. *Gamma Sigma Delta Sophomore Scholarship Award*: Awarded each year to the highest ranking sophomore student in the College of Agriculture. Established in 1932 by Gamma Sigma Delta Honorary Fraternity.

98. *Henry and Mary Cornelia Crumbaugh Medal*: This is an award of a scholarship medal for excellence in household chemistry or chemistry of nutrition. Established in 1914 under the will of Mrs. Robert Lee C. Herne, in memory of her father and mother, former residents of Columbia, Missouri.
99. *Greenlee Student Aid Fund*: The stipend is \$50. This award is available to a regularly enrolled student in the University who is majoring in Poultry Husbandry. The selection of the recipient is made by the Department of Poultry Husbandry on the basis of scholarship, interest in poultry husbandry and interest in research. Established in 1944 by A. D. Greenlee of St. Louis, Missouri.
100. *Harry L. Kempster Scholarship*: See 50, above.
101. *Lange Brothers Scholarship*: See 51, above.
102. *Missouri Poultry Council Scholarship*: See 53, above.
103. *Missouri Poultry Improvement Association Scholarship*: See 54, above.
104. *Ralston-Purina Scholarship*: See 57, above.
105. *Frank Richards Scholarship*: Stipend, \$300. The scholarship is awarded annually to a junior in the College of Agriculture on the basis of financial need, character, scholarship, and participation in Animal Husbandry activities before and during his enrollment in the University of Missouri. Established in 1950 by Paul Grafe of Ferndale Ranch, Santa Paula, California, in honor of a former University of Missouri student who specialized in Animal Husbandry. Payable at the beginning of the Senior year.
106. *James S. Rollins Scholarship*: See 91, above.
107. *Soil Science Award by The National Plant Food Association*: See 59, above.

*For Upperclassmen in the College of Education*

108. *S. H. Ford Scholarship*: It is awarded each year to some student in the graduating class of the College of Education, who upon the basis of scholarship and probable service in the field of education, is deemed most worthy. Established in 1907 by the will of Mary Ford, of Jennings, Missouri, in memory of the Reverend S. H. Ford, 1820-1905.
109. *Theo. W. H. Irion Memorial Award*: It is awarded each year to a senior in the College of Education or to a graduate student majoring in education. The award is made on the basis of scholarship, leadership, and probable service in education. The award consists of income on investment. Established in 1953 in memory of Theo. W. H. Irion, Professor of Education 1926-1953 and Dean of the Faculty of Education 1930-1945.
110. *Pi Lambda Theta Prize*: Two prizes of \$50 each are awarded each year to two women students enrolled in the College of Education, one to a student who has completed her sophomore year and one to a student who has completed her junior year. The awards are based on scholarship and probable service in the field of education. Established by the Alpha Chapter of Pi Lambda Theta, national honorary educational fraternity for women, and first awarded in 1927.

*For Upperclassmen in the College of Engineering*

111. *American Institute of Chemical Engineers Scholarship Award:* The award consists of a certificate, a two-year subscription to "Chemical Engineering Progress," a student membership in the A.I.Ch.E. for one year and a student membership pin or lapel button. The recipient must be a member of the student chapter and shall have received the highest scholastic rating in his courses during his freshman and sophomore years. The student chapter will designate the recipient at the beginning of his junior year, recommendation being made through the faculty scholarship committee. The award was established in 1955 by the American Institute of Chemical Engineers.
112. *General Electric Award:* Stipend is \$500. The award is made to juniors interested in fields of engineering, accounting and finance, marketing, employee relations and manufacturing who have shown qualities of academic aptitude, vocational promise, character and leadership. Need is not a prime factor. Selection is made by the Faculty. Established in 1953 and repeated the following year by the General Electric Company.
113. *Missouri Engineers of Chicago Scholarship:* See 52, above.
114. *Award of the Missouri Society of Professional Engineers:* An award of three Engineer-in-Training memberships in the Missouri Society of Professional Engineers is made to the three high ranking graduates of the College of Engineering. Established in 1949 by the Missouri Society of Professional Engineers.
115. *Frederick O. Norton Memorial Prize:* A prize of \$50 is awarded upon recommendation of the Faculty of the College of Engineering, to a student completing the junior year in this college. Award is made to a student of high scholastic standing, and preferably one who gives promise of leadership in social service, appropriate to the Engineering profession. Payment is made in September at the time of registration following the year of award. Established in 1940 by a nephew, W. C. Curtis, in appreciation of Frederick O. Norton, who was a manufacturer of Rosendale Cement in Ulster County, New York. Dr. Curtis is Professor Emeritus of Zoology and Dean Emeritus of the College of Arts and Science of the University of Missouri.
116. *James S. Rollins Scholarships:* See 91, above.
117. *Mendell P. and Regina Paves Weinbach Memorial Prize in Electrical Engineering:* A prize consisting of the income on \$2,000 is awarded annually to the highest ranking member of the graduating class in Electrical Engineering. Established in 1946 with a gift of \$1,000 by M. P. Weinbach, former Professor of Electrical Engineering, in memory of his wife. An additional \$1,000 was presented by the daughters, Charlotte, Edith, and Althea and son Ben, of Professor and Mrs. Weinbach to honor the memory of their father.
118. *Westinghouse Achievement Scholarship:* The stipend of \$500 is paid in installments of \$250 each at the beginning of the first and second semesters. It is awarded to a junior for his senior year in electrical, mechanical, or chemical engineering on the basis of high achievement in his academic work and demonstrated qualities of leadership. Selection is made by a committee of the faculty and announcement made during Engineers' Week or other public ceremony. Established in 1954 by the Westinghouse Educational Foundation.

*For Students in the School of Business and Public Administration*

119. *Alpha Kappa Psi Award*: A scholarship key is given to the male senior student in the School of Business and Public Administration, who has attained the highest scholastic average for three years of collegiate work in the University. Established in 1932 by the Upsilon Chapter of Alpha Kappa Psi, a professional fraternity in commerce.
120. *Delta Sigma Pi Prize*: The prize is a gold key awarded annually to that male member of the graduating class who has made the best scholastic record in one of the commerce curricula in the School of Business and Public Administration. Established by the international commerce fraternity of Delta Sigma Pi in 1930.
121. *General Electric Award*: See 112, above.
122. *Maytag Scholarship in Commerce*: Stipend \$200 to be paid one half at the beginning of the first and one half at the beginning of the second semester. To be awarded annually to a male senior in the School of Business and Public Administration on recommendation by the faculty of the school to the Committee on Aids and Awards. The recipient must rank in the upper 25% of the junior class, must be of good character, have high technical and administrative potential, and need the assistance to complete his senior year at the University. Established in 1954 by the Maytag Company Foundation of Newton, Iowa.
123. *Phi Chi Theta Prize*: A gold key is awarded annually to that woman member of the graduating class who has made the best scholastic record in one of the commerce curricula in the School of Business and Public Administration. Established in 1930 by the Omicron Chapter of Phi Chi Theta in the field of business administration.
124. *Wall Street Journal Achievement Award*. A year's subscription to the Wall Street Journal is given to the student selected by the Faculty of the School of Business and Public Administration. The award was established in 1955 by Dow, Jones, and Co., Inc.

*For Students in the School of Nursing*

125. *Alumnae Association of the School of Nursing Prize*: A prize of \$25 is awarded to the member of the graduating class in nursing who has attained a high scholastic record and has shown the most outstanding ability in the field of nursing. Established in 1931 by the Alumnae Association of the School of Nursing.

*For Students in the School of Journalism*

126. *Agricultural Journalism Award*: Each year the name of a student in the School of Journalism doing the most outstanding work in Agricultural Journalism is engraved upon a mahogany and silver shield. The Shield was presented in 1927 by the *Missouri Ruralist*, a Capper Publication.
127. *Alpha Delta Sigma Prize*: A prize of \$10 is awarded to an outstanding male student majoring in advertising. Established in 1927 by the Missouri Chapter of Alpha Delta Sigma, national professional advertising fraternity.
128. *Borden Scholarship Award in Journalism*: A stipend of \$300 is available for a student in the School of Journalism during the senior year. The Dean

of the School of Journalism will designate as recipient the senior who has achieved the highest average grade of all senior Journalism students in all college work preceding the senior year. The stipend is to be paid in a lump sum at the beginning of the fall semester of the senior year. The Scholarship was established in 1955 by the Borden Company Foundation Inc., of New York.

129. *Oliver K. Bovard Memorial Journalism Scholarship*: The stipend is \$100. It is awarded annually to a student who has completed his first year in the School of Journalism and who has demonstrated exceptional ability and interest in newspaper reporting. Established in 1946 by the St. Louis Post-Dispatch unit of the St. Louis Newspaper Guild in honor of Oliver K. Bovard, a former editor of the St. Louis Post-Dispatch.
130. *Central Missouri Press Association Scholarship*: See 22, above.
131. *Eugene Field Scholarship*: The stipend is the annual income on \$1,500. It is awarded to a student in the School of Journalism who has shown himself well equipped in professional ideals and in general newspaper-making ability. Established in 1913, largely through the efforts of J. West Goodwin of Sedalia, as a memorial to Eugene Field, a former student at the University.
132. *Benjamin Franklin Scholarship*: Stipend, \$600. It is awarded annually to an undergraduate student in Journalism selected by the faculty committee on scholarships and awards in the School of Journalism on the basis of scholarship, need, character and interest in the Journalistic field. Established in 1952 by John P. Herrick of Olean, New York, a former country editor.
133. *Gamma Alpha Chi Prize*: A prize of \$10 is awarded to an outstanding woman student majoring in advertising. Established in 1927 by the Missouri Chapter of Gamma Alpha Chi, national professional advertising sorority.
134. *Greater Kansas City Newspaper Guild Scholarship*: The stipend is \$100. It is awarded every third year at the University of Missouri to a student enrolled in Journalism selected by the faculty on the basis of character, scholarship, and need. Established in 1953 by the Greater Kansas City Newspaper Guild. The next award is for the 1956-57 school year.
135. *John P. Herrick Scholarship in Journalism*: Stipend is \$600. It is awarded preferably to a student from the state of New York entering the School of Journalism on the basis of scholarship, need, character, and interest in Journalism. This scholarship was established in 1953 by John P. Herrick of Olean, New York.
136. *The Mrs. John Pierce Herrick Scholarship*: Awarded annually, beginning in September 1955, to a young woman enrolled in the School of Journalism, selected by the Faculty of the School of Journalism on the basis of scholarship, need, character, and interest in the field of Journalism. The annual stipend of \$600 is to be paid monthly in ten equal instalments. The same person may receive the scholarship in successive years if qualified and properly selected. Established in 1955 by John P. Herrick in honor of his wife, former Literary Editor of the Des Moines Daily Capital.
137. *John W. Jewell Scholarships*: Stipend, annual income on investment of \$5,500. Three or four scholarships are awarded annually to students in the



School of Journalism considered deserving on the basis of scholarship and general merit. Established in 1919 by Mr. H. S. Jewell and Mrs. John W. Jewell of Springfield, in memory of John W. Jewell, a former student of the School of Journalism.

138. *Journalism Alumni Scholarship*: Stipend \$37.50. It is awarded to a student in Journalism on the basis of meritorious classwork. Established by the Alumni of the School of Journalism in 1927.
139. *Journalism Students Association Scholarship*: Stipend \$25. It is awarded annually to a student in the School of Journalism, chosen on a basis of industry, character, mental alertness, capacity for leadership and harmonious work with others, as evidenced by activities other than classwork. The student's grades must average "M". Established in 1928 by the Journalism Students Association.
140. *Kappa Alpha Mu Prize*: A prize of \$10 is offered in recognition of outstanding work in photography. Established in 1947 by the Missouri Chapter of Kappa Alpha Mu, national professional photographers' fraternity
141. *Kappa Tau Alpha Prize*: A prize of \$10 is awarded to a senior whose scholarship is in the upper 5% of his class. Established in 1946 by the Missouri Chapter of Kappa Tau Alpha, professional fraternity in Journalism.
142. *Kansas City Press Club Scholarship*: Stipend is \$100. This award is made annually by the Kansas City Press Club, professional chapter of Sigma Delta Chi, to a junior in the School of Journalism who shows the greatest promise under the standards set up by the Press Club. Final selection is made by the Press Club from a list of applicants approved by the Faculty of the School of Journalism. Established in 1950.
143. *Missouri Newspapermen's Children and Grandchildren Scholarship*: Stipend \$50 per semester. This fund of \$500 is to be used for scholarships granted by the Faculty of the School of Journalism. The scholarships are available to children and grandchildren of persons currently engaged in newspaper work in the state of Missouri with financial need a ruling factor. No recipient may receive the scholarship for more than two semesters. The fund was established in 1948 by the Faculty of the School of Journalism.
144. *The Mary S. Pryor Scholarship*: The stipend, \$250, is offered annually for one academic year to a woman student in the School of Journalism. Selection is made by the Faculty of the School of Journalism on the basis of need, character, scholarship, and interest in the field of Journalism. Established in 1953 by Mrs. Millard H. Pryor of Mansfield, Ohio, who was graduated from the School of Journalism in 1929.
145. *Theodore Roosevelt Scholarship*: Stipend \$600. It is awarded to an undergraduate student in the School of Journalism selected by the Faculty Committee on Scholarships and Awards in the School of Journalism on the basis of scholarship, need, character, and interest in the journalistic field. Established in 1952 by John P. Herrick of Olean, New York, a former country editor.
146. *Sigma Delta Chi Prize*: A prize of \$10 is awarded to a student in the School of Journalism, chosen on the basis of meritorious class work and harmonious working with others. Established in 1940 by the Missouri Chapter of Sigma Delta Chi, national journalistic fraternity.



147. *Harold Swanberg Medical Journalism Scholarship of the American Medical Writers' Association*: See 24, above.
148. *Jay L. Torrey Scholarship*: The stipend is the annual income on investment of \$2,200. It is awarded to the woman student of the School of Journalism considered the best equipped to do the work of a journalist. Established in 1917 by Col. J. L. Torrey of Fruitville, Missouri.
149. *The Walter Williams Scholarship*: The stipend, \$600, is offered annually for one academic year to a student upon entering the School of Journalism. Selection is made on the basis of scholarship, character, interest in the journalistic field, and need. Established in 1951 by John P. Herrick, Olean, New York, a former country editor.
150. *Walter Williams Award in Journalism*: A plaque is given annually during Journalism Week to a student in the School of Journalism who has shown the most ability in writing for the year. Established in 1931 by the Missouri Writers Guild.
151. *Week-in-St. Louis Advertising Club Award*: An annual trip to St. Louis is provided for two seniors, one man and woman, with a major in advertising, as guests of the St. Louis Advertising Club, for a week between the first and second semesters. Selection is by the Faculty of the School of Journalism as a recognition of achievement and promise in the profession of advertising. Established in 1946 by the St. Louis Advertising Club.
152. *The Lafayette Young Scholarship*. The stipend, \$500, is offered annually for one academic year to a student upon entering the School of Journalism. Selection is made on the basis of scholarship, character, and interest in the journalistic field, and need. Established in 1951 by John P. Herrick, Olean, New York, a former country editor.

#### D. FOR STUDENTS IN LAW, MEDICINE, AND VETERINARY MEDICINE

160. *Roscoe Anderson Award*: An award is made in the form of a plaque to the student doing the best work on the brief and in the oral argument in the Junior Case Club Finals. Established in 1951 by the law firm and friends of the late Roscoe Anderson, St. Louis, Missouri, former President and member of the Board of Curators of the University of Missouri.
161. *Judge Shepard Barclay Prize*: The prize consisting of the net annual income on \$500 is awarded to that student in the School of Law who has attained the highest grade and scholarship and who has exerted the best influence, in the opinion of the Trustees, in moral leadership in the University. Established in 1930 by the Missouri Bar Association in memory of the Honorable Shepard Barclay, former judge of the Supreme Court of Missouri.
162. *Adele Overall Black Memorial Scholarship*: The income from a trust of \$5,000 is to be awarded annually to a second year student in the School of Law. The recipient must be a resident of Missouri, possess qualities of scholarship, character, and promise of usefulness to society and be in need of financial aid to further his legal education and prepare himself for the Missouri Bar. Selection will be made by the Faculty of the School of Law and payment will be made to the recipient, one half of the amount of the award at the beginning of the first semester and one half at the beginning of the second semester. Established in 1954 by Arthur G. Black, attorney

and alumnus of Kansas City in memory of his wife, Adele Overall Black, former student and member of a family with close University connections.

163. *City National Bank and Trust Company of Kansas City Prize*: A first prize of \$50 and a second prize of \$25 are offered each semester to students who do the best work in the drafting of legal instruments or in estate planning. The Prize was established in 1953 by the City National Bank and Trust Company of Kansas City to stimulate interest in the legal aspects of estate planning.
164. *Governor Joseph W. Folk Memorial Scholarship*: The stipend, income on a sum over \$11,000, is paid in two equal installments. The award is to be made to a second or third year law student who is a resident of Missouri and who, in the judgment of the Faculty of Law along with an advisory committee named by the donor, has indicated by his work that he possesses qualities of scholarship, character and promise of usefulness to society and has demonstrated need for financial assistance to further his legal education and preparation for the Missouri Bar. Established in 1954 by the will of Mrs. Gertrude G. Folk, of Brownsville, Tennessee, widow of Joseph W. Folk, former governor of Missouri.
165. *Kellogg Foundation Scholarship*: Stipend \$100. One scholarship is awarded to a student enrolled in the School of Medicine, or a premedical student whose entrance to the School of Medicine has been approved. It is awarded on the basis of scholastic ability, financial need, and professional promise. Established in 1942 by the W. K. Kellogg Foundation, Battle Creek, Michigan.
166. *La Verne Noyes Scholarships*: See 16 above.
167. *The Law Student Association Award*: This award by the Law Student Association honors the highest ranking student at the end of his first year in the Law School by having his name engraved on a plaque which hangs in the corridor of the School. The Award was established by the Law Student Association in 1951.
168. *John D. Lawson Prize*: A prize of \$50 in cash or in law books is awarded to a student regularly enrolled in the first year class who shall do the best work in Contracts. Established in 1930 by the University of Missouri Law School Foundation as a memorial to the Honorable John D. Lawson, former Dean of the School.
169. *Lederle Veterinary Medical Students' Research Scholarships*: Five scholarships with stipend of \$200 each are offered for senior students selected by the Faculty of the School of Veterinary Medicine. Each recipient will be assigned to and required to carry on research under the direction of a member of the staff. The scholarships were established in 1955 by the Lederle Laboratories.
170. *Alexander Martin Prize*: A prize of \$50 in cash or in law books is offered to a student regularly enrolled in the second year class, who shall do the best work in some second year course, such course to be designated at the beginning of each academic year by the Faculty. Established in 1930 by the University of Missouri Law School Foundation as a memorial to the Honorable Alexander Martin, former Dean of the School.
172. *James Lewis Parks Prize*: Established in 1949 as a memorial to the Honorable James Lewis Parks, former Dean of the Law School, the University

of Missouri Law School Foundation offers a prize of \$50 in cash or in law books to the student regularly enrolled in the second year class, who shall do the best work in some second year course, such course to be designated at the beginning of each academic year by the faculty.

173. *Dr. J. C. Parrish Medical Scholarship Fund*: This fund was established in 1946 by the wife and daughters of Dr. J. C. Parrish, for many years a practicing physician in Vandalia, Missouri and at one time a member of the Board of Curators of the University of Missouri. The recipient is to be selected by the faculty of the School of Medicine on the basis of scholarship, character and financial need. The award is to be granted for the junior year in the School of Medicine and will be first awarded when a junior class is enrolled in the School of Medicine in Columbia.
174. *Anthony W. Rollins Educational Aid Fund*: See 19, above.
175. *James S. Rollins Scholarships*: See 91, above.
176. *The Guy A. Thompson Award*: This was established in 1953 by a gift to the Law School Foundation from Guy A. Thompson of St. Louis, Missouri, an alumnus of the School of Law and former member of the Board of Curators of the University of Missouri. The income on the investment will annually be awarded to that student member of the Missouri Law Review Board who during the scholastic year has, in the judgment of the faculty of the School of Law, published the best note in the Missouri Law Review.
177. *The University of Missouri Law School Foundation Prize*: A prize of \$100 is awarded to that graduating member of the senior class who maintains the highest scholastic standing throughout the senior year, provided however, that no student shall be eligible for this prize who carries less than 12 hours of classroom work in each semester of his senior year. Established by the University of Missouri Law School Foundation in 1930.
178. *University of Missouri Medical School Foundation Scholarship*: A stipend of \$50 is awarded to a member of the sophomore class in the School of Medicine selected by the Faculty for excellence in scholarship and in scientific leadership. Established in 1940 by the University of Missouri Medical School Foundation, Incorporated.
179. *University of Missouri School of Nursing Alumnae Association Prize*: See 125, above.
180. *School of Veterinary Medicine Lederle Research Scholarship*: See 169, above.

#### E. LITERARY, FORENSIC, ATHLETIC, AND ROTC ACHIEVEMENT AWARDS AND PRIZES

##### *For Literary and Forensic Achievement*

181. *Chinese-American Essay Prize*: This prize consists of the annual income on \$4,000. It is awarded for the best essay on Chinese-American Affairs, under conditions announced annually by the School of Journalism and is open to competition of regularly enrolled students of American and Chinese nationality in the School of Journalism. Established in 1943 by John B. Powell, an alumnus of the School of Journalism and former editor of the China Weekly Review.

182. *McAnally Medal*: A medal is awarded annually for the best essay submitted as a regular assignment by any resident student enrolled in an upper-class course in English. Established in 1888 by David R. McAnally, Jr.
183. *Mahan Prizes*: These prizes were established in 1930 by Mr. George A. Mahan of Hannibal, Missouri in memory of his wife, Ida B. Mahan.

*Mahan Story Prizes*: A first prize of \$100 and a second prize of \$25 are offered for the best original short stories written and submitted by any resident student at the University.

*Mahan Poetry Prizes*: A first prize of \$100 and a second prize of \$25 are offered for the best original poems written and submitted by any resident student at the University.

*Mahan University Essay Prizes*: A first prize of \$50 and a second prize of \$15 are offered for the best original essays written and submitted by any resident student at the University.

*Mahan Freshman Prose Prizes*: A first prize of \$25 and a second prize of \$10 are offered for the best English papers, of whatever character, submitted as regular assignments by any student enrolled in the freshman course in composition and rhetoric.

184. *The Missourian News Story and Feature Story Prize*: Awarded to the best news story and the best feature story appearing in the *Missourian*. Established by the *Columbia Evening Missourian* in 1949.
185. *Prentis Essay Prize*: A prize of \$100 is offered for the best essay on the subject "The Roots of American Liberty." The contest is open to all undergraduate students in residence at the University. Established in 1943 by Mr. Henning W. Prentis, Jr. of Lancaster, Pennsylvania, a graduate of the University, class of 1903.
186. *Stephens Medal*: A gold medal is awarded annually for the best oration by any student of the University who has not received his Bachelor's degree. Established in 1868 by Mr. James L. Stephens of Columbia, Missouri.
187. *Theta Sigma Phi Prize*: A prize of \$10 is awarded annually for the best feature article written by a woman student in the School of Journalism. Established in 1928 by the Missouri Chapter of Theta Sigma Phi.

#### *For Athletic Achievement*

188. *Athletic Scholarships*: See 4, above.
189. *Gwinn Henry Award*: A prize of \$25. Awarded to the second year man on the football squad who, by his observance of the football rules of training and the instructions of the coaching staff, by his exemplification of his spirit of cooperation with his teammates has, in the opinion of the coaching staff, during the year contributed most to the development of the team. Established in 1936 by Mr. Earl Nelson of St. Louis in honor of Gwinn Henry, a former football coach at the University.
190. *"M" Men's Scholarship Trophy*: Award, a silver plaque. An annual award to the senior athlete having the best scholastic record during his entire period in the University. Established in 1916 by James A. Gibson and maintained by the "M" Men of Missouri since 1926.

191. *Missouri Valley Intercollegiate Conference Medal*: Awarded by the conference to one student in the graduating class of each member school for outstanding achievement in athletics and scholarship. Established in 1929 by the Missouri Valley Intercollegiate Athletic Association.
192. *Walter Robertson Fund for Deserving Members of the University of Missouri Football Squad*: The fund was established in 1952 by the will of Mayme Robertson, wife of Walter Robertson, in honor of her husband. This fund is to be used for deserving members of the football squad as determined by the Athletic Director. (These scholarships must conform to the regulations of the Missouri Valley Intercollegiate Athletic Association of which the University of Missouri is a member.)
193. *Henry F. Schulte Award*: An award of about \$25, made to the first year man on the football squad who in the opinion of the coaching staff has during the year contributed most to the development of the team. Established in 1936 by Mr. Earl Nelson of St. Louis, Missouri in honor of Mr. Henry F. Schulte, former football coach at the University.
194. *Harry Tidd Scholarship*: Stipend, \$125. It is awarded to the most outstanding student enrolled in the University, regardless of his year of attendance. The award is based 50% on scholarship, 25% on general activities, and 25% on athletics. Established in 1941 by Mr. Harry Tidd of Hutchinson, Kansas, a graduate of the University of Missouri—class of 1913.

*For Achievement in the R O T C Programs*

195. *The Air Force Association Award*: A medal is awarded to the outstanding AS IV AFROTC cadet based on demonstrated leadership, air science and other academic grades, and observed officer qualities during the Air Force ROTC advanced course. Established in 1950 by the Air Force Association.
196. *Armed Forces Communications and Electronics Association Honor Award*: A gold medal is to be awarded each year to one of the outstanding senior Army, Naval, and Air Force ROTC cadets in each service, who are majoring in electrical engineering, recipients to be selected jointly by the appropriate ROTC Department and the Dean of the College of Engineering. The award will be based on demonstrated qualities of leadership in ROTC, high moral character and definite aptitude for military or naval service, the recipients also having distinguished themselves in their academic records or in leadership in recognized campus activities especially in the fields of communications, electronics, or photography. Established in 1954 by the Armed Forces Communications Association of Washington, D. C.
197. *The Chicago Tribune Awards*: A silver medal each semester is awarded to an outstanding cadet or midshipman of the Army, Naval, and Air Force ROTC of the sophomore class. A gold medal is awarded each semester to an outstanding cadet of the Army ROTC in the final year, in the Air Force ROTC in the third year of the course, and to the NROTC Midshipman who has the highest grades in Navigation (Junior Year). Established in 1950 by the Chicago Tribune Publishing Company.
198. *Combat Forces Medal*: A medal is awarded to an outstanding student who is a senior in the Army ROTC based upon the highest marks received in Artillery Tactics and Techniques. Established in 1951 by the Combat Forces Association.

199. *Board of Curators Medals*: The Board of Curators in 1931, with later additions, has established the following medals for proficiency in the ROTC programs:

*Marksmanship*—A medal is awarded to the student in each ROTC program based upon the highest average score in marksmanship during the current year;

*Elementary Student Proficiency*—A medal is awarded to the outstanding student in the sophomore course of each ROTC unit, Army, Navy, Air Force, based upon his University ranking, his standing in ROTC, and his aptitude for general service. These ratings will be accumulative;

*Senior Student Proficiency*—A medal is awarded to the outstanding student in each Senior Course ROTC, Army, Navy, Air Force, based upon his University ranking, his standing in the ROTC, and his aptitude for general service;

*Summer Camp or Cruise Proficiency*—A medal is awarded to the outstanding University of Missouri student who is rated as most proficient at the Army ROTC Summer Camp, to the two students with the best records in the first and second Air Force Summer Camps respectively, and to the Regular NROTC Midshipman with the best record based upon average grades of the three summer cruises.

200. *Daughters of Founders and Patriots of America Award*: A medal is offered by the Missouri Chapter of the Daughters of Founders and Patriots of America to be awarded annually to an outstanding cadet enrolled in Army ROTC for the freshman year. Established in 1954.
201. *Marine Corps Association Award of Merit*: An award is made to the outstanding NROTC graduate to be commissioned in the U. S. Marine Corps. This award is made to the graduating midshipman to be commissioned in the Marine Corps making the highest average in Naval Science subjects for his junior and senior years. The award consists of a free membership in the Marine Corps Association and a two year free subscription to the Marine Corps Gazette, a professional magazine for the United States Marines and published by the Marine Corps Association. Established in 1952 by the Marine Corps Association.
202. *Subsistence Allowance for Army, Navy, and Air Force Advanced Course ROTC*: Advanced course cadets currently receive 90 cents per day, paid monthly, and not to exceed \$535.00 for the two-year course. They also receive \$100.00 toward a tailored officer-type uniform and top coat. These programs were established by Acts of Congress in 1916 and 1945.
203. *U. S. Naval Institute Award of Membership*: Two awards were established in 1952 by the U. S. Naval Institute, one to the outstanding midshipman in the regular program making the highest average in Naval Science subjects for the first three and one-half years. The other award is offered to a student in the contract program under the same provisions. The awards consist of free membership in the U. S. Naval Institute and a one year subscription to the U. S. Naval Institute Proceedings, a publication for the advancement of professional, literary, and scientific knowledge in the Navy.
204. *Reserve Officers Association Awards*: A medal is offered one each to an outstanding student who is a sophomore in Army, Naval, and Air Force



ROTC based upon University standing, ROTC grades, and aptitude for general service as shown during the year. A medal is offered one each to an outstanding student who is a senior in Army, Naval and Air Force ROTC based upon University standing, ROTC grades, and aptitude for general service as shown during the year. Established in 1951 by the Reserve Officers Association.

205. *Scabbard and Blade Awards*: This honor society of ROTC cadets and midshipmen offers annual awards to the outstanding cadet in the first year course of each of the three ROTC programs, Army, Navy, and Air Force. Established in 1953 by the Scabbard and Blade Society.
206. *Sons of the American Revolution Medal*: One medal is provided for a cadet in each of the ROTC programs, Army, Navy, Air Force. The recipients are chosen by the University on the basis of leadership, soldierly bearing, and excellence. Established in 1953 by the Sons of the American Revolution.

#### F. FOR ORGANIZED GROUPS

210. *Board of Curators Cup*: A silver cup is awarded each year to the best drilled unit in each of the Army, Navy, and Air Force programs. The cup will be retained by the University but will have inscribed upon it the name of the unit commander and the unit winning the award. Established by the Board of Curators in 1935.
211. *Men's Panhellenic Scholarship Cups*: Two cups are awarded each year to the fraternity, exclusive of agricultural fraternities, having the highest scholastic average for the previous year. The Tom K. Smith Fraternity Scholarship Cup is held for one year and is re-awarded annually. The Sigma Chi Foundation Fraternity Scholarship Cup will be awarded annually for twenty years, and then awarded permanently. These awards were established in 1922 and 1946, respectively.
212. *Women's Panhellenic Scholastic Cup*: A cup awarded to the sorority having the highest scholastic average for both semesters of the previous school year. Established by the Women's Panhellenic Association.



# Gifts and Bequests

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The University welcomes the endowment of prizes, scholarships, and fellowships, and the establishment of loan funds and professorships. It accepts bequests for the University libraries, for the erection of buildings, and for purchasing equipment and conducting research.

Prizes afford an opportunity to give suitable recognition to outstanding achievement in some educational activity. In addition to their monetary value, they are esteemed for the honor they bestow on the recipients. Scholarships provide many worthy students the opportunity to continue with their education when lack of adequate personal finances would seriously interrupt or terminate their educational plans.

Fellowships and graduate scholarships frequently are established to serve the twofold purpose of assisting students of unusual promise and of promoting investigation in special fields. Loan funds enable worthy students, by supplementing their own resources, to continue their studies without unnecessary financial worries. A scholarship, fellowship, prize, or loan fund may serve as a distinguished memorial to one whose memory should be perpetuated.

Anyone who makes gifts to the University for the purpose indicated may be assured that the bequests will be carried forward permanently and will be administered with the utmost diligence and with careful attention to his desires and intentions. It is the experience of the University that all gifts redound to the credit of the donors, encourage and benefit worthy students, and facilitate the advancement of knowledge. The University is empowered by the laws of the State of Missouri to act as Trustee in cases where property is left by will or bequest for the benefit of the University or the students.

Prospective donors are invited to consider the establishment of such scholarships to the University by will or by immediate bequest. The University cannot prepare wills for donors but stands ready to consult with either the donors or their attorneys for the purpose of giving information necessary to the preparation of wills or instruments of gift. The following forms are set forth by way of suggestion only for use by those wishing to devise or bequeath property to the University. If the forms do not cover the situation desired by anyone wishing to bestow funds upon the University by way of a trust, the University will be glad to render whatever assistance may be necessary to insure the fulfillment of the donor's desires. Inquiries may be addressed to Director of University of Missouri Development Fund, 102 Read Hall, Columbia, Missouri.

## General Bequest

*I give, devise and bequeath to the Curators of the University of Missouri the sum of .....dollars.*

## Special Bequests

### 1. Endowment of Research

*I give, devise and bequeath to the Curators of the University of Missouri, hereinafter called "Trustee," the sum of .....Dollars, in trust,*

to be held, managed, controlled, invested and reinvested by Trustee, with power in Trustee to mingle said fund with its own or other funds, but only for purposes of investment and reinvestment. The fund hereby established shall be known as "The.....Research Fund." Trustee shall collect the income from said fund and shall pay out of the income all charges of every kind and nature against or in connection with said fund.

After making all the payments hereinbefore mentioned, Trustee shall annually disburse the balance of said income for the purpose of carrying on and fostering research in the Department (or School) of.....  
.....at the University of Missouri, at Columbia, in such manner as Trustee, in its sole discretion, shall deem proper.

## 2. Scholarship

### a. Gift

I give, devise and bequeath to the Curators of the University of Missouri, hereinafter called "Trustee," the sum of .....Dollars, in trust, to be held, managed, controlled, invested and reinvested by Trustee, with power in Trustee to mingle said fund with its own or other funds, but only for purposes of investment and reinvestment. The fund hereby established shall be known as "The.....Scholarship Fund." Trustee shall collect the income from said fund and shall pay out of the income all charges of every kind and nature against or in connection with said fund.

After making all of the payments hereinbefore mentioned, Trustee shall use the balance of said income for the establishment, support, and maintenance of scholarships in aid of education in the University of Missouri, at Columbia, in such numbers and amounts thereof as shall be determined by Trustee, in its sole discretion. Each scholarship so established shall be filled, from time to time, by a student in the Department of.....at the University of Missouri, at Columbia, who shall be selected by Trustee and who shall hold and fill said scholarship under and upon such terms and conditions, and for such times as Trustee in its sole discretion, may prescribe; provided, however, that the sum or sums so paid to the student or students so selected shall be by way of a gift to the student or students so selected.

### b. Loan

I give, devise and bequeath to the Curators of the University of Missouri, hereinafter called "Trustee," the sum of .....Dollars, in trust, to be held, managed, controlled, invested and reinvested by Trustee, with power in Trustee to mingle said fund with its own or other funds, but only for purposes of investment and reinvestment. The fund hereby established shall be known as "The.....Loan Fund." Trustee shall collect the income from said fund and shall pay out of the income all charges of every kind and nature against or in connection with said fund.

After making all of the payments hereinbefore mentioned, Trustee shall use the balance of said income, or such portion thereof as it, in its sole discretion, shall deem necessary in making loans to such needy and deserving students enrolled in and seeking an education at the University of Missouri, at Columbia, as shall be selected by the Trustee, in such numbers and amounts, and upon such terms and conditions as Trustee, in its sole discre-

tion, may prescribe. All loans so made are to be repaid to Trustee upon such terms, at such rates of interest and upon such security as Trustee may prescribe; provided, however, that Trustee need not, if it does not so desire, require security of any student to whom money may be loaned hereunder. The monies repaid to Trustee by the recipients of loans made as above provided, shall be by Trustee, in its sole discretion, either again loaned as herein provided, or added to, and become a part of the principal sum of the scholarship endowment hereby established.

### 3. For Erection of Building

*I give, devise and bequeath to the Curators of the University of Missouri, hereinafter called "Trustee," the sum of.....Dollars, in trust, which shall be used by Trustee for the establishment, erection, and equipment of a building on the campus of the University of Missouri, at Columbia, to be known as.....Hall and to be used as..... Trustee shall expend the entire sum hereby given, or such portion thereof as in its uncontrolled discretion it shall deem proper, in accomplishing the purpose hereinbefore set forth. Any portion of the sum hereinbefore granted, which remains unexpended after the establishment, erection, and equipment of said building, may be used or, in the sole discretion of Trustee may be invested and reinvested and the income thereof used by Trustee, in its uncontrolled discretion, either for the maintenance of said building or for such educational purposes in the field of.....at the University of Missouri as Trustee in its uncontrolled discretion deems proper.*

### 4. Bequest to Foundation.

*I give, devise and bequeath to the.....Foundation the sum of.....Dollars.*

(At the present time there are in existence at the University of Missouri the following foundations:

Agriculture—University of Missouri College of Agriculture Foundation

Engineering—University of Missouri College of Engineering Foundation

Journalism—

1. Walter Williams Memorial Journalism Foundation
2. The University of Missouri School of Journalism Foundation

Law—The University of Missouri Law School Foundation

Medicine—The University of Missouri Medical School Foundation, Inc.)

# College of Arts and Science

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The College of Arts and Science has five clearly defined purposes:

It offers to students a liberal education in the arts and sciences in order to provide an intelligent familiarity with modern civilization, prepare for wide service in the world, and enlarge and enrich the individual's life. Through the study of the natural sciences, the social sciences, and the humanities, it aims at depth of thought, breadth of view, and personal integrity and worth.

It prepares for graduate study in the various fields of research represented by the departments of the College. Students who wish ultimately to become trained investigators or to teach their specialties in colleges and universities should earn the A.B. or B.S. degree as a preparation for such advanced study.

It teaches the basic subjects required for admission to the professional schools of Law, Medicine, Dentistry, Journalism, Theology, and Business and Public Administration.

It furnishes information to the public on matters of scientific, literary, and social interest.

Through its programs leading to B.S. and B.M. degrees, it provides specialized training in certain areas.

## Admission

Applicants seeking admission to the College of Arts and Science must have official transcripts of their high school and college credits sent to the Office of Admissions. The forms necessary in making application may be had upon writing the Director of Admissions, 130 Jesse Hall, University of Missouri.

*Admission of Freshmen:* For admission to the College of Arts and Science a minimum of fifteen accredited high school units, exclusive of physical education and military science, must be presented. Three units shall be in English and a minimum of eight additional units shall be selected from the fields of mathematics, social science, science, and foreign language. The remainder of the fifteen units may be selected from any other courses accepted by an accredited high school for its diploma, with the exception of physical education and military science. Students who offer fifteen acceptable units but fewer than the eleven from the groups specified may be admitted on condition. A condition may be removed by the substitution of University credit at the rate of five semester hours for each unit of condition.

Students who plan to enter the College of Arts and Science are advised to complete at least one unit of algebra, one unit of geometry, and two units in one foreign language in order to correlate more effectively their secondary and college education.

Experience indicates that the student who ranks in the lowest fourth of his high school graduating class or who scores below the 25th percentile rank on the College Aptitude tests administered to all entering freshmen will find college work quite difficult. Rarely does a student with low scholastic standing in high school complete a four-year program. The student who has thus far had little success in school work is therefore advised not to attempt college. However, if he does choose to come to the University, he should be aware that his chances of completing a

four-year program for a degree are small, and he should therefore plan his course of study toward securing the maximum advantage from a program of fewer than four years. The high school principal can inform students about their probable academic success in college.

*Admission to Advanced Standing:* A student who has been regularly admitted to another college or university of recognized standing may be admitted to the College of Arts and Science upon presentation of an official transcript and a statement of honorable dismissal. Official notice regarding admission and advanced standing will be given students whose applications and credentials are filed with the Director of Admissions in sufficient time before the opening of the term for which application is made.

Normally, transfer credit will be given only for those courses regularly approved in the liberal arts program. No more than sixteen credits per semester are transferable. No more than sixty-four hours may be transferred from a junior college. Following the general practice of accredited schools and colleges, the College of Arts and Science will transfer no more total honor points than total credit hours. Minimum passing grades ("T" in the University of Missouri) carry no points; therefore total hours may exceed total points.

Evaluation of credit for advanced standing for degrees in the College of Arts and Science will be made by the Dean of that division. Students expecting to be admitted to professional training in the Schools of Law, Medicine, Journalism, or Business and Public Administration will receive credit evaluations from the Director of Admissions.

*Admission as a Hearer:* With the consent of the Director of Admissions and the instructors concerned, students may be admitted to any division as hearers. Hearers must be registered and must pay fees, but they are not required to take examinations and they receive no credit toward a degree. Once a course has been taken, as a hearer, that is, for no credit, it may not be repeated for credit.

## Elective System

Work in the College of Arts and Science is largely elective under the guidance of faculty advisers. The student with the advice of a specially designated member of the faculty makes such choices and combinations of studies as suit his individual needs and purposes, subject to the requirements for graduation.

## Credit Per Semester

A student may enroll in a minimum of twelve and a maximum of sixteen credit hours per semester, exclusive of required courses in military training and physical education.

Students whose scholastic records are superior may be permitted to register for more than sixteen hours with the approval of the Dean.

Enrollment in courses after the regular registration date will carry the penalty of credit loss in the amount of one-half hour each week after the third week. Individual departments may reduce course credit after the first week of class work.

## Degrees

Candidates for the A.B. (Bachelor of Arts) and B.S. (Bachelor of Science) degrees generally spend their first two years in broadening their knowledge and experience and their last two years increasing the depth of understanding in some

selected Area of Concentration. The plan of work for these degrees and for the degree B.M. (Bachelor of Music) is explained in the divisional announcement of the College of Arts and Science.

Many students enter the College of Arts and Science to become candidates later for degrees in medicine, law, journalism, or business and public administration. These divisions require two or three years of successful work in college before students are admitted to professional training. Many students, especially those planning to study law or medicine, find it desirable to remain four years in the College of Arts and Science rather than three, and take an A.B. or B.S. degree before entering the professional schools. Others take advantage of plans which combine the last year of work in the College of Arts and Science with the first year of work in law or medicine, a program which enables them to earn two degrees in six years.

### **Residence Requirement**

Normally students are expected to spend eight semesters in residence in the College of Arts and Science, and no student shall be recommended for the degree who has not completed six semesters of college work. Credit will be given, however, for work completed in other institutions of college rank and for work done in the Adult Education and Extension Division. The last twenty-four hours taken by a student in fulfillment of the requirements for graduation, however, must be done in residence.

### **The Advising System**

Upon entering the College of Arts and Science or soon thereafter, a student is assigned a faculty adviser who helps the student plan his schedule of classes, gives information about the University, and is available for consultation and advice about the total college program. It is the student's responsibility to seek out his adviser and become acquainted with him.

A student who has decided upon his Area of Concentration (major field of study) should select a major adviser in the department of his choice.

In addition to the assigned advisers there is a staff of trained personnel in the office of the Deans, 210 Jesse Hall, available at all times for student conferences.

### **College Aptitude Tests**

College Aptitude Tests are required of all students enrolling in the College of Arts and Science with fewer than twenty-four hours of acceptable college credit. The results of these tests are of benefit to both the student and his adviser in planning the student's program and in consideration of his educational and vocational objective.

### **Graduation Requirements—Bachelor of Arts**

In order to receive the degree of Bachelor of Arts the candidate must have been regularly admitted and must meet the following requirements:

#### **BASIC SKILLS**

Course requirements in the following basic skills will be determined for each student either on the basis of his level of attainment in proficiency tests given at

the beginning of the freshman year or by the number of high school units in particular fields which he presents for admission:

*a. English Composition and Rhetoric.* Students deficient in an English placement test will be required to pass a course in composition and rhetoric meeting five times a week for three hours' credit.

Students demonstrating average skill in such a test will be required to pass a course in composition and rhetoric meeting three times a week for three hours' credit.

Students demonstrating superior ability in such a test may satisfy the English requirement by passing with an S or E grade, during their first semester, a special course in composition and rhetoric meeting three times a week for three hours' credit. Such students are urged to continue their study of composition by taking English 60( Exposition), 3 hours. The student who makes a grade lower than S will be required to pass English 2 during the second semester.

*b. Speech.* Students deficient in a speech test will be required to pass, during either one of the first two semesters, a two-hour course in speech (Oral Communication). There will be no requirement in speech for other students.

*c. Mathematics.* Students who have not completed a unit of algebra in high school may be required to meet an appropriate requirement in mathematics before graduation.

*d. Foreign Language.* Each student will be required to attain the degree of proficiency indicated by the fulfillment of a ten-hour foreign language requirement as set forth below.

A student who presents no high-school foreign language credit or who wishes to begin the study of another language in college will fulfill the foreign language requirement by passing the elementary course (five hours) and the intermediate course (five hours) in the language of his choice.

A student who presents one high-school unit in a foreign language may satisfy the requirement by passing the same elementary language course at reduced credit (three hours) and the intermediate course of the same language; or if his degree of proficiency is such as to enable him to go immediately into the intermediate course, he is considered as having satisfied the requirement by the passing of this intermediate course.

A student who presents two high-school units in a foreign language will complete the requirement by passing the intermediate course.

A student who presents three high-school units in a foreign language may complete the required work in foreign language in one of three ways: (1) by passing the intermediate course (for which he will receive three hours' credit); (2) by passing a first course in reading (three hours); (3) by passing the achievement test described below.

A student who presents four high-school units in one language will be regarded as having fulfilled the requirement.

Students transferring from other colleges and universities who have not completed the equivalent of the intermediate course at the University of Missouri must complete the requirement after entering the University.

*Waiver of the foreign language requirement in whole or in part.* Any student who, because of previous foreign language study or experience, believes himself to have satisfied the requirement in whole or in part has the privilege of taking a qualifying examination. If he can pass an achievement test at the elementary level,



he will be excused from taking the elementary course and may complete the requirement by passing the intermediate course in the same language. If he can pass an achievement test at the intermediate level, he will be regarded as having fulfilled the requirement.

The student should bear in mind, however, that passing a qualifying examination entails no credit, and that he will need to take a corresponding number of hours in electives toward satisfying the requirements for graduation.

### GENERAL EDUCATION

The general education requirements insure that the Arts and Science students plan broad and integrated programs including courses in the humanities, social science, and in natural sciences and mathematics. The following requirements are to be completed:

*a. Humanistic Studies.* Ten hours of introductory courses in the humanities with no more than six hours in any one of the fields of fine arts, literature, or philosophy. The following courses may be used to satisfy this requirement:

#### *Fine Arts:*

Art 3—Appreciation of Art, 11—Introduction to Ancient and Medieval Art, 12—Introduction to Renaissance and Modern Art, 14—Modern Painting, 20—The Art of America, 151—History of Motion Pictures.

Classical Archaeology 60—Classical Mythology, 240—Roman Art and Archaeology, 245—Greek Art and Archaeology.

Music 21—Introduction to Music Literature, 22—Masterpieces of Music, 121 and 122—History of Music.

Speech 6—Introduction to the Theater, 10—British and American Oratory.

Spanish 210—Hispanic Civilization (knowledge of Spanish not required).

#### *Humanities:*

Humanities 1 and 2. (These ten hours satisfy the requirement.)

#### *Literature:*

Classical Languages 112—Greek Literature in English Translation, 113—Latin Literature in English Translation.

English 5 and 6—Masterpieces, 30 and 40—English Life and Literature, 321 and 322—World Literature.

Russian 323—Russian Literature in Translation.

#### *Philosophy:*

Philosophy 5—Introduction to Philosophy, 50—Introduction to Ethics, 204—Early European Philosophy.

Juniors and seniors who have not fulfilled this requirement in the humanistic studies will be permitted to use upperclass courses from these fields, subject to the approval of their advisers and the Dean.

*b. Natural and Physical Sciences and Mathematics.* Ten hours of introductory courses in the natural sciences, including mathematics, distributed among the biological sciences, mathematics, and the physical sciences, with not more than five hours in any one field and including at least one laboratory course. All of the following, except Astronomy 1 and the courses in mathematics, are laboratory courses and may be used to satisfy this requirement.

*Biological Science:*

Botany 1—General Botany.

Psychology 2—General Experimental Psychology.

Zoology 1—General Zoology.

*Physical Science:*

Astronomy 1—Introduction to Astronomy.

Chemistry 1—General Inorganic Chemistry.

Geology 1—Principles of Geology.

Physics 1 and 1A—Elementary College Physics, 23—General Physics.

*Mathematics:*

3—Basic Algebra, 7—Introductory College Algebra, 9—Trigonometry, 10—College Algebra, 11—Analytic Geometry, 203—Introduction to Mathematical Thought.

c. *Social Sciences.* Ten hours of introductory courses in the social sciences with no more than six hours from any one department. Attention is called to the fact that the requirement in American History, Institutions, and National and State Constitutions (see Requirement 5) may be used in partial fulfillment of this general education requirement. The following courses may be used to satisfy this requirement:

Citizenship 1 and 2—Citizenship.

Economics 51—General Economics.

Geography 6—Regions and Nations of the World.

History 1—Western Civilization I, Man and Society from Earliest to Modern Times, 2—Western Civilization II, Man and Society in the Modern World, 20—American History.

Political Science 1—American Government, 55—International Relations.

Sociology 1—General Sociology, 50—Social Disorganization, 60—General Anthropology, 100—Fundamentals of Sociology.

**AREA OF CONCENTRATION**

Not later than the beginning of the junior year the student shall declare his intent to concentrate in one of the following areas: humanistic studies, social science, or the natural sciences including mathematics.

This plan is an adaptation of the major-minor system, but it has distinct advantages for the student. Although a particular subject field must be selected, the supporting courses to complete the area may be chosen from many related studies. Certain other fields of interest which cut across these lines, such as American Civilization and Latin American Affairs and some professional programs, are also available as areas of concentration.

Except insofar as, in the judgment of his area adviser, additional elementary studies or elective studies outside his field definitely contribute to his intellectual development, the student in his upperclass years will be expected to devote most of his time to the completion of a coherent and progressive sequence of courses, to be known as his Area of Concentration. In his Area of Concentration, the student must obtain at least forty-five hours credit, of which not fewer than eighteen nor more than forty must be in the department of his principal interest. A minimum of 20 hours of courses numbered above 100, upperclass courses, in which the final grades are E, S, or M, must be included in the Area of Concentration. A total of 30 hours, upperclass courses, are required for the degree. A student may

count at the option of his area adviser, not more than five hours of the general education requirements on his area program. A student whose major interest is in any of the foreign languages may count, at the option of his area adviser, not more than five hours of the basic skills requirements on his area program. Students should apply to the chairman of the department of their major interest for assignment to an area adviser not later than the beginning of the junior year. General plans for the areas of concentration are explained in more detail in Arts and Science bulletin under the sections devoted to the various departments.

#### OTHER REQUIREMENTS

*Credit and Points:* He must have earned 124 semester hours of credit and 124 proficiency points exclusive of the required courses in physical education. Each hour of credit earned in the University of Missouri is valued in points as follows: E, three points; S, two points; M, one point. No points are given for I grades.

In order to be classified as a junior or upperclassman the student must have earned sixty hours of credit and sixty points toward graduation. Points will be allowed for credits earned in other institutions, except that in no case may the number of points awarded exceed the number of hours.

A minimum of thirty hours must be taken in courses numbered 100 or above. No more than forty hours may be presented for the degree from any one department, with the following exception: English 1 and 2 (Freshman English) need not be counted in applying the forty-hour rule to the English department.

*Required Physical Education and Required Military Science.* All students in their freshman and sophomore years, except those excused by the Faculty Committee appointed by the Executive Board, are required to take physical education. No credit toward graduation is earned in the required physical education courses.

In addition, men students, in their freshman and sophomore years, are required to take a course in one of the following: Air Science and Tactics, Military Science and Tactics, or Naval Science. Air Science and Military Science each give one hour of credit a semester toward graduation. Naval Science courses offer three credit hours a semester.

A student may take the maximum of sixteen hours of academic courses each semester in addition to required physical education and either required Air Science or required Military Science; or he may take fourteen hours of academic courses each semester, plus the required physical education and the Naval Science courses.

Any student who contracts with any branch of the United States Defense Services for advanced courses in any one of the R.O.T.C. departments must satisfy the obligations of the contract and qualify for a commission before he may be awarded a degree.

*Required Work in American History, Institutions, and National and State Constitutions.*

(See Page 49)

*Proficiency in English.* In order to be recommended for graduation, all students must pass a test of their proficiency in English unless specifically excused under regulations of the faculty. This test should be taken during the junior year and will be given at certain specified times, once a semester.

#### Combined Courses for the Bachelor of Arts Degree

*Arts and Science and Law:* Seniors who have taken the junior year in the College of Arts and Science of the University of Missouri and who have com-

pleted all of the specific requirements for the A.B. degree may count toward the A.B. degree work from the first year in Law to an amount not exceeding thirty credit hours.

*Arts and Science and Medicine:* Seniors who have taken the junior year in the College of Arts and Science of the University of Missouri and who have completed all of the specific requirements for the A.B. degree may count toward the A.B. degree work from the first year in Medicine to an amount not exceeding thirty hours.

*Arts and Science and Engineering:* Students who are candidates for both the degree in Arts and Science and the degree in Engineering may count toward the A.B. degree twenty hours from their courses in Engineering.

Students are urged to take both a B.S. in Engineering and an A.B. degree. This can be done in a five-year curriculum in which a student enrolls in both colleges and pursues both programs simultaneously. A careful selection of courses under expert advising will make it possible to receive both degrees in this time.

### Graduation Requirements—Bachelor of Science

The degree of Bachelor of Science (B. S.) is designed for students interested in more professional training in chemistry or physics than is possible under the program of the A. B. degree. The candidate must fulfill the same requirements as those for the degree of Bachelor of Arts, except that he must complete mathematics through Analytic Geometry and Calculus III and he need complete only a minimum of sixteen semester hours distributed between the areas of the humanities and the social sciences. The language requirement for the B. S. degree in chemistry is satisfied by the same courses which satisfy the language requirement for the A. B. degree. If a student seeks, in addition to the B. S. degree, certification by the chemistry department to the American Chemical Society that he has completed the minimum professional training for a bachelor's degree in chemistry, a reading knowledge of German is required. Hence, it may often be advisable for the student to elect German for his language requirement, so that the professional requirements for certification are met simultaneously with the completion of the language requirement for the B. S. degree. Bachelor of Science programs will include at least 27 semester hours of course work in the major department (chemistry or physics).

### Graduation Requirements—Bachelor of Music

For those desiring to specialize in music as a profession the Bachelor of Music (B.M.) degree offers a maximum concentration in music combined with the elements of a liberal education. This is described under the Area of Concentration in music.

### Courses Regularly Offered for Credit in the College of Arts and Science

Accounting and Statistics .....	1, 36, 37
Agricultural Chemistry .....	416
Air Science and Tactics .....	16 hrs.
Art (except public school art) .....	entire
Biochemistry .....	201
Botany .....	entire
Chemistry .....	entire

Citizenship .....	entire
Classical Languages and Archaeology .....	entire
Economics .....	See Description of Courses—Economics
Education .....	A102, B125
English .....	entire
Geography .....	entire
Geology .....	entire
Germanic and Russian Languages .....	entire
History .....	entire
Humanities .....	entire
Home Economics: All courses regularly accepted for the area of concentration in Home Economics	
Journalism .....	100, 101
Library Science: All courses regularly accepted for the area of concentration in Library Science	
Mathematics (except 2 and 4) .....	entire
Microbiology .....	25
Military Science and Tactics .....	16 hrs.
Music (except public school music) .....	entire
Naval Science .....	24 hrs.
Philosophy .....	entire
Physics .....	entire
Physiology .....	201
Political Science .....	entire
Psychology .....	entire
Romance Languages .....	entire
(French, Italian, Portuguese, Spanish)	
Rural Sociology (except 1) .....	entire
Social Work .....	entire
Sociology and Anthropology .....	entire
Spanish .....	entire
Speech and Dramatic Art .....	entire
Zoology .....	entire

### Electives from Other Divisions

A limited number of courses offered in other divisions are open as electives with the prior approval of the student's adviser and the Dean. These courses may be counted as elective credit toward a degree only if they are closely related to the student's professional interests or if they complement his major field of study. Under no circumstances may these electives exceed 18 hours.

### Credit in Military and Naval Science

A total of 16 hours' credit in Military Science and Tactics or Air Science and Tactics or 24 hours' credit in Naval Science may be counted toward a bachelor's degree in the College of Arts and Science. All such credit in excess of 12 hours will be counted as elective credit from other divisions and will be applied under the 18-hour rule, as outlined in the preceding paragraph.

**Credit in Religion**

Courses in the Bible College of Missouri and in the Baptist Chair of Bible, both of which are located near the campus of the University, are open as electives to students regularly enrolled in the College of Arts and Science. Credit for such courses must meet with the approval of the Dean of the College of Arts and Science. The total credit for courses taken in Religion may not exceed 14 hours.

**Honor List**

The College of Arts and Science each year gives public recognition to those students in the College who have maintained, in the previous year's work, a grade average ranking them in the upper 15% of all undergraduates, in scholarship. Names of seniors who are graduated with distinction are appropriately designated on the Commencement program.

## *School of Social Work* *in the College of Arts and Science*

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The present curriculum in social work has been offered since 1946 and was organized at that time in the Department of Social Work. In August, 1953, the Board of Curators established the School of Social Work to administer this program. The school is a member of the Council on Social Work Education and is accredited as a two-year graduate school.

The objective of the school is to prepare for effective professional practice and leadership in social work. For this purpose a two-year graduate program leading to the degree of Master of Science has been developed. The program includes courses considered basic to all social work and allows for additional work in any special field in which the student may be interested, such as family and child welfare, medical and psychiatric social work, correctional work, and research.

The school also offers an undergraduate program which may be counted toward requirements for the A.B. degree. This program is designed for three groups of students: those wishing to qualify for junior professional work in departments of public welfare, youth service organizations, and recreational programs; those who expect to complete the full professional program; and those who do not plan a professional career in social work but who have a general interest in the field and wish to prepare for civic leadership in the social services.

For admission to the graduate program the student must have an undergraduate degree (A.B. or B.S.) or its equivalent including not less than 30 semester hours in the social and biological sciences.

For the degree of Bachelor of Arts (A.B.) in social work the student must satisfy the requirements for that degree in the College of Arts and Science as set forth on preceding pages and must elect social work as his undergraduate area of concentration. Requirements for the area of concentration in social work include the following: Social Work (courses in the department), 10 hours; Sociology and Anthropology, 8 hours; psychology, 8 hours; Political Science or Economics, 5 hours; electives restricted to the above named departments and the departments of Rural Sociology, Home Economics, and Physical Education, 14 hours. Freshmen and sophomores in the College of Arts and Science who plan to major in social work may request assignment to a member of the social work faculty for advisement.

The student's interests to some extent determine his choice of the courses he elects. A student should include in his program as many courses as possible in political science, psychology, home economics, sociology, or physical education (recreation), depending on whether he contemplates employment in a public welfare agency, in psychiatric work, child welfare, or recreation. The Announcement of the College of Arts and Science gives more detailed information on the undergraduate program.

For the requirements for the degree of Master of Science in social work the student should consult the Announcement of the School of Social Work or the Announcement of the Graduate School.

*For further information regarding the College of Arts and Science, address Office of the Dean, College of Arts and Science, University of Missouri, 210 Jesse Hall, Columbia, Missouri.*



# *College of Agriculture*

## *in the Division of Agricultural Sciences*

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The Division of Agricultural Sciences includes:

The College of Agriculture with its sub-divisions

- a. Resident teaching,
- b. Agricultural Experiment Station,
- c. Cooperative Extension Service teaching in Agriculture and Home Economics; and

The School of Veterinary Medicine.

The College of Agriculture was established by acts of Congress and by laws enacted by the Missouri General Assembly. The character of instruction presented at the College is to some extent specified by the legal enactments.

The object of the instruction is to train men and women for success in their chosen vocations, Agriculture and Home Economics. The College offers training for farmers, farm managers, fruit growers, grain growers, dairymen, poultrymen, stockmen, and foresters. It prepares men for responsible positions as teachers in agricultural colleges, investigators in experiment stations, extension work in Agriculture, teachers of vocational agriculture in high schools, for service in the United States Department of Agriculture, and for many businesses directly and indirectly related to agriculture.

Young women are educated for better personal, family and community living through a liberal program of courses. In addition, they may prepare for professions in the fields of child development and family life, food and nutrition, home management, interior design or textiles and clothing. Positions are available in these fields in teaching, research and extension as well as in many phases of business, industry, hospital and government service.

The University of Missouri is the Land-Grant College in the State of Missouri. The College of Agriculture is a division of the University; the Resident teaching program, the Agricultural Experiment Station and the Agricultural Extension Service are sub-divisions in and integral parts of the College.

### **The Physical Plant**

Fourteen major buildings and numerous minor buildings, barns, shelters, and greenhouses are used for instruction, and experimentation.

*Agricultural Building:* A substantial section of a new agricultural building has been completed. It is an excellent laboratory structure and provides modern equipment for instruction and research in the more technical phases of agriculture.

Laboratories for soils, horticulture, forestry, and entomology are included. The laboratories are constructed to accommodate 32 students at one time. An entomological museum also is located in this building and houses the famous Bock and Rowley collections of insects.

A complete meats, fruit, and vegetable processing laboratory with large cold storage and freezing rooms is included.

Of special interest are the large and well equipped chemical-spectrographic service laboratories. The services of these laboratories are available to other divisions of the University as well as to all departments of the College of Agriculture.

*Mumford Hall:* A three story stone building containing several large classrooms, the Agricultural Library, the offices of the Dean and Director, the Agricultural Editor, the University Photo Service, and the departments of Animal Husbandry, Soils, Agricultural Economics, and Rural Sociology.

*Waters Hall:* A two story stone building housing the departments of Field Crops, Poultry Husbandry, Agricultural Education, and the Agricultural Extension Service.

*Whitten Hall:* A two story stone building containing classrooms, laboratories, offices, and preparation rooms for the departments of Horticulture and Entomology.

*Eckles Hall:* A two story stone building containing modern laboratories, classrooms, and offices for teaching and research in dairy production, marketing milk, dairy products manufacture, dairy bacteriology, milk inspection, dairy chemistry, nutrition, breeding, and milk secretion.

*Schweitzer Hall:* A two story stone building for Agricultural Chemistry containing the offices and general chemical laboratories of the Agricultural Chemistry department, several large student laboratories, and student classrooms. The basement contains storerooms, coolers, research laboratories, and demonstration rooms.

*Gwynn Hall:* This building contains classrooms, reading rooms, and laboratories for work in textiles and clothing, foods, applied art, and nutrition and also special laboratories equipped for research in various phases of Home Economics.

*Curtis Hall:* A two story stone building containing laboratories for research in genetics and plant breeding.

*T 14:* A large temporary building containing offices for Poultry Husbandry, the Poultry Improvement Association and classrooms for instruction and research in Poultry Husbandry.

*Agricultural Engineering Buildings:* A two story stone building contains offices, classrooms, drafting rooms, and home equipment laboratories and a one-story stone building contains the metal and woodworking shops.

*T 12:* A large temporary building devoted to offices, gas engine, tractor and field machinery laboratories, and classrooms for instruction in Agricultural Engineering subjects.

*Live Stock Judging Pavilion:* This building is 90 by 160 feet, with an arena 50 by 120 feet, and has a seating capacity of 1,500. It also contains several classrooms and offices.

*Land:* The College of Agriculture owns and operates more than three thousand acres of land at Columbia. This land is utilized for instructional and investigational purposes.

Through a gift from Mr. J. C. Penney a 640 acre farm, the Foremost Guernsey Farm, has been acquired. Also, a new 234 acre farm for Horticulture has been

purchased. It is located on the loess soil in the Missouri River hills, approximately 25 miles from Columbia. The Agricultural Engineering Department has been assigned the 160 acre Midway Farm.

**Livestock:** The department of Animal Husbandry maintains herds and flocks representing most of the leading breeds of livestock; more than five hundred head of beef cattle representing the Shorthorn, Aberdeen-Angus, and Hereford breeds; about 150 pure bred sheep of the Shropshire, Hampshire, Southdown, and Corriedale breeds; and 70 mature sows and their offspring representing the Duroc, Hampshire, and Poland China, Chester White, and Landrace breeds. The University dairy herd consists of more than 450 head of Guernseys, Jerseys, and Holsteins. Large poultry flocks representing many breeds are maintained.

### Special Acts of Congress Supporting Land Grant Colleges

**The First Morrill Act:** Provided that the funds from the sale of 275,000 acres of land granted to Missouri by act of Congress in 1862 should be invested and the income used to support and maintain a college of agriculture and mechanic arts. The Missouri Legislature has provided that  $\frac{1}{4}$  of this income should go to the School of Mines and Metallurgy at Rolla.

**Second Morrill Act and the Nelson Amendment:** Provides an annual appropriation of \$50,000 by act of Congress approved August 30, 1890 and March 4, 1907 respectively. One sixteenth of this amount by law is appropriated to Lincoln University at Jefferson City for the education of Negro students in agriculture and mechanic arts. One fourth of the remainder by law is apportioned to the School of Mines and Metallurgy at Rolla.

**Hatch Act:** This act of Congress approved March 7, 1887, appropriates \$15,000 annually to the Agricultural Experiment Station for agricultural research purposes.

**Adams Act:** This act of Congress approved March 16, 1906, appropriates \$15,000 annually to the Agricultural Experiment Station for fundamental research in agriculture and related sciences.

**Purnell Act:** This act of Congress approved February 24, 1925, appropriates \$60,000 annually to the Missouri Agricultural Experiment Station.

**Bankhead-Jones Act:** This act of Congress approved June 29, 1935, appropriated funds to Missouri for teaching and for the Missouri Agricultural Experiment Station research program.

**The Agricultural Marketing Act:** Approved August 14, 1946, provided additional funds each year to the Missouri Agricultural Experiment Station for research in marketing.

**The Smith-Lever Amended Act of 1953:** This act of Congress approved June 26, 1953, appropriates funds each year to Missouri for agricultural extension teaching and demonstration of improved agricultural and home economics practices.

**Clarke-McNary Act:** This act of Congress approved June 7, 1924, provides funds for agricultural extension work in forestry.

**Research and Marketing Act:** This act of Congress approved August 14, 1946 appropriated funds each year for co-operative agricultural extension work.

**Public Law 352:** This act passed by the 84th Congress August 11, 1955 consolidated all the previous acts relating to appropriations to the Agricultural Experiment Stations.

## Laboratories

*Agricultural Engineering:* Agricultural Engineering laboratories are maintained for instruction and research in farm power and machinery, farm shop work, farm buildings, rural electrification, drainage, irrigation, and soil erosion control. Modern farm equipment, including latest models of engines, tractors, field machines, farm electrical equipment, and farm water systems, is provided as well as suitable instruments and apparatus for study and testing such equipment. Experimental and teaching shops are equipped with modern electric and oxyacetylene welders, lathes, drill presses, power saws, grinders, and complete sets of small hand and power tools for wood and metal work. Surveying instruments and equipment are provided for class instruction in irrigation, drainage and soil erosion control. Drafting tables and blueprinting equipment are available for study and design of farm buildings.

*Agricultural Chemistry:* The student laboratories and the laboratories of the research staff of the Agricultural Chemistry Department, located in Schweitzer Hall, provide facilities for instruction, for research in animal nutrition, and for the analysis of foods and feeding stuffs. However, much of the routine analysis is done in the Agricultural Laboratories Building in the Experiment Station Laboratories.

*Animal Husbandry:* Animal Husbandry laboratories are maintained where research is conducted in live-stock nutrition and in the physiology of reproduction of farm animals. Excellent facilities for slaughtering and cutting and curing meats are provided. Laboratories for study in the processing of foods are also provided.

*Botany:* Laboratories for general, physiological, pathological, and structural botany, and culture rooms for physiological, mycological, and bacteriological work are in Lefevre Hall. They are equipped with compound and dissecting microscopes, microtomes, steam and steam pressure sterilizers, incubators, balances, precision apparatus and glassware. The herbarium amply illustrates the local flora.

*Dairy Husbandry:* Facilities for instruction and research include a herd of dairy cattle consisting of 450 head of the leading dairy breeds and laboratories for farm dairying, milk production, milk secretion, dairy cattle breeding, nutrition, metabolism, dairy bacteriology and milk control, dairy chemistry, and the processing, manufacture, and storage of dairy products. These laboratories include equipment for creamery work, the handling of market milk, and the manufacture of butter, ice cream, and cheese.

*Entomology:* The laboratories and insectary located in Whitten Hall are supplied with microscopes, dissecting instruments, microtomes, breeding cages, aquaria, spraying machines, insecticides, and reagents. The museum located in the Agricultural Laboratories Building contains collections of several thousand species of the more injurious and beneficial insects, arranged to illustrate their habits of work and life history.

*Horticulture:* The horticultural laboratories include several thousand square feet of greenhouse space, a laboratory for the propagation of plants and storage space for cutting, bulbs, stock and scions, a special spray laboratory for the study of spray machinery and materials, a packing shed and fruit packing laboratory. There are three analytical laboratories for the study of special problems in the fertilization and physiology of horticultural crops. The out-of-doors collection on the horticultural grounds comprises about 1,000 varieties of fruits, ornamental

shrubs and trees for a study of varieties and types, planting, pruning, training and spraying.

*Field Crops:* The Field Crops laboratories include a large practice room for the study of grains, seeds, and other crop materials by students; a laboratory for the analysis of commercial seeds; and several greenhouses and laboratories for research investigation.

*Soils:* Laboratories for instruction and investigation in soil physics, soil colloids, soil biology, and soil fertility are maintained. These are equipped for both graduate and undergraduate instruction and for comprehensive investigation in these fields. Greenhouse space is available for research investigation.

### Admission

*Freshmen:* Fifteen units of acceptable high school credits (see sections on Admissions) are required. These must include three units of English, one of mathematics, one of social science and one of natural science.

*Admission to Advanced Standing:* When the student plans to attend some other college before enrolling in the University of Missouri College of Agriculture, care should be taken so that the transfer of his credit does not result in loss of either time or credit. The agricultural departments of Central Missouri State College, Northeast Missouri Teachers' College, Northwest Missouri State College, Southeast Missouri State College and Southwest Missouri State College can assist students in planning a carefully integrated program so that credits are fully transferable to the University of Missouri College of Agriculture.

It is suggested that students who plan to attend some college other than those listed above before enrolling in the University of Missouri College of Agriculture, should write to the Dean's Office, College of Agriculture, Mumford Hall, Columbia, Missouri for advice on courses.

Credit for courses in Agriculture, Forestry and Home Economics taken at a Land Grant college will be fully transferable to the Missouri College of Agriculture.

### Residence Requirements

The last two years, 60 hours, of work leading to baccalaureate degrees offered in the Missouri College of Agriculture must be taken in residence. In addition, subject matter residence requirements are listed under each curriculum.

### Definition of Agricultural Subjects

Agricultural subjects include all courses now offered in the departments of Agricultural Economics, Agricultural Engineering, Agricultural and Home Economics Extension, Agricultural Chemistry, Animal Husbandry, Dairy Husbandry, Entomology, Field Crops, Horticulture, Forestry 352 only, Poultry Husbandry, Rural Sociology, and Soils, and the School of Veterinary Medicine, excluding the professional courses intended only for training for Doctors of Veterinary Medicine. In addition, Botany 203, 301 and 306; Geography 142 and 365; and Zoology 5, 6, 301, 305, 309, and 415 will be accepted.

### Definition of Home Economics Subjects

Home Economics subjects include all subjects offered by the department of Home Economics.

## Women Students

Women students who are candidates for degrees in agriculture may count home economics subjects toward the 60 hours in agriculture normally required.

## Specialized Training

Students who desire specialized training in pure or applied science, or in some technical phase of agriculture may replace not to exceed twelve hours of the sixty hours of required agriculture courses, or ten hours of the fifty hours of required Home Economics courses, with other subjects. Such substitutions can be made only from work completed in residence and on recommendation of the adviser and approval of the Dean in writing.

## Application for a Degree

Candidates for degrees must make formal application in the Dean's Office for the degree which they intend to receive at least three months before the requirements for such degree are to be completed. Blank forms are provided for this purpose. No student will be graduated until all requirements in one of the published curricula have been met. *Students should check their requirements for graduation and file the application for a degree during the first semester of their senior year.*

## Curricula of the College

Courses of study leading to the degree Bachelor of Science in Agriculture, Bachelor of Science in Home Economics, and Bachelor of Science in Forestry are offered.

Agriculture 1—Introduction to Agriculture is required of all freshmen, excepting Home Economics and Forestry majors.

For full details concerning curricula and regulations see special announcements for the College of Agriculture.

Briefly, the curricula offered are as follows:

### A. CURRICULUM IN GENERAL AGRICULTURE

Curriculum A is designed to provide a broad opportunity for generalization or specialization in agriculture. Under this curriculum it is possible to plan special courses of study in the various phases of agriculture and its related industries. Under the direction of, and subject to the approval of an adviser, individual courses of study may be planned.

The requirements are as follows:

1. A total of one hundred twenty-eight hours and a total of one hundred twenty-eight points are required, including:
  - (a) At least sixty hours of agriculture, including forty-eight hours in residence.
  - (b) At least fifty hours in subjects other than agriculture.
  - (c) Eighteen hours of electives that can be in either (a) or (b) above.
2. The last sixty hours of the above one hundred twenty-eight must be completed in residence.

## 3. In the above groups the following subjects must be included:

Military .....	4	
Physical Education .....	4	
English 1 and 2—Composition and Rhetoric .....	6	
Chemistry 1—General Inorganic Chemistry .....	5	
Botany 1—General Botany	}	5
or		
Zoology 1—General Zoology .....		
Agriculture 1—Introduction to Agriculture .....		2
Economics and Business 51—General Economics	}	5
or		
Agricultural Economics 1—Agricultural Economics		
Political Science 1—American Government	}	5
or		
History 20—American History .....		
Mathematics .....		3
Selected subjects in the departments of Geology, Mathematics, Physics, Chemistry, Botany, Zoology, Agricultural Chemistry and Geography 142 and 365 ..... 25 (Courses in Agricultural Chemistry, Geography 142 and 365 will count toward the totals for either agriculture or basic science, but not for both.)		

4. Advisers for students in this curriculum are appointed by the Dean's Office after consultation with the student.
5. All registration programs and changes in courses must be approved by the adviser and the adviser must certify at the close of the entire curriculum that the student has completed courses that train him reasonably well for his objective.

## B. CURRICULUM FOR TRAINING TEACHERS OF VOCATIONAL AGRICULTURE

The College of Agriculture with the collaboration of the College of Education offers this curriculum to prepare teachers of vocational agriculture for the secondary schools of this State. The curriculum gives a thoroughly practical training in agriculture and in education, including methods of teaching and practice teaching in vocational agriculture.

The requirements of Curriculum B are as follows:

1. One hundred twenty-eight hours and 128 points are required for graduation.
2. The last sixty hours of the above 128 hours must be completed in residence.
3. Sixty hours of agriculture including 48 hours in residence, and 25 hours of selected courses in the departments of Geology, Mathematics, Physics, Chemistry, Botany, Zoology, Agricultural Chemistry, and courses 142 and 365 in Geography. (Courses in Agricultural Chemistry and Geography 142 and 365 may be counted either as technical agriculture or as courses in basic science but not as both.)
4. In order to teach vocational agriculture in Missouri high schools three years of farm experience after reaching the age of fourteen (or having been reared on the farm) are required.
5. The following groups and courses are required:



<i>Technical Agriculture</i>	<i>Courses Required</i>	<i>Hours to be Elected</i>	<i>Total Hours Required</i>
Agriculture .....	1 (2)		2
Agricultural Economics .....	1 (5), 310 (3)		8
Agricultural Engineering .....	1 (3), 10 (3)	6	12
Animal Husbandry .....	1 (3), 202 (3), 203 (3)		9
Dairy .....	1 (3)		3
Entomology .....	1 (3)		3
Field Crops .....	1 (3), 100 (2)		5
Horticulture .....	1 (3)		3
Poultry .....	1 (3)		3
Rural Sociology .....		3	3
Soils .....	100 (5)		5
	<hr/> 47	<hr/> 9	<hr/> 54

Additional work must be elected to meet requirement of 60 hours of agriculture.

<i>Science and Mathematics</i>	<i>Courses Required</i>	<i>Hours to be Elected</i>	<i>Total Hours Required</i>
Botany or Zoology .....	Bot. 1 (5) or Zool. 1 (5)		5
Chemistry .....	1 (5), 15 (3)		8
Geology .....	2 (3)		3
Mathematics .....		(3)	3
			<hr/> 19

Additional work must be elected to meet requirement of 25 hours of basic sciences.

<i>Areas Other Than Agriculture and Science</i>	<i>Courses Required</i>	<i>Hours to be Elected</i>	<i>Total Hours Required</i>
Agricultural Education .....	F100, F105, F107, F120, F156		15
Education .....	A102, D140		5
English .....	1 (3), 2 (3)		6
Political Science .....	1 (American Government)		
or History .....	20 (American History)		5
Military .....		4	4
Physical Education .....		4	4
Speech .....	175 (3)		3
			<hr/> 42

### C. CURRICULUM IN HOME ECONOMICS

The curriculum as outlined below is designed to meet the needs of students who wish to apply their knowledge of Home Economics to problems in homemaking, extension work, social service, textiles and clothing, foods and nutrition, and in various fields of industry. Completion of the 4-year curriculum leads to the degree of Bachelor of Science in Home Economics.

The requirements are as follows:

1. Satisfactory completion of 124 hours and 124 points.
2. The completion of the following courses:

	<i>Hours</i>
English 1 and 2, Composition and Rhetoric .....	6
Mathematics .....	3
Social Studies, at least two (Economics, geography, history, political science, sociology, 5 hrs. of which must be History 20 or Political Science 1.)	8
Physical science .....	5
(Astronomy, chemistry, geology, physics)	
Biological science .....	8
(Botany, psychology, zoology)	
Humanities, at least two .....	8
(Literature, speech, philosophy, fine arts)	
Home Economics .....	50
(Including at least 40 hours in residence)	
Physical Education .....	4

3. The last 60 hours must be completed in residence.
4. Advisers for students in this curriculum are appointed by the Dean's Office, after consultation with the student.
5. All registration programs and changes in courses must be approved by the adviser, and the adviser must give final approval of the entire program as qualifying the student for a given objective.

Students interested in training to become teachers of Home Economics in high schools should enroll in the College of Education.

#### D. CURRICULUM IN AGRICULTURAL JOURNALISM

The College of Agriculture, cooperating with the School of Journalism, offers a curriculum in agricultural journalism. The purpose of this course is to train men and women for successful service in the field of agricultural journalism. An effort is made to give the student a broad foundation in the subject of agriculture, and a knowledge of the principles and practices of journalism, with particular emphasis on agricultural journalism.

The degree of Bachelor of Science in Agriculture (in Agricultural Journalism) will be given to students registered in the College of Agriculture who complete all of the requirements in the curriculum and electives to make a total of one hundred twenty-eight hours.

The requirements of Curriculum D are as follows:

1. A total of one hundred twenty-eight hours and a total of one hundred twenty-eight points are required, (124 hours and 124 points for students in Home Economics) including:
  - (a) At least sixty hours in agriculture including forty-eight hours in residence for students enrolled in agriculture; or at least fifty hours in Home Economics including forty hours in residence for students enrolled in Home Economics.
  - (b) At least thirty hours in journalism including the subjects listed below.
  - (c) At least thirty-two hours other than agriculture or journalism.
2. The last sixty hours of the above one hundred twenty-eight must be completed in residence.
3. In the above groups the following subjects must be included:

	<i>Hours</i>
Military .....	4
Physical Education .....	4
English 1 and 2—Composition and Rhetoric .....	6
Chemistry 1—General Inorganic Chemistry .....	5
Botany 1 or Zoology 1 .....	5
Agriculture 1 .....	2
Agricultural Economics 1 or Economics 51 (General Economics) .....	5
Political Science 1 or History 20 .....	5
Mathematics .....	3
Journalism 100—History and Principles of Journalism .....	3
Journalism 101—History and Principles of Journalism .....	3
Journalism 105—News Writing .....	3

Journalism 110—Copyreading I .....	2
Journalism 111—Copyreading II .....	2
Journalism 120—Advertising Principles and Practice .....	3
Journalism 266—The Agricultural Press .....	3

Students in Home Economics will meet the requirements of Curriculum C plus the above 30 hours of Journalism.

#### CURRICULUM E—FORESTRY

The requirements for the degree in this curriculum are as follows:

1. Satisfactory completion of 144 hours and 144 points.
2. The last 60 hours of the 144 hours must be completed in residence, 40 hours of which must be in forestry.
3. Electives in the forestry curriculum must be approved by the student's adviser.
4. The completion of the following courses:

##### FRESHMAN YEAR

<i>First Semester</i>		Hours
Mathematics 7—Algebra .....		3
Botany 1—General Botany .....		5
Forestry 50—General Forestry .....		3
English 1—Composition and Rhetoric .....		3
Military 1 .....		1
Physical Education .....		1
		<hr/>
		16
<i>Second Semester</i>		Hours
Mathematics 9—Trigonometry .....		2
Forestry 55—Cartography .....		2
English 2—Composition and Rhetoric .....		3
Botany 10—Taxonomy .....		3
Political Science 1—American Government .....		5
Military .....		1
Physical Education .....		1
		<hr/>
		17

##### SOPHOMORE YEAR

<i>First Semester</i>		Hours
Chemistry 1—General Inorganic Chemistry .....		5
Forestry 57—Dendrology (Softwoods) .....		2
Zoology 6—Principles of Wildlife Conservation .....		3
Agricultural Engineering 21—Land Surveying .....		3
Geology 2—Physical Geology .....		3
Military .....		1
Physical Education .....		1
		<hr/>
		18
<i>Second Semester</i>		Hours
Soils 101—Forest Soils .....		3
Forestry 58—Dendrology (Hardwoods) .....		2
Physics 1—Elementary College Physics .....		5
Forestry 59—Foundations of Silviculture .....		2
English 61—Technical Writing .....		3
Military .....		1
Physical Education .....		1
		<hr/>
		17

## SUMMER CAMP

Forestry 70—Forest Measurements .....	4
Forestry 71—Silvics .....	2
Forestry 72—Field Dendrology .....	1
Forestry 74—Silviculture .....	2
Forestry 75—Forest Utilization .....	2
Forestry 76—Forestry Improvements .....	1

12

## JUNIOR YEAR

*First Semester*

Hours

Forestry 156—Forest Mensuration .....	3
Forestry 163—Logging and Milling .....	3
Forestry 301—Practice of Silviculture .....	3
Economics 51—General Economics or Agricultural Economics I .....	5
Elective .....	3

17

*Second Semester*

Hours

Forestry 157—Forest Protection .....	3
Forestry 160—Wood Technology .....	3
Forestry 161—Forest Economics .....	3
Rural Sociology 1—Introduction to Rural Life .....	3

or

Sociology 100—Fundamentals of Sociology .....	5
Elective .....	3

17

## SENIOR YEAR

*First Semester*

Hours

Forestry 315—Forest Management .....	3
Forestry 305—Forest Pathology .....	3
Speech 175—Public Speaking .....	3
Elective .....	5

14

*Second Semester*

Hours

Forestry 158—Forest Policy .....	2
Forestry 191—Forest Products .....	3
Entomology 210—Forest Insects .....	3
Elective .....	8

16

## CURRICULUM E-1—FOREST PRODUCTS MARKETING

The requirements for the degree in this curriculum are as follows:

1. Satisfactory completion of 144 hours and 144 points.
2. The last 60 hours of the 144 hours must be completed in residence, 24 hours of which must be in forestry.
3. Electives must be approved by the student's adviser.
4. The completion of the following courses:

## FRESHMAN YEAR

*First Semester*

Hours

Mathematics 7—Algebra .....	3
Botany 1—General Botany .....	5
Forestry 50—General Forestry .....	3
English 1—Composition and Rhetoric .....	3
Military .....	1
Physical Education .....	1

16

*Second Semester*

Hours

Mathematics 9—Trigonometry .....	2
Mechanical Engineering 1—Engineering Drawing .....	3
Political Science 1—American Government .....	5
English 2—Composition and Rhetoric .....	3
Botany 10—Taxonomy .....	3
Military .....	1
Physical Education .....	1
	<hr/>
	18

## SOPHOMORE YEAR

*First Semester*

Hours

Chemistry 1—General Inorganic Chemistry .....	5
Economics 51—General Economics .....	5
Forestry 57—Dendrology (Softwoods) .....	2
Agricultural Engineering 21—Land Surveying .....	3
Military .....	1
Physical Education .....	1
	<hr/>
	17

*Second Semester*

Hours

Forestry 58—Dendrology (Hardwoods) .....	2
Speech 175—Public Speaking .....	3
English 61—Technical Writing .....	3
Physics 1—Elementary College Physics .....	5
Civil Engineering 82—Engineering Materials .....	2
Military .....	1
Physical Education .....	1
	<hr/>
	17

## SUMMER SCHOOL (Columbia)

Economics 254—Business Law A .....	3
Psychology 1—General Psychology .....	3
Accounting 36—Elementary Accounting I .....	3

## SUMMER CAMP (University Forest)

Forestry 75—Forest Utilization .....	2
Forestry 77—Wood in Light Construction .....	2

## JUNIOR YEAR

*First Semester*

Hours

Forestry 163—Logging and Milling .....	3
Rural Sociology 1—Introduction to Rural Life .....	3
or	
Sociology 100—Fundamentals of Sociology .....	
Accounting 37—Elementary Accounting II .....	3
Economics 204—Principles of Marketing .....	3
Elective .....	3
	<hr/>
	15

*Second Semester*

Hours

Forestry 160—Wood Technology .....	3
Economics 314—Retailing .....	4
Forestry 165—Wood Deterioration .....	2
Psychology 30—Applied Psychology .....	3
Elective .....	5
	<hr/>
	17

## SENIOR YEAR

<i>First Semester</i>		<i>Hours</i>
Forestry 312—Forest Products Marketing .....	2	2
Agricultural Engineering 203—Farm Buildings .....	3	3
Economics 340—Real Estate .....	3	3
Elective .....	8	8
		<hr/> 16
<i>Second Semester</i>		<i>Hours</i>
Forestry 164—Timber Seasoning and Preservation .....	2	2
Forestry 191—Forest Products .....	2	2
Journalism 120—Advertising Principles and Practice .....	3	3
Economics 216—Credits and Collections .....	3	3
Economics 207—Principles of Selling .....	2	2
Elective .....	3	3
		<hr/> 15

## F. TWO-YEAR PRE-VETERINARY MEDICAL CURRICULUM

This curriculum is designed to provide the pre-professional training for admission to the School of Veterinary Medicine.

Applicants for admission to the four-year curriculum in the School of Veterinary Medicine must have completed 70 credit hours in the subjects listed. Thirty of the 70 credit hours must be completed in residence in the College of Agriculture or in another land-grant college. Students who satisfactorily complete the pre-professional requirements and the requirements for the degree, Doctor of Veterinary Medicine, can also earn the degree, Bachelor of Science in Agriculture.

English 1 and 2—Composition and Rhetoric .....	6
Public Speaking 175 .....	3
Chemistry 1—General Inorganic Chemistry .....	5
Chemistry 15—Elementary Organic Chemistry .....	3
Zoology 1—General Zoology .....	5
Entomology 1—Applied Entomology .....	3
Political Science 1—American Government	
or	
History 20—American History .....	5
Agricultural Economics 1—Agricultural Economics .....	5
Mathematics .....	3
Introduction to Agriculture 1 .....	2
*Animal Science .....	12
**Agricultural Electives .....	10
Military .....	4
Physical Education .....	4
Total .....	<hr/> 70

\*Includes Animal Husbandry 1, 202, and 203; and Dairy Husbandry 1.

\*\*Suggested electives: Poultry Husbandry 1, Field Crops 1, Soils 1, Agricultural Engineering 103, Rural Sociology 1, and Veterinary Anatomy 1.

## G. CURRICULUM FOR TWO-YEAR COLLEGIATE COURSE

A suitable certificate will be awarded upon the satisfactory completion of this course of study. It does not qualify for a degree but all courses will apply toward a degree if students later decide to finish an additional two years work.

*A special announcement describing the various curricula offered by the College of Agriculture has been published. Copies will be sent upon request. Address: Office of the Dean, College of Agriculture, University of Missouri, 125 Mumford, Columbia, Missouri.*

# *School of Veterinary Medicine*

## *in the Division of Agricultural Sciences*

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The School of Veterinary Medicine was developed through expansion of the Department of Veterinary Science in the College of Agriculture. In the fall of 1946 a curriculum leading to the degree Doctor of Veterinary Medicine (D.V.M.) was established, and the first class admitted. Action by the Board of Curators in 1949 created a School of Veterinary Medicine. The first class was graduated in 1950.

The School is located on the Columbia campus. Five departments conduct the teaching, research, and service programs. In addition to courses for students in the professional curriculum, it offers courses for undergraduate and graduate credit to students in other related divisions of the University.

The School of Veterinary Medicine is striving to establish and maintain the highest standards in veterinary medical education. Particular emphasis is placed on training in the clinical areas, as well as in the basic subjects.

The aims of the school are to give thorough laboratory and clinical training in all phases of veterinary medicine, to contribute to the advancement of veterinary medicine by original research, and to promote the dissemination of knowledge on the prevention and control of animal diseases.

### **Buildings and Equipment**

*Connaway Hall:* A three story stone building houses the Departments of Veterinary Anatomy, Veterinary Bacteriology and Parasitology, and Veterinary Pathology. There are offices, classrooms, and laboratories for each department. Cold rooms, incubator rooms, laboratory animal rooms and autopsy rooms provide space for the activities of these departments. This building also houses the library and office of the Dean.

*Veterinary Hospital and Clinic Building:* The Departments of Veterinary Medicine and Surgery and Veterinary Physiology and Pharmacology are in a temporary one story frame and stucco building. In addition to the offices, laboratories, and classrooms of these departments there are examination and treatment rooms and wards for large and small animals. Conveniently near this building are outside runs for small animals, chutes and lots for large animals and buildings for feed storage.

*Veterinary Medical Library:* Located on the top floor of Connaway Hall, the library contains a wide variety of books and periodicals on veterinary medicine and related subjects. Also accessible are the General Library, the Medical Library, and other divisional departmental libraries.

*Veterinary Medical Research Farm:* Four miles north of the campus on a 90 acre tract are laboratories and barns for research on diseases of farm animals and poultry. An area of 15 acres near the campus is also available for certain phases of the research and teaching programs.

### **The Course of Study**

The curriculum covers a minimum period of six years, two years of pre-veterinary medicine and four years in the professional curriculum. Students are required to



take two years of pre-professional work in the College of Agriculture after which application can be made for admission to the School of Veterinary Medicine. From the qualified applicants thirty are selected by the Committee on Admissions for the first year class that enters the School each September. Those admitted to the professional curriculum can receive the B.S. in Agriculture at the same time they receive the degree Doctor of Veterinary Medicine.

### Admission to the Professional Curriculum

A minimum of 70 hours of college credit, including military and physical education, 30 hours of which must be taken in residence in the College of Agriculture, or in another land-grant school, is required in the pre-professional curriculum. All of the listed pre-veterinary medical courses must be completed before a student will be admitted to the four-year professional curriculum.

1. Students applying for admission to the School of Veterinary Medicine in September must have completed the pre-veterinary requirements, as offered in the College of Agriculture, by the preceding June 15.
2. Students must average "M" or better in the pre-professional work completed at the University of Missouri or elsewhere.
3. Students who were residents of the State of Missouri and who have been such for a period of one year at the time of their first enrollment in the University of Missouri, and who have completed their pre-professional work in the University of Missouri will be given preference.
4. Application for admission to the School of Veterinary Medicine must be submitted to the Dean on or before April 1, preceding the September when the student desires admission.
5. Applicants will be interviewed by an Admissions Committee.
6. The committee may require an examination of any applicant in any or all pre-professional subjects.
7. Applicants must have taken the veterinary aptitude test.
8. Experience in caring for livestock is considered desirable.
9. Selection from qualified applicants will be based on scholarship, aptitude, background, seriousness of purpose, and fitness for the work he professes to undertake.
10. Enrollment in the School of Veterinary Medicine is limited to not more than 30 new students each September.

### Withdrawal and Re-Admission

Any student who withdraws or is eliminated for cause must apply for re-admission and be passed upon by the admissions committee.

Any student, when re-admitted, must repeat each course in which he received a grade below that of "M". This is to apply to courses being taken during the semester in which he was dropped.

### Requirements for Graduation

To earn the degree, Doctor of Veterinary Medicine (D.V.M.), a student must pursue and complete a six-year course of study—two years of pre-veterinary medi-

cal education (70 hours including military and physical education) offered in the College of Agriculture, and four years of a professional curriculum in the School of Veterinary Medicine (150 hours). Totals of 220 hours and 220 points, including military and physical education, are required for graduation.

Candidates for the degree, Doctor of Veterinary Medicine, must earn a satisfactory grade in all courses in the four-year curriculum. These courses must be taken in the order listed in the curriculum. Earlier courses are prerequisites for succeeding courses. A student is required to have an "M" average or better in the required courses in the first two years of the professional curriculum before he can enter the third year of study.

Candidates must spend one summer vacation period while in the professional curriculum working with a licensed graduate veterinarian or the U.S. Department of Agriculture.

The degree, Bachelor of Science in Agriculture, will be conferred at the same time as the D.V.M., to those students who satisfactorily earn a minimum of 48 hours of technical agriculture in residence, in addition in the credits earned in veterinary medical subjects.

### The Four-Year Professional Curriculum

#### FIRST YEAR

<i>First Semester</i>	<i>Hours</i>	<i>Second Semester</i>	<i>Hours</i>
Vet. Anat. 100—Veterinary		Vet. Anat. 110—Veterinary	
Gross Anatomy . . . . .	7	Gross Anatomy . . . . .	7
Vet. Hist. 105—Veterinary		Vet. Hist. 115—Veterinary	
Histology . . . . .	3	Histology . . . . .	3
Entom. 215—Veterinary		An. Husb. 234—Meat Processing . . . .	3
and Medical Entomology . . . . .	3	Vet. Phys. 120—Veterinary	
Agr. Chem. 212—Physiological		Physiology . . . . .	5
Chemistry of Domestic Animals . . .	5		<hr/>
	<hr/>		18
	18		

#### SECOND YEAR

<i>First Semester</i>	<i>Hours</i>	<i>Second Semester</i>	<i>Hours</i>
Vet. Phys. 130—Veterinary		Vet. Phys. 138—Veterinary	
Physiology . . . . .	5	Pharmacology . . . . .	3
Vet. Bact. 124—Veterinary		Vet. Bact. 132—Veterinary	
Bacteriology . . . . .	3	Bacteriology . . . . .	5
Vet. Path. 128—Veterinary		Vet. Path. 136—Veterinary	
Pathology . . . . .	5	Pathology . . . . .	5
Vet. Bact. 126—Veterinary		Vet. M&S 140—Veterinary Clinical	
Parasitology . . . . .	5	Orientation & Diagnosis . . . . .	2
	<hr/>	Vet. Bact. 134—Veterinary	
	18	Parasitology . . . . .	3
			<hr/>
			18

## THIRD YEAR

<i>First Semester</i>	<i>Hours</i>	<i>Second Semester</i>	<i>Hours</i>
Vet. Path. 144—Veterinary		Vet. M&S 178—Veterinary	
Clinical Pathology .....	2	Clinic .....	4
Vet. M&S 158—Veterinary		Vet. M&S 168—Veterinary	
Clinic .....	4	Surgery .....	3
Vet. M&S 152—Veterinary		Vet. Path. 162—Veterinary	
Surgery .....	3	Meat Inspection .....	3
Vet. Phys. 146—Veterinary		Dairy Husb. 360—Farm and	
Pharmacology & Therapeutics .....	3	Plant Inspection .....	2
Vet. M&S 142—Veterinary		Vet. M&S 164—Veterinary	
Medicine .....	3	Radiology .....	1
Vet. M&S 148—Veterinary		Vet. M&S 166—Veterinary	
Medicine .....	5	Medicine .....	5
	<hr/>	Vet. Anat. 172—Veterinary	
	20	Applied Anatomy .....	1
			<hr/>
			19

## FOURTH YEAR

<i>First Semester</i>	<i>Hours</i>	<i>Second Semester</i>	<i>Hours</i>
Vet. M&S 186—Veterinary		Vet. M&S 192—Veterinary	
Clinic .....	8	Clinic .....	15
Vet. M&S 184—Veterinary		Vet. M&S 198—Veterinary	
Surgery .....	3	Medicine .....	5
Bot. 101—Poisonous Plants .....	2		<hr/>
Vet. M&S 182—Veterinary			20
Professional Orientation .....	1		
Vet. M&S 188—Veterinary			
Obstetrics & Reproductive			
Diseases .....	5		
	<hr/>		
	19		

# *School of Business and Public Administration*

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The School offers fundamental training in the principles of business and public administration. The student has a wide choice of curricula for preparation for various occupations in industry, government service, private business, public affairs, and in teaching. In all business curricula at least forty per cent of the work is in business and economic subjects in accordance with the requirements of the American Association of Collegiate Schools of Business, of which this School is a member.

The offices of the School of Business and Public Administration are located in the Business and Public Administration Building on the east side of Francis Quadrangle. The business statistics Laboratory is equipped with Monroe, Allen-Wales, and Dalton electric adding and listing machines, Monroe and Friden electric automatic-division calculating machines, and 80-column alphabetic and numerical punching, sorting, tabulating, and accounting machines made by the International Business Machines Corporation.

## **Requirements for Admission**

The requirements for admission as a regular student to the School of Business and Public Administration are the satisfactory completion of (1) a four-year high school course or its equivalent, and (2) sixty hours of credit and sixty honor points in the College of Arts and Science, Agriculture, Education, or Engineering, or a combination thereof, in the University of Missouri or in any college or university of recognized standing. (Neither credit nor honor points in required work in physical training or basic military science may be counted in satisfying the above requirements). A student in other divisions of the University or in some other accredited school or institution who transfers to this school will receive credit for his work in so far as it covers the required and elective courses for admission or for a degree.

A student who is unable to present sixty credit hours and sixty honor points for admission may be admitted with a condition of as much as six hours and six honor points, or both, but neither deficiency may exceed six. All students admitted to this school with credit of from 54 to 84 hours are classified as Juniors; those with 84 hours or more are classified as Seniors.

All communications regarding entrance credits should be addressed to the Director of Admissions, University of Missouri, Columbia, Missouri. Inquiries regarding other matters may be addressed to the Dean of this school.

## **Plan for the Freshman and Sophomore Years**

Students intending to enter the School of Business and Public Administration enroll ordinarily in the College of Arts and Science for the freshman and sophomore years. The following plan is offered for the guidance of such students in the selection of courses of study.

Students who do not expect to enter this University until the beginning of the junior year are advised to conform to the following suggestions as far as possible

and to take only standard courses in arts and science subjects when substitutions are necessary.

<i>Required Courses in All Curricula</i>	<i>Credit Hours</i>	<i>Departmental Number</i>
English Composition .....	6	English 1 and 2
American Government .....	5	Political Science 1
Elementary Statistical Analysis .....	4	Acctg. & Stat. 1
College Mathematics .....	3	Mathematics 7 or 10
Elementary Accounting I .....	3	Acctg. & Stat. 36
Elementary Accounting II .....	3	Acctg. & Stat. 37
General Economics .....	5	Econ. & Bus. 51
History .....	5	

The required courses in Military Training and Physical Education

#### *Suggested Courses*

##### General Psychology or

General Experimental Psychology .....	3 or 5	Psychology 1 or 2
Elementary Logic .....	3	Philosophy 1
Exposition .....	3	English 60
Introductory Geography .....	3	Geography 6
Economic Geography .....	3	Geography 125
Applied Psychology .....	3	Psychology 20
General Sociology .....	3	Sociology 1
International Relations .....	3	Political Science 55
Mathematics of Finance .....	3	Mathematics 155
Additional Mathematics courses .....	5 to 15	
History .....	3 to 8	
Natural Science .....	5 to 10	
Foreign Language .....	5 to 10	
Home Economics or Art .....	4 to 5	
Speech .....	2 to 5	
Citizenship (freshman only) .....	4	
Typing and Stenography .....	6 to 7	

Free Electives, arts and science subjects sufficient to complete the requirement of 60 hours and 60 points for admission.

Students intending to enter the curriculum in Government Service (IV) are advised to elect the courses in General Sociology and Psychology. Those intending to enter the curriculum in Finance (II), Accounting (III), or Statistics (VI) are advised to elect the course in Mathematics or Finance. Mathematics 9, Trigonometry; Mathematics 10, College Algebra; Mathematics 11, Analytic Geometry; and Mathematics 175, Calculus 1 are available to students who expect to continue in statistics beyond the more elementary courses with a view to specializing in that field. Students interested in Textile Merchandising under Marketing (V) should elect Home Economics 40 and 41, Design I and II or Art 2 and 5, Theory of Drawing. Students intending to enter the curriculum in Real Estate and Insurance (VIII) should elect Sociology I, Psychology 30, Speech 75, and English 60.

#### **Advanced Standing**

The student who has gained more than sixty hours of credit before entering the School of Business and Public Administration may be given credit for such courses in excess of the sixty hours required for admission as are acceptable in the curriculum in which the student is enrolled.

## Residence Requirements

Ordinarily a candidate for a degree will have been registered in this School for two years, but a student with advanced standing who meets all other requirements may receive a degree if registered in this School throughout his senior year.

Any student who is deficient to the extent of no more than three hours and six grade points may be permitted to complete the requirements for a degree by correspondence courses in this University when acceptable courses are available or by courses approved in advance in residence in another university.

## Courses of Instruction

Instruction is offered in the fields of accounting, economics, finance, government, business law, industrial management, marketing, public administration, business statistics, transportation, real estate and insurance. The courses are described principally under the titles of Accounting and Statistics, Economics and Business, and Political Science, elsewhere in this catalog.

## Curricula

Nine curricula are offered for the purpose of guiding students in their preparation for special fields of business and public administration. In order to meet the needs and purposes of the individual student, provision is made for special curricula, and modification of any curriculum may be made with the approval of the student's adviser and the Dean. These curricula are outlined in detail in the announcement of the School of Business and Public Administration.

## Requirements for Graduation

The requirements for graduation are the completion of any curriculum of this School and a minimum of one hundred twenty credit hours and one hundred twenty points. A student with less than an average record may not register for more than sixteen hours. A student with an average or better record may be granted permission by his adviser to register for more than sixteen hours. No student, without special permission of the Dean, may carry less than twelve credit hours.

Sixty of the one hundred twenty hours and points must be earned in the required courses and acceptable electives of the student's curriculum. Points are awarded on the following basis: for each hour of E grade, three points; S grade, two points; M grade, one point. No points are given for I and equivalent grades. A student whose grades at the time of entrance to the School of Business and Public Administration are below an M average, whether his credits have been earned at the University of Missouri or elsewhere, is required to make up the deficiency in points during the junior and senior years.

## Degrees

The degree of Bachelor of Science in Business Administration is conferred upon those students who have completed the requirements of one of the seven curricula in business administration. The degree of Bachelor of Science in Public Administration is conferred upon those who have completed the requirements of the curriculum in government service. The degree of Bachelor of Science in Statistics is conferred upon those who have completed the curriculum in statistics.

### Graduate Study

Graduate instruction in accounting, business administration, economics, government, and statistics is under the supervision of the Graduate School of the University. The courses of instruction available to graduate students are given in the Description of Courses of the catalog. For further information address the Dean of the Graduate School or the chairman of one of the departments.

### Placement Service

The School of Business and Public Administration undertakes to assist its graduates in finding suitable positions and offers this service to recent graduates and older alumni alike in so far as its facilities permit. Business establishments and governmental agencies co-operate in the development of the service.

*For further information address the Office of the Dean, School of Business and Public Administration, University of Missouri, 102 B. & P. A. Building, Columbia, Missouri.*



# *College of Education*

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The undergraduate work in Education is organized in the College of Education which consists of the freshman, sophomore, junior, and senior years.

The graduate work in Education is organized as a department in the Graduate School.

## **Purposes**

The College of Education has these definite purposes:

It provides professional education for men and women who plan to make teaching, school supervision, or school administration a career.

It provides an appropriate foundation for graduate research and advanced study in the various areas of education.

It extends certain assistance in the nature of research, studies, surveys, and consultation to the public school system of the state.

## **Admission**

For admission to the College of Education a minimum of fifteen accredited high school units, exclusive of physical education and military science, must be presented. Three units shall be in English and a minimum of eight additional units shall be selected from the fields of mathematics, social studies, fine arts, science, and foreign language. The remaining units to total fifteen may be selected from any other courses accepted by an accredited high school for its diploma, with the exception of physical education and military science.

Students admitted to the University under provision of Plans B, C and D, explained in the section on admission in this publication, will be admitted to the College of Education.

Inquiries concerning admission to the College of Education of the University of Missouri should be addressed to the Director of Admissions. The applicant should provide the Admissions Office with complete transcripts of credit and a statement that the enrollment desired is in the College of Education.

## **Facilities**

The classrooms, laboratories, and libraries of the entire University are made available to students in the College of Education. Specialists in other departments and divisions of the University give instruction in all subject matter areas leading to teaching majors in those fields in which elementary and high school teachers work.

The library in Education is housed in the General Library Building. The Education collection has been carefully developed to make available significant materials for carrying forward graduate and research programs in Education. This library is supplemented by contributions to the Irion Library in Education, a special collection established through an endowment fund created by Phi Delta Kappa.

### **The Laboratory School**

The Laboratory School of the University consists of an elementary school, a junior high school, and a senior high school. It provides a vital integrating center for teacher-education activities.

The Laboratory School provides an instructional program for children from the kindergarten through the senior high school. This program is designed to make possible a study of the growth and development of children and their progress by means of appropriate school instruction. The program permits the adaptation of results of modern research and the best practices in American education. The operation of the school affords opportunities for demonstration, visitations by interested persons, research, and consultation with reference to educational problems.

The Laboratory School also provides opportunities for teacher-preparation in those fields which include student teaching and apprenticeship in school situations as a basic part of teacher education.

### **Placement**

A Teacher Placement Service is maintained to assist teachers in securing positions and is available to graduates of the University and to all former students who have attended the University a minimum of one summer session.

A small fee is charged for one year's service. Correspondence with regard to placement of teachers should be addressed to: Director Teacher Placement, 102 Hill Hall, University of Missouri, Columbia, Missouri.

### **Degrees and Certificates**

The College of Education confers one undergraduate degree, Bachelor of Science in Education (B.S. in Ed.).

The College of Education is authorized by the Legislature of Missouri to issue certificates, valid for life, to students who have completed the requirements for the degree of Bachelor of Science in Education and who are recommended by the Faculty of the College of Education as being qualified to teach in the public schools of the state.

The course work necessary to complete the requirements for certificates issued by the State Department of Education of Missouri may also be completed in the College of Education.

### **Requirements for Graduation**

For the degree, Bachelor of Science in Education (B.S. in Ed.), the candidate must fulfill the following requirements:

He must be regularly admitted to the College of Education.

He must complete the professional courses in Education listed in the various curricula, the other courses required in the curriculum of specialization, and the general education requirements.

He must make a satisfactory record on an English Proficiency Examination.

He must have completed one hundred twenty credit hours of work acceptable toward the degree of Bachelor of Science in Education. Credit in the required courses in physical education and military science in the freshman and the sophomore years is not included in the one hundred twenty hours.

He must also complete a total of one hundred twenty credit points. Each

hour of credit earned in the University of Missouri is valued in points on the basis of the grades earned, as follows: E, three points; S, two points; M, one point; I, no points. Points will be allowed for credits earned in other institutions, and accepted in the College of Education, commensurate with the quality of work done, except that in no case may the number of points awarded exceed the number of hours.

He must be recommended for the degree by the Faculty of the College of Education.

He must be free from gross physical defects which would make his success as a teacher unlikely.

He must meet the residence requirement. A student must spend his senior year in the University of Missouri in order to obtain the degree of Bachelor of Science in Education. Students entering with advanced standing must complete at least three courses in Education to fulfill the requirements for the degree and must complete at least one course with not less than three hours of credit in the subject of specialization. Work done in the summer session of the University will be counted as work in residence.

### Programs of Study

The program for each semester should be worked out carefully with the help of the major and the minor advisers, as well as with the assistance which may be provided by the Office of the Dean of the College of Education.

While the program of training of a student may be materially strengthened by taking certain elective courses, such election should be made only with the consent of the proper advisers. Students will not be permitted to elect studies at random.

### Majors and Minors

Students preparing for secondary school teaching are required to have an academic major and also a minor. Exception in the case of the minor may be made for students enrolling in specialized curricula such as physical education, vocational home economics, industrial education, music, art, and commercial education.

Students preparing for elementary school teaching are required to have broad training in a number of subject matter areas in addition to a major in elementary education. A concentration of at least fifteen hours in a subject matter area will be required as a minor. Programs in elementary education should be planned with the close supervision of an adviser.

#### MAJOR AND MINOR REQUIREMENTS FOR TEACHERS

Field	Minimum require- ment for Major	Minimum require- ment for Minor	Room No. of Adviser
I. Elementary School Teachers Kindergarten, Primary, Inter- mediate Grade, Upper Grade, Specialized Fields .....(a)		Mr. Artley .....	213 Hill
		Miss Taylor .....	206 Education
		Miss Knowles .....	304 Education
		Mr. Townsend .....	107 Hill
		Mr. Maxwell .....	212 Education
		Mr. Eubank .....	102 Hill
		Mr. Phillips .....	122 Switzler
		Miss Fergen .....	208 Hill
		Miss Fitzgerald .....	302 Education
		Mrs. Davis .....	202 Education
		Mr. Smith .....	306 Education

Field	Minimum require- ment for Major	Minimum require- ment for Minor	Room No. of Adviser
II. Secondary School Teachers (Junior and Senior High Schools):			
Agriculture . . . . . (a) . . . . .	Mr. Ekstrom	122	Waters
Art . . . . . 40 . . . . . 20 . . . . .	Miss Wulfekammer	325	Jesse
Biology . . . . . 24 . . . . . 15 . . . . .	Mr. Palmquist	104	Lefevre
Chemistry . . . . . 24 . . . . . 15 . . . . .	Mr. Breckenridge	209	Schweitzer
Commercial Subjects . . . . . (a) . . . . .	Miss Williams	306	Hill
English . . . . . 36 . . . . . 27 . . . . .	Mr. Moffett	209	Jesse
French . . . . . 24 . . . . . 20 . . . . .	Mr. Brent	303	Jesse
General Science . . . . . 40 . . . . . 30 . . . . .	Mr. Watkins	302	Hill
Geography . . . . . 24 . . . . . 15 . . . . .	Mr. Collier	103, T-4	
German . . . . . 24 . . . . . 20 . . . . .	Miss Nagel	309	Jesse
Home Economics . . . . . (a) . . . . . 22 . . . . .	Miss Motter	107	Gwynn
Industrial Arts . . . . . (a) . . . . .	Mr. London	202	Indus. Arts
Latin . . . . . 24 . . . . . 20 . . . . .	Mr. Gwatkin	211	Jesse
Library Science . . . . . 24 . . . . . 15 . . . . .	Miss Bennett	116	Gen. Library
Mathematics . . . . . 24 . . . . . 15 . . . . .	Miss Doolittle	306	Hill
Music . . . . . (a) . . . . . 24 . . . . .	Mr. Mathews	209	Lathrop
Physical Education (Men) . . . . . (a) . . . . . 24 . . . . .	Mr. Edwards	105	Rothwell Gym
Physical Education (Women) . . . . . (a) . . . . . 24 . . . . .	Miss McKee		Women's Gym
Physics . . . . . 24 . . . . . 15 . . . . .	Mr. Holroyd	104	Stewart
Physiology and Hygiene . . . . . 24 . . . . . 15 . . . . .			
Social Studies . . . . . 40 . . . . . 30 . . . . .	Mr. Atherton	318	Jesse
	Mr. Wyllie	315	Jesse
Spanish . . . . . 24 . . . . . 20 . . . . .	Mr. Brent	303	Jesse
Speech . . . . . 34 . . . . . 25 . . . . .	Mr. Aly	321	Switzler
Speech Correction . . . . . (a) . . . . .	Miss Wells	331	Switzler
Vocational Agriculture (a) . . . . .	Mr. Ekstrom	122	Waters
Vocational Home Eco- nomics . . . . . (a) . . . . .	Miss Motter	107	Gwynn
Vocational Education: Trades and Industries (a) . . . . .	Mr. London	202	Indus. Arts

(a) For requirements, see Announcement of College of Education.

## Curricula

All students will be expected to complete the general education requirements.

*General Education Requirements:* Freshmen will be required to take a course, Introduction to Education, for orientation and guidance purposes.

Appropriate tests in the basic skills such as English, Speech, etc., will be given to freshmen, and students will be scheduled in remedial sections when necessary.

Students will be required to complete English, nine hours; social studies, ten hours, including American History and American Government; science, ten hours, including one course in biological science and one course in geology or other physical science; mathematics, three hours (students who present three units of high school mathematics may be excused from the mathematics requirements); fine arts, five hours; and physical education and military science. Preventive Medicine or School Hygiene, two hours, will also be required but may be taken in any year.

Adjustments may be made in the general education requirements of the first two years for students enrolled in rural education or in vocational education curricula.

### Elementary School Teachers

In addition to the general education courses required for all teachers, majors in elementary education will be required to complete the following professional education courses:

	<i>Semester Hours</i>
A102, Educational Psychology .....	2.5 or 3
B125, History of American Education .....	2.5 or 3
E120, Elementary School Organization and Management .....	2.5 or 3
E121, Technique of Teaching in Elementary Schools .....	2.5 or 3
Prerequisite A120	
E151, Student Teaching in the Elementary School .....	6

These additional courses in the elementary education major will be required:

	<i>Semester Hours</i>
J129, Elementary School Music .....	2
E118, Art Activities in the Kindergarten and Primary Grades .....	3
or	
E119, Art Activities in the Intermediate Grades .....	3
E 96, Children's Literature .....	2
E 99, Arithmetic for Teachers .....	2
or	
E367, Problems of Teaching Arithmetic in the Elementary School .....	2
H127, Physical Education Activities for the Elementary School .....	2
One course in Geography .....	2.5 or 3
One course in Reading .....	2.5 or 3

Elementary education majors will be required to complete a minor of at least 15 hours in some academic field. The remainder of the program may be elective with the approval of the adviser.

### Curriculum in Rural Education

The curriculum in rural education is a special two year program designed to meet the needs of students in elementary education who plan to teach in the rural sections of the state. This includes village and small town schools. Students may enroll in this curriculum as freshmen.

The program will include subject-matter courses in English, science, social studies, art activities, music, and children's literature.

Thirteen hours of this curriculum will be taught in the College of Agriculture in courses in agriculture, home economics and rural sociology. This section of the program is planned to acquaint the student with significant problems of rural life and conditions as they affect education.

The curriculum will include appropriate courses in professional education necessary to qualify the prospective teacher for teaching in the elementary schools.

Students who complete the curriculum in rural education, and who may desire to continue their education later, will be eligible to begin the work of the junior year in the College of Education without loss of credit.

### Secondary School Teachers

*Required Professional Courses:* The student is expected to complete the following professional courses in the field of Education in addition to Introduction to Education: A102, Educational Psychology, 3 hours; B125, History of American Education, 3 hours; D110, Technique of Secondary School Teaching, 3 hours, prerequisite, A102; D140, Secondary School Administration for Teachers, 2 hours, prerequisite, A102; a course in the teaching of the subject of specialization, 2

hours, prerequisite, A102; D150, Student Teaching in the Secondary School, 5 hours, prerequisites, A102 and D110.

This total of eighteen hours of required work in professional Education courses may be supplemented under the direction of the adviser.

The student should observe carefully the sequence of certain of the Education courses. The course A102, Educational Psychology, is the basic prerequisite for all further professional courses and must be taken before the student can enroll in D110, Technique of Secondary School Teaching. Students will not be permitted to enroll in course D150, Student Teaching in the Secondary School, until they have completed course D110, Technique of Secondary School Teaching.

*Other General Requirements:* A student who enters with advanced standing must complete at least one course, with not less than three hours of credit, in the subject of specialization. This course must be selected under the direction of his adviser.

*Secondary School Teaching Majors and Minors:* A student preparing to teach in secondary school should select major and minor teaching fields with proper advisement. The student must meet the major and minor requirements in his chosen fields of specialization. Curricula to prepare students to teach in the following secondary school teaching areas are available: agriculture, art, biology, chemistry, commercial subjects, English, French, general science, geography, German, home economics, industrial arts, Latin, library science, mathematics, music, physical education, physics, physiology and hygiene, social studies, Spanish, speech, speech correction, vocational agriculture, vocational home economics, and trades and industries.

## Graduate Work

Graduate work in Education leads to the following degrees: Master of Education and Doctor of Education; Master of Arts and Doctor of Philosophy. For specific information about graduate programs in Education, the student is referred to the special announcement of the Graduate School.

*Master of Education Degree:* To be admitted to candidacy for the degree of Master of Education students must have completed not less than fifteen hours of work in undergraduate courses in Education in an approved institution. A thesis is not required for this degree.

*Master of Arts with a Major in Education Degree:* To be admitted to candidacy for the degree of Master of Arts with a major in Education, students must have completed at least fifteen hours of professional Education courses in an approved institution. Candidates shall be required to have a minimum preparation in research techniques which shall include a course in Elementary Educational Statistics and a course in Methods of Educational Research. A thesis will be required of all candidates for this degree.

*Doctor of Education Degree:* The degree of Doctor of Education is especially intended to meet the professional needs of the candidate. The program of studies will be planned with this objective in view.

*Doctor of Philosophy with a Major in Education Degree:* The degree of Doctor of Philosophy is a research degree, and the dissertation offered in partial fulfillment of the requirements must give evidence of mastery of research methods in the field of Education.

*Major Adviser:* A graduate student in Education should select the particular area of school work for which he wishes to prepare. He should then consult the faculty adviser in the field of his major interest and with the adviser make out a complete program of studies for the desired degree. Some of the fields of specialization with the names of the appropriate adviser in the department of Education are listed below:

<i>Graduate Specialty</i>	<i>Faculty Adviser</i>	<i>Room No.</i>
Educational Psychology .....	Mr. Polmantier .....	118 Hill
	Mr. Carter .....	20 Hill
History and Philosophy of Education .....	Mr. Drake .....	311 Hill
City, County, and State School Administration .....	Mr. Capps .....	202 Hill
	Mr. Carpenter .....	204 Hill
	Mr. Maxwell .....	212 Education
	Mr. Townsend .....	107 Hill
Educational Tests and Measurements .....	Mr. Capps .....	202 Hill
	Miss Doolittle .....	306 Hill
Secondary Education .....	Mr. Ruff .....	304 Hill
	Mr. Watkins .....	302 Hill
Commercial Education .....	Miss Williams .....	306 Hill
Teaching of English .....	Mr. Moffett .....	203 Jesse
Elementary Education .....	Mr. Artley .....	213 Hill
	Miss Knowles .....	212 Education
	Mr. Maxwell .....	212 Education
	Mr. Phillips .....	122 Switzler
	Mr. Townsend .....	107 Hill
Agricultural Education .....	Mr. Ekstrom .....	122 Waters
Home Economics Education .....	Miss Motter .....	107 Gwynn
Industrial Education .....	Mr. London .....	202 Indus. Arts
Guidance and Counseling .....	Mr. Callis .....	11 Hill
	Mr. Ferguson .....	113 Hill
Physical Education .....	Mr. Hindman .....	102 Rothwell Gym
	Mr. Bunker .....	109 Rothwell Gym
Speech Education .....	Mr. Aly .....	321 Switzler
Speech Correction .....	Miss Wells .....	331 Switzler
Music Education .....	Mr. Mathews .....	209 Lathrop
Special Education .....	Miss Fergen .....	208 Hill

*For further information about the College of Education write for the special announcement of the College of Education or address the office of the Dean, College of Education, University of Missouri, 107 Hill Hall, Columbia, Missouri.*



# College of Engineering

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The College of Engineering consists of five professional engineering departments, namely, Agricultural, Chemical, Civil, Electrical and Mechanical Engineering. Descriptions of the courses offered by these departments can be found on pages 192, 206, 210, 237 and 283.

The *undergraduate program* of each of these professional departments is designed to make it the proper foundation for:

Graduate study leading to research and development work

Professional practice in a chosen field of engineering

The wide business and management opportunities in connection with all manner of manufacturing, with sales, with the construction of public works, with public utilities, and with federal and state engineering enterprises.

Besides the cultural values to be obtained from the scientific studies inherent in engineering, each undergraduate program recognizes the liberal opportunities provided in a university to gain that breadth of view so essential to greatest success in professional service and the largest measure of enjoyment of leisure.

The *Engineering Experiment Station* was established July 1, 1909, with the Dean of the College of Engineering as Director. The purpose is to organize those members of the engineering faculty and students particularly interested in research as a staff to investigate problems of scientific or engineering interest. From time to time the results of such investigations are published either in technical journals or in bulletins.

## Buildings, Laboratories and Libraries

The College of Engineering is housed in a group of buildings fronting the west side of the historic Francis Quadrangle. These buildings provide large general laboratories for each department, some sixty small rooms equipped for research, and numerous classrooms and offices.

In addition to the large general library of the University, an engineering library of 24,240 volumes is housed in the Engineering Building and in charge is a full-time librarian.

## Admission

*Admission of Freshmen:* The requirements for regular admission to the College of Engineering are fifteen units, the equivalent of a four-year high school course. The fifteen units offered must include three units in English, three in mathematics, and one in science with laboratory. The three units in mathematics should include one and one-half units of algebra, one unit of plane geometry, and one-half unit of solid geometry. Students who offer one-half unit in trigonometry in lieu of one-half unit in solid geometry will take solid geometry instead of trigonometry in the freshman year. Students who offer less than the above three units of mathematics may be admitted provisionally to the College of Engineering by special permission of the Dean. They must then make up the deficiencies by taking appropriate mathematics courses in their freshman year without credit toward a degree in

engineering. Students who offer four units in mathematics (2 units of algebra, 1 unit of plane geometry,  $\frac{1}{2}$  unit of solid geometry and  $\frac{1}{2}$  unit of trigonometry) may, at their request, omit trigonometry and algebra and start the mathematics sequence with analytic geometry.

*Admission from Junior Colleges:* The College of Engineering has a working agreement with many junior colleges whereby the work undertaken in the junior college during the first year and sometimes in the second year may be wholly accepted by the College of Engineering. The student is advised to consult the engineering adviser in the junior college at the time he registers in the junior college to insure that his program is satisfactory. A summer session program at the University is provided for those entering the College of Engineering with deficiencies from a junior college. A student planning to enter the College of Engineering as a junior will do well to attend the Summer Session just prior to his junior year. In many instances this will avoid an extra term in completing an engineering curriculum at the University. The Dean of the College of Engineering at the University will promptly answer any inquiries concerning the course of study which should be undertaken in the junior college.

### English and Speech

Students deficient in an English placement test will be required to pass, during each of their first two semesters, a course in composition and rhetoric meeting five times a week for three hours' credit.

Students demonstrating average skill in such a test will be required to pass, during each of their first two semesters, a course in composition and rhetoric meeting three times a week for three hours' credit.

Students demonstrating superior ability in such a test may satisfy the English requirement by passing with an S or E grade, during their first semester, a special course in composition and rhetoric (English 3) meeting three times a week for three hours' credit. Such students are urged to continue their study of composition by taking English 60 (Exposition), 3 hours, during the second semester or by taking English 61 (Technical Writing), 3 hours, during their junior or senior years. The student who makes a grade lower than S will be required to pass English 2 during the second semester.

Students deficient in a speech test will be required to pass, during either one of the first two semesters, a two-hour course in speech (Oral Communication).

### Curricula and Degrees

The degree of Bachelor of Science with designation of the branch of engineering is awarded in each of the five engineering departments. Each curriculum requires a total of one hundred thirty-eight semester credit hours exclusive of the required courses in military science and physical education. An average grade of M, i.e., a grade point average of not less than 2 for all courses, is required for graduation; the grade marks being E for excellent work, S for superior, M for medium, I for inferior, and F for failure. For purpose of calculating grade point averages a value in points is assigned to each of these grades as follows:

For each hour of (E) grade, 4 credit points shall be allowed.

For each hour of (S) grade, 3 credit points shall be allowed.

For each hour of (M) grade, 2 credit points shall be allowed.

For each hour of (I) grade 1 credit point shall be allowed.

For the grade of (F), no credit points shall be allowed.

## Rules Governing Enrollment

Students may not enroll for more credit hours than shown in the curricula except with the permission of the Dean.

Students who do not make satisfactory grades in their courses or who do not attend their classes regularly are subject to dismissal by the Dean.

Study for advanced degrees (M.S. and Ph.D.) in engineering is administered by the Graduate School.

The Army, the Navy, and the Air Force cooperate with the College of Engineering in the offering of both basic and advanced reserve officers training programs. Detailed programs are outlined in the College of Engineering bulletin which may be obtained upon request by addressing the Dean of the College of Engineering.

## Acceptable Humanistic-Social Studies

Each student with the help of his adviser must select at least 12 semester hours from among the following courses—5 of which must be American History or American Government.

Other humanistic-social courses may be accepted through a petition approved by the Adviser and the Executive Committee.

Only starred (\*) courses are open to freshmen or sophomores

	<i>Hours</i>
<b>Art</b>	
11 Introduction to Ancient and Medieval Art*	2
12 Introduction to Renaissance and Modern Art* (Prerequisite Art 11)	2
20 The Art of America*	3
<b>English</b>	
5 Masterpieces (Prerequisite English 1 and 2)	2
6 Masterpieces (Prerequisite English 5)	2
30 English Life and Literature	3
40 English Life and Literature (Prerequisite English 30)	3
60 Exposition (Prerequisite English 1 and 2)	3
61 Technical Writing (Prerequisite, second semester sophomore standing or above)	3
102 General Literature	2
103 General Literature	2
<b>History</b>	
1 Modern Europe*	3
2 Modern Europe* (Prerequisite History 1)	3
5 Introduction to Social Studies*	5
20 American History*	5
231 Contemporary Europe	3
251 Recent U. S. History	3
312 American Constitutional History	3
<b>Languages</b>	
Elementary courses in French, German, Italian, Spanish, Russian. If elementary course is selected it must be followed by the intermediate course.	
<b>Philosophy</b>	<i>Hours</i>
1 Elementary Logic*	3
5 Introduction to Philosophy*	3
50 Introduction to Ethics*	3
212 American Ideals	3
320 Philosophy of Science (Prerequisite Philosophy 1 and 10 hours in natural science)	3
<b>Political Science</b>	
1 American Government*	5
55 International Relations*	3
310 Principles of Public Administration (Prerequisite Political Science 1 and junior standing)	4

**Psychology**

1	General Psychology*	3
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**Religion**

110	Life and Literature of the Old Testament	2
130	Comparative Religion (Prerequisite junior standing)	2
132	Ethics of World Religions (Prerequisite junior standing)	2

**Sociology**

1	General Sociology* (Freshmen and Sophomores only)	3
60	General Anthropology*	3
100	Fundamentals of Sociology (Juniors and Seniors only)	3
310	Public Opinion (Prerequisite Sociology 1 or 100)	2

**Department of Agricultural Engineering**

*(Administered jointly by the Dean of the Faculty of Agriculture and the Dean of the Faculty of Engineering)*

The curriculum in agricultural engineering deals with the application of engineering to the problems of agriculture and related industries. This curriculum embraces the fields of farm power and machinery, farm buildings and equipment, rural electrification, soil and water conservation engineering and irrigation. Graduates in agricultural engineering are employed by manufacturers of farm machinery, farm building materials, and farm equipment and supplies to do various kinds of design, development, sales, education, and service work. Many graduates are also employed by state and government agencies, for teaching, research, and extension work. The Department of Agricultural Engineering has been accredited by the Engineers' Council for Professional Development.

**CURRICULUM IN AGRICULTURAL ENGINEERING**

<i>First Semester</i>		<i>Hours</i>	<i>Second Semester</i>		<i>Hours</i>
Math. 9—Trigonometry	2		Math. 11—Anal. Geometry	5	
Math. 10—Algebra	3		Chem. 15—Elem. Organic Chem.	3	
Chem. 1—Gen. Inorganic Chem.	5		Engl. 2—Comp. and Rhetoric	3	
Engl. 1—Comp. and Rhetoric	3		M. E. 10—Descrip. Geometry	3	
M. E. 1—Engr. Drawing	3		C. E. 20—Engineering Surveys	3	
P. E. 1—Physical Education	1*		P. E. 2—Physical Education	1*	
M. S. 1—Military Science or	1*		M. S. 2—Military Science or	1*	
N. S. 1—Naval Science or	3*		N. S. 2—Naval Science or	3*	
A. S. 21—Air Science	1*		A. S. 22—Air Science	1*	
Engr. 2—Engineering Orientation	0				
<i>Third Semester</i>		<i>Hours</i>	<i>Fourth Semester</i>		<i>Hours</i>
Math. 175—Calculus I	5		Math. 201—Calculus II	5	
Phys. 23—General Physics	5		Phys. 24—General Physics	5	
A. E. 240—Farm Power and Machy.	3		Geol. 2—Physical Geology	3	
Ag. Econ. 1—Ag. Economics (5) or	5		A. E. 10—Farm Shopwork or M. E. 80 and 81—Machine Tool Operation	3	
Econ. 41—Industrial Econ. (3) & Elective (2)			F. C. 1—Field Crops	3	
P. E. 5—Physical Education	1*		P. E. 6—Physical Education	1*	
M. S. 3—Military Science or	1*		M. S. 4—Military Science or	1*	
N. S. 25—Naval Science or	3*		N. S. 26—Naval Science or	3*	
A. S. 23—Air Science	1*		A. S. 24—Air Science	1*	

\*This credit does not count toward a degree in Engineering.

<i>Fifth Semester</i>	<i>Hours</i>	<i>Sixth Semester</i>	<i>Hours</i>
M. E. 90—Analytical Mechanics . . . . .	4	C. E. 101—Mech. of Materials . . . . .	3
E. E. 119—Fundamentals of Electrical Circuits Lecture . . . . .	2	C. E. 102—Mech. of Materials (Lab.) . . . . .	1
E. E. 120—Fundamentals of Electrical Circuits Laboratory . . . . .	1	C. E. 240—Fluid Mechanics . . . . .	3
Soils 100—Soils . . . . .	5	A. E. 340—Adv. Farm Power & Machinery . . . . .	3
Speech 175—Public Speaking . . . . .	3	A. E. 221—Soil Conservation Engineering . . . . .	3
M. E. 99—Heat Engines . . . . .	3	Technical Elective . . . . .	3
<i>Seventh Semester</i>	<i>Hours</i>	<i>Eighth Semester</i>	<i>Hours</i>
A. E. 203—Farm Buildings . . . . .	3	A. E. 303—Farm Bldg. Design . . . . .	3
A. E. 321—Irrig. and Drainage Engineering . . . . .	3	A. E. 410—Seminar . . . . .	1
A. E. 315—Farm Electrification Engineering . . . . .	3	Technical Elective . . . . .	3
P. S. 1—American Government or Hist. 20—American History	5	Humanistic-Social Studies . . . . .	6
Technical Elective . . . . .		Elective . . . . .	4

## Department of Chemical Engineering

Chemical engineers enter into a wide variety of chemical and process industries. The first professional assignment may be in production, but persons with requisite abilities and interests often are chosen for management, engineering design, research and development, patent studies, or technical sales.

The floor space devoted to chemical engineering laboratories provides room for a wide variety of instructional units, instrument and chemical storerooms, and small research rooms. A well-equipped shop in charge of a full-time mechanic affords facilities for the construction of research and instructional equipment.

The Department of Chemical Engineering has been accredited by the Engineers' Council for Professional Development.

### CURRICULUM IN CHEMICAL ENGINEERING

<i>First Semester</i>	<i>Hours</i>	<i>Second Semester</i>	<i>Hours</i>
Math. 9—Trigonometry . . . . .	2	Math. 11—Anal. Geometry . . . . .	5
Math. 10—Algebra . . . . .	3	Chem. 2—Gen. Inorganic Chem. . . . .	3
Chem. 1—Gen. Inorganic Chem. . . . .	5	Chem. 26—Qualitative Analysis . . . . .	2
Engl. 1—Comp. Rhetoric . . . . .	3	Engl. 2—Comp. and Rhetoric . . . . .	3
M. E. 1—Engineering Drawing . . . . .	3	M. E. 10—Descriptive Geometry . . . . .	3
P. E. 1—Physical Ed. . . . .	1*	P. E. 2—Physical Education . . . . .	1*
M. S. 1—Military Science or . . . . .	1*	M. S. 2—Military Science or . . . . .	1*
N. S. 1—Naval Science or . . . . .	3*	N. S. 2—Naval Science or . . . . .	3*
A. S. 21—Air Science . . . . .	1*	A. S. 22—Air Science . . . . .	1*
Engr. 2—Engineering Orientation . . . . .	0		
<i>Third Semester</i>	<i>Hours</i>	<i>Fourth Semester</i>	<i>Hours</i>
Math. 175—Calculus I . . . . .	5	Math. 201—Calculus II . . . . .	5
Chem. 210—Organic Chemistry . . . . .	3	Chem. 212—Organic Chemistry . . . . .	3
Chem. 211—Org. Chem. Lab. . . . .	2	Phys. 24—General Physics . . . . .	5
Phys. 23—General Physics . . . . .	5	Chem. 221—Quant. Analysis . . . . .	3
Econ. 41—Industrial Economics . . . . .	3	Ch. E. 223—Introduction to Chemical Engineering . . . . .	2
P. E. 5—Physical Education . . . . .	1*	P. E. 6—Physical Education . . . . .	1*
M. S. 3—Military Science or . . . . .	1*	M. S. 4—Military Science or . . . . .	1*
N. S. 25—Naval Science or . . . . .	3*	N. S. 26—Naval Science or . . . . .	3*
A. S. 23—Air Science . . . . .	1*	A. S. 24—Air Science . . . . .	1*

\*This credit does not count toward a degree in Engineering.

<i>Fifth Semester</i>	<i>Hours</i>
Chem. 231—Physical Chemistry . . . . .	3
Chem. 232—Physical Chem. Lab. . . . .	2
Ch. E. 225—Chem. Process Calculations I . . . . .	3
Ch. E. 234—Prin. of Ch. E. I . . . . .	3
M. E. 90—Anal. Mechanics . . . . .	4
Speech 175—Public Speaking . . . . .	3

<i>Seventh Semester</i>	<i>Hours</i>
Ch. E. 236—Prin. of Chem. E. III . . . . .	3
Ch. E. 243—Chem. Engr. Lab. I . . . . .	2
Ch. E. 361—Chem. Engr. Thermo. I . . . . .	3
Ch. E. 385—Chem. Plant Design I . . . . .	3
E. E. 119—Fundamentals of Electrical Circuits Lecture . . . . .	2
E. E. 120—Fundamentals of Electrical Circuits Laboratory . . . . .	1
Humanistic-Social Studies . . . . .	3
Inspection Trip . . . . .	R

<i>Sixth Semester</i>	<i>Hours</i>
Chem. 233—Physical Chemistry . . . . .	3
Ch. E. 204—Chem. Engr. Materials . . . . .	2
Ch. E. 226—Chem. Process Calculations II . . . . .	3
Ch. E. 235—Prin. of Ch. E. II . . . . .	3
C. E. 101—Mech. of Materials . . . . .	3
C. E. 102—Mech. of Matls. Lab. . . . .	1
Humanistic-Social Studies . . . . .	3

<i>Eighth Semester</i>	<i>Hours</i>
Technical Electives . . . . .	6
Ch. E. 244—Chem. Engr. Lab. II . . . . .	2
E. E. 121—Fund. of Electrical Machinery Lecture . . . . .	2
E. E. 122—Fund. of Electrical Machinery Laboratory . . . . .	1
Humanistic-Social Studies . . . . .	6

## Department of Civil Engineering

The field of civil engineering embraces administrative, topographical, hydraulic, structural, sanitary, transportation, and construction engineering. It is the aim of this department to give a broad general training which will fit men for technical, administrative, and commercial positions in the promotion, design, construction, operation, and management of governmental projects and private corporations.

All Civil Engineering students have an introduction to the problems of construction management and the management of corporations and public organizations in which many engineers find their careers.

The Department of Civil Engineering has been accredited by the Engineers' Council for Professional Development.

## CURRICULUM IN CIVIL ENGINEERING

<i>First Semester</i>	<i>Hours</i>
Math. 9—Trigonometry . . . . .	2
Math. 10—Algebra . . . . .	3
M. E. 1—Engr. Drawing . . . . .	3
Chem. 1—Gen. Inorganic Chem. . . . .	5
Engl. 1—Comp. and Rhetoric . . . . .	3
P. E. 1—Physical Education . . . . .	1*
M. S. 1—Military Science or . . . . .	1*
N. S. 1—Naval Science or . . . . .	3*
A. S. 21—Air Science . . . . .	1*
Engr. 2—Engineering Orientation . . . . .	0

<i>Third Semester</i>	<i>Hours</i>
Math. 175—Calculus I . . . . .	5
Phys. 23—Gen. Physics . . . . .	5
C. E. 61—Higher Surveying . . . . .	4
Econ. 41—Industrial Econ. . . . .	3
P. E. 5—Physical Education . . . . .	1*
M. S. 3—Military Science or . . . . .	1*
N. S. 25—Naval Science or . . . . .	3*
A. S. 23—Air Science . . . . .	1*

<i>Second Semester</i>	<i>Hours</i>
Math. 11—Anal. Geometry . . . . .	5
C. E. 20—Engr. Surveys . . . . .	3
M. E. 10—Descript. Geometry . . . . .	3
Engl. 2—Comp. and Rhetoric . . . . .	3
Chem. 2—Gen. Inorganic Chem. . . . .	3
P. E. 2—Physical Education . . . . .	1*
M. S. 2—Military Science or . . . . .	1*
N. S. 2—Naval Science or . . . . .	3*
A. S. 22—Air Science . . . . .	1*

<i>Fourth Semester</i>	<i>Hours</i>
Math. 201—Calculus II . . . . .	5
Phys. 24—Gen. Physics . . . . .	5
C. E. 50—Statics . . . . .	3
C. E. 82—Engr. Materials . . . . .	2
Speech 175—Public Speaking . . . . .	3
P. E. 6—Physical Education . . . . .	1*
M. S. 4—Military Science or . . . . .	1*
N. S. 26—Naval Science or . . . . .	3*
A. S. 24—Air Science . . . . .	1*

\*This credit does not count toward a degree in Engineering.

<i>Fifth Semester</i>	<i>Hours</i>
C. E. 101—Mech. of Materials . . . . .	3
C. E. 102—Mech. of Materials (Lab.) . . . . .	1
E. E. 119—Fundamentals of Electrical Circuits Lecture . . . . .	2
E. E. 120—Fundamentals of Electrical Circuits Laboratory . . . . .	1
C. E. 155—Dynamics . . . . .	2
C. E. 220—Structural Stresses . . . . .	3
C. E. 235—Highway Engr. I . . . . .	3
Humanistic-Social Studies . . . . .	3

<i>Seventh Semester</i>	<i>Hours</i>
C. E. 212—Route Surveys . . . . .	4
C. E. 372—Found. & Mas. Const. . . . .	3
C. E. 273—Struct. Design . . . . .	3
C. E. 365—Engr. Administration . . . . .	3
or	
C. E. Technical Elective . . . . .	2
C. E. 292—Water Supply I . . . . .	
Humanistic-Social Studies . . . . .	3

<i>Sixth Semester</i>	<i>Hours</i>
C. E. 341—Hydrology . . . . .	3
C. E. 221—Struct. Steel Design . . . . .	3
C. E. 222—Reinforced Concrete . . . . .	3
C. E. 240—Fluid Mechanics . . . . .	3
C. E. 241—Fluid Mech. (Lab.) . . . . .	1
Humanistic-Social Studies . . . . .	3

<i>Eighth Semester</i>	<i>Hours</i>
C. E. 367—Constr. & Contracting . . . . .	3
C. E. 374—Struct. Design . . . . .	4
C. E. 293—Waste Water Treatment & Disposal . . . . .	3
C. E. 375 or 376—Stat. Indeter. Structures . . . . .	3
or	
Technical Elective . . . . .	2
Elective . . . . .	
Humanistic-Social Studies . . . . .	3
Inspection Trip . . . . .	R

### Civil Engineering—Sanitary Option

Sanitary engineering has become increasingly specialized during the past decade, and this option is designed to give men entering the field a more specialized background than that available in the general civil engineering curriculum. Essential civil engineering classes are required, accompanied by suitable preparation in chemistry, chemical engineering, and bacteriology.

The sanitary option is intended to prepare students for work with consulting engineers in the municipal field; for public service in the health departments of cities, counties, states, the federal government, or private foundation; for the design, operation, and supervision of water supply and sewerage systems; and for the highest type of post-graduate work.

#### CURRICULUM IN THE SANITARY OPTION

<i>First Semester</i>	<i>Hours</i>
Math. 9—Trigonometry . . . . .	2
Math. 10—Algebra . . . . .	3
Chem. 1—Gen. Inorganic Chem. . . . .	5
Engl. 1—Comp. and Rhetoric . . . . .	3
M. E. 1—Engr. Drawing . . . . .	3
P. E. 1—Physical Education . . . . .	1*
M. S. 1—Military Science or . . . . .	1*
N. S. 1—Naval Science or . . . . .	3*
A. S. 21—Air Science . . . . .	1*
Engr. 2—Engineering Orientation . . . . .	0

<i>Third Semester</i>	<i>Hours</i>
Math. 175—Calculus I . . . . .	5
Chem. 25—Analytical Chemistry . . . . .	5
Phys. 23—Gen. Physics . . . . .	5
Econ. 41—Industrial Econ. . . . .	3
P. E. 5—Physical Education . . . . .	1*
M. S. 3—Military Science or . . . . .	1*
N. S. 25—Naval Science or . . . . .	3*
A. S. 23—Air Science . . . . .	1*

<i>Second Semester</i>	<i>Hours</i>
Math. 11—Anal. Geometry . . . . .	5
Chem. 2—Gen. Inorganic Chem. . . . .	3
Engl. 2—Comp. and Rhetoric . . . . .	3
C. E. 20—Engr. Surveys . . . . .	3
M. E. 10—Descript. Geometry . . . . .	3
P. E. 2—Physical Education . . . . .	1*
M. S. 2—Military Science or . . . . .	1*
N. S. 2—Naval Science or . . . . .	3*
A. S. 22—Air Science . . . . .	1*

<i>Fourth Semester</i>	<i>Hours</i>
Math. 201—Calculus II . . . . .	5
Phys. 24—Gen. Physics . . . . .	5
C. E. 50—Statics . . . . .	3
C. E. 82—Engineering Materials . . . . .	2
Speech 175—Public Speaking . . . . .	3
P. E. 6—Physical Education . . . . .	1*
M. S. 4—Military Science or . . . . .	1*
N. S. 26—Naval Science or . . . . .	3*
A. S. 24—Air Science . . . . .	1*

\*This credit does not count toward a degree in Engineering.



<i>Fifth Semester</i>	<i>Hours</i>	<i>Sixth Semester</i>	<i>Hours</i>
Bot. 202—Gen. Bacteriology . . . . .	3	C. E. 221—Struct. Steel Design . . . . .	3
C. E. 101—Mech. of Materials . . . . .	3	C. E. 222—Reinforced Concrete . . . . .	3
C. E. 102—Mech. of Materials (Lab.) . . . . .	1	C. E. 240—Fluid Mechanics . . . . .	3
C. E. 155—Dynamics . . . . .	2	C. E. 241—Fluid Mech. (Lab.) . . . . .	1
C. E. 220—Struct. Stresses . . . . .	3	C. E. 341—Hydrology . . . . .	3
E. E. 119—Fundamentals of Electrical Circuits Lecture . . . . .	2	Bact. 203—Sanitary Bact. . . . .	3
E. E. 120—Fundamentals of Electrical Circuits Laboratory . . . . .	1	Humanistic-Social Studies . . . . .	2
Humanistic-Social Studies . . . . .	2		
<i>Seventh Semester</i>	<i>Hours</i>	<i>Eighth Semester</i>	<i>Hours</i>
C. E. 212—Route Surveys . . . . .	4	C. E. 293—Waste Water Treatment & Disposal . . . . .	3
C. E. 273—Structural Design . . . . .	3	C. E. 348—Municipal & Rural Sanitation . . . . .	2
C. E. 292—Water Supply . . . . .	2	C. E. 365—Engr. Administration . . . . .	3
C. E. 349—Sanitary Analysis . . . . .	3	or	
C. E. 372—Found. & Mas. Const. . . . .	3	C. E. 367—Const. & Contracting . . . . .	3
Humanistic-Social Studies . . . . .	3	M. E. 99—Heat Engines . . . . .	
		Humanistic-Social Studies . . . . .	5
		Inspection Trip . . . . .	R

### Department of Electrical Engineering

Electrical Engineering offers wide opportunities for young men with proper training. Graduates find employment in the fields of design and construction of electrical power systems, manufacture and sale of electrical equipment, radio and wire communication, television, transportation, and illumination.

One of the chief concerns of the Department of Electrical Engineering is to impart to its students a sound knowledge of fundamental electrical engineering theory. It recognizes the diversity of work performed by electrical engineers by offering a program of study which in the fourth year may be centered in either of the two broad fields of electrical communication or electrical power.

The Department of Electrical Engineering has been accredited by the Engineers' Council for Professional Development.

### CURRICULUM IN ELECTRICAL ENGINEERING

<i>First Semester</i>	<i>Hours</i>	<i>Second Semester</i>	<i>Hours</i>
Math. 9—Trigonometry . . . . .	2	Math. 11—Anal. Geometry . . . . .	5
Math. 10—College Algebra . . . . .	3	Chem. 2—Gen. Inorg. Chemistry . . . . .	3
Chem. 1—Gen. Inorg. Chem. . . . .	5	Engl. 2—Comp. and Rhetoric . . . . .	3
Engl. 1—Comp. and Rhetoric . . . . .	3	M. E. 10—Descript. Geometry . . . . .	3
M. E. 1—Engineering Drawing . . . . .	3	Humanistic-Social Studies . . . . .	3
P. E. 1—Physical Education . . . . .	1*	P. E. 2—Physical Education . . . . .	1*
M. S. 1—Military Science or . . . . .	1*	M. S. 2—Military Science or . . . . .	1*
N. S. 1—Naval Science or . . . . .	3*	N. S. 2—Naval Science or . . . . .	3*
A. S. 21—Air Science . . . . .	1*	A. S. 22—Air Science . . . . .	1*
Engr. 2—Engineering Orientation . . . . .	0		
<i>Third Semester</i>	<i>Hours</i>	<i>Fourth Semester</i>	<i>Hours</i>
Math. 175—Calculus I . . . . .	5	Math. 201—Calculus II . . . . .	5
Phys. 23—General Physics . . . . .	5	Physics 24—General Physics . . . . .	5
C. E. 82—Eng. Materials . . . . .	2	E. E. 150—Elem. of Elec. Engr. . . . .	5
Econ. 41—Industrial Economics . . . . .	3	Speech 175—Public Speaking . . . . .	3
M. E. 80—Machine Tool Lect. . . . .	1	P. E. 6—Physical Education . . . . .	1*
M. E. 81—Machine Tool (Lab.) . . . . .	2	M. S. 4—Military Science or . . . . .	1*
P. E. 5—Physical Education . . . . .	1*	N. S. 26—Naval Science or . . . . .	3*
M. S. 3—Military Science or . . . . .	1*	A. S. 24—Air Science . . . . .	1*
N. S. 25—Naval Science or . . . . .	3*		
A. S. 23—Air Science . . . . .	1*		

\*This credit does not count toward a degree in Engineering.

<i>Fifth Semester</i>	<i>Hours</i>	<i>Sixth Semester</i>	<i>Hours</i>
E. E. 210—A. C. Circuit Theory . . . . .	4	E. E. 249—Elect. Machinery II . . . . .	5
E. E. 240—Elect. Machinery I . . . . .	4	E. E. 275—Transmission Circuits . . . . .	3
M. E. 90—Analytical Mechanics . . . . .	4	E. E. 280—Electronics . . . . .	3
Phys. 304—Elect. Measurements . . . . .	3	M. E. 99—Heat Engines . . . . .	3
Humanistic-Social Studies . . . . .	3	C. E. 101—Mech. of Materials . . . . .	3
		C. E. 102—Mech. of Materials (Lab.) . . . . .	1
<i>Seventh Semester</i>	<i>Hours</i>	<i>Eighth Semester</i>	<i>Hours</i>
C. E. 240—Fluid Mechanics . . . . .	3	M. E. 230—Thermodynamics . . . . .	3
E. E. 315—Transients . . . . .	3	M. E. 241—Mech. Laboratory . . . . .	2
E. E. 320—Vacuum Tube Circuits . . . . .	4	Elective . . . . .	3
Technical Electives ( <i>See Note</i> ) . . . . .	3	Technical Electives ( <i>See Note</i> ) . . . . .	6
Humanistic-Social Studies . . . . .	3	Humanistic-Social Studies . . . . .	3
		Inspection Trip . . . . .	R

*Note:* Six credit hours required from the following courses: 300—Problems in Electrical Engineering, 305—Illumination, 325—Acoustical Engineering, 330—Radio Circuit Analysis, 335—Television Engineering, 340—Ultra High Frequency Techniques, 355—Electrical Machinery III, 356—Induction Machinery, 360—Control Systems, 370—Power Transmission and Distribution.

## Department of Mechanical Engineering

Mechanical Engineering offers a wide range of well diversified opportunities for those young men and women graduates who have the proper training. The main functions of the Mechanical Engineer center around the design and production of all kinds of industrial and domestic manufactured products; the generation of power to operate our many industrial areas and towns, farms and cities; the design and production of engines and equipment for transportation by land, sea, and air; and the management and administration of industrial and municipal enterprises, large and small.

Because the area of activity in mechanical engineering is so extensive and because it is the center from which so many new engineering developments proceed, the training must be broad and basic. With this in mind, the curriculum in mechanical engineering provides a firm foundation in the basic sciences, mathematics, chemistry, and physics, and the basic engineering courses in mechanical drawing, technical materials, and production methods. These basic studies are followed by advanced lecture and laboratory courses in heat engines, thermodynamics, metallurgy, kinematics, and machine design. Elective courses in the senior year give the student an opportunity to select from a large number of specialized technical courses to meet his particular needs. Moreover, about twenty per cent of the four year program is devoted to broadening, non-technical courses such as English, Speech, Economics, Government, History, and elective courses in the Humanistic—Social Area.

### CURRICULUM IN MECHANICAL ENGINEERING

<i>First Semester</i>	<i>Hours</i>	<i>Second Semester</i>	<i>Hours</i>
Math. 9—Trigonometry . . . . .	2	Math. 11—Analytic Geometry . . . . .	5
Math. 10—College Algebra . . . . .	3	Chem. 2—General Inorg. Chem. . . . .	3
Chem. 1—General Inorg. Chem. . . . .	5	Engl. 2—Comp. and Rhetoric . . . . .	3
Engl. 1—Comp. and Rhetoric . . . . .	3	M. E. 10—Descriptive Geometry . . . . .	3
M. E. 1—Engineering Drawing . . . . .	3	Humanistic-Social Studies . . . . .	3
P. E. 1—Physical Education . . . . .	1*	P. E. 2—Physical Education . . . . .	1*
M. S. 1—Military Science or . . . . .	1*	M. S. 2—Military Science or . . . . .	1*
N. S. 1—Naval Science or . . . . .	3*	N. S. 2—Naval Science or . . . . .	3*
A. S. 21—Air Science . . . . .	1*	A. S. 22—Air Science . . . . .	1*
Engr. 2—Engineering Orientation . . . . .	0		

\*This credit does not count toward a degree in Engineering.

<i>Third Semester</i>		<i>Hours</i>	<i>Fourth Semester</i>		<i>Hours</i>
Math. 175—Calculus I	.....	5	Math. 201—Calculus II	.....	5
Phys. 23—General Physics	.....	5	Phys. 24—General Physics	.....	5
M. E. 80—Machine Tool Lect.	.....	1	M. E. 90—Analytical Mechanics	.....	4
M. E. 81—Machine Tool Lab.	.....	2	M. E. 99—Heat Engines	.....	3
Econ. 41—Industrial Econ.	.....	3	P. E. 6—Physical Education	.....	1*
C. E. 82—Engr. Materials	.....	2	M. S. 4—Military Science or	.....	1*
P. E. 5—Physical Education	.....	1*	N. S. 26—Naval Science or	.....	3*
M. S. 3—Military Science or	.....	1*	A. S. 24—Air Science	.....	1*
N. S. 25—Naval Science or	.....	3*			
A. S. 23—Air Science	.....	1*			
<i>Fifth Semester</i>		<i>Hours</i>	<i>Sixth Semester</i>		<i>Hours</i>
M. E. 205—Kinematics of Mach.	....	3	M. E. 210—Dynamics of Mach.	....	2
M. E. 230—Engineering Thermo.	....	3	M. E. 242—Mechanical Lab.	.....	2
M. E. 241—Mechanical Lab.	.....	2	M. E. 330—Engineering Thermo.	....	3
M. E. 305—Industrial Engr.	.....	3	M. E. 395—Engr. Personnel		
M. E. 310—Metal Processing	.....	3	Practice	.....	2
Speech 175—Public Speaking	.....	3	C. E. 101—Mechanics of		
			Materials Lect.	.....	3
			C. E. 102—Mechanics of		
			Materials Lab.	.....	1
			Humanistic-Social Studies	.....	3
			Elective	.....	3
<i>Seventh Semester</i>		<i>Hours</i>	<i>Eighth Semester</i>		<i>Hours</i>
M. E. 220—Machine Design	.....	3	M. E. 221—Mech. Engr. Design	....	3
M. E. 243—Mechanical Lab.	.....	2	M. E. 244—Mechanical Lab.	.....	2
M. E. 351—Steam Power Plants	....	3	C. E. 343—Hydraulic Machinery	....	3
E. E. 119—Fundamentals of Electrical			E. E. 121—Fund. of Electrical		
Circuits Lecture	.....	2	Machinery Lect.	.....	2
E. E. 120—Fundamentals of Electrical			E. E. 122—Fund. of Electrical		
Circuits Laboratory	.....	1	Machinery Lab.	.....	1
Humanistic-Social Studies	.....	3	Humanistic-Social Studies	.....	3
Technical Elective ( <i>See Note</i> )	.....	3	Technical Elective ( <i>See Note</i> )	....	3
			Inspection Trip	.....	R

*Note:* Six credit hours required from the following courses: 300—Special Problems, 319—Advanced Machine Design, 320—Advanced Mechanical Design, 340—Heating and Air Conditioning, 355—Steam and Gas Turbines, 358—Economic Studies in Mechanical Engineering, 360—Internal Combustion Engines, 363—Aircraft Power Plants, 365—Automotive Engineering, 368—Machinery for Compressible Fluids, 370—Refrigeration Systems, 380—Factory Production, 381—Factory Design, 385—Tool Design, 390—Aeromechanics, Math. 301—Differential Equations.

## Mechanical Engineering—Industrial Engineering Option

For those who are qualified and are especially interested in the industrial engineering aspects of mechanical engineering, a separate option in this specialty is provided for the last two years. The option retains the essential courses of the mechanical engineering curriculum, but eliminates elective courses and specifies certain courses in accounting, economic analysis, tool design, production planning and control, and industrial relations. The option is available to qualified students who have successfully completed the first two years of the mechanical engineering curriculum. Application for the option is made to the Chairman of the Department not earlier than the third semester.

### FRESHMAN AND SOPHOMORE YEARS

(First, second, third and fourth semesters—See pages 142 and 143.)

#### JUNIOR YEAR

<i>Fifth Semester</i>	<i>Hours</i>	<i>Sixth Semester</i>	<i>Hours</i>
M. E. 205—Kinematics of Machines . . .	3	M. E. 210—Dynamics of Mach. . . . .	2
M. E. 230—Engineering Thermodynamics . . . . .	3	M. E. 306—Industrial Engineering Lab. . . . .	3
M. E. 241—Mechanical Lab. . . . .	2	M. E. 330—Engineering Thermodynamics . . . . .	3
M. E. 305—Industrial Engr. . . . .	3	C. E. 101—Mech. of Mats. Lect . . . . .	3
M. E. 310—Metal Processing . . . . .	3	C. E. 102—Mech. of Mats. Lab . . . . .	1
M. E. 339—Evaluation of Engineering Data . . . . .	3	Acct. 36—Elem. Accounting I . . . . .	3
		Humanistic-Social Studies . . . . .	3

#### SENIOR YEAR

<i>Seventh Semester</i>	<i>Hours</i>	<i>Eighth Semester</i>	<i>Hours</i>
M. E. 220—Machine Design . . . . .	3	M. E. 385—Tool Design . . . . .	3
M. E. 351—Steam Power Plants . . . . .	3	M. E. 358—Econ. Studies in Mech. Engr. . . . .	3
M. E. 380—Factory Production . . . . .	3	M. E. 381—Factory Design . . . . .	3
E. E. 119—Fund. of Elect. Mach. Lect. . . . .	2	Speech 175—Public Speaking . . . . .	3
E. E. 120—Fund. of Elect. Mach. Lab. . . . .	1	E. E. 121—Fund. of Elect. Mach. Lect. . . . .	2
M. E. 395—Engineering Personnel Practice . . . . .	2	E. E. 122—Fund. of Elect. Mach. Lab. . . . .	1
Humanistic-Social Studies . . . . .	3	Humanistic-Social Studies . . . . .	3
		Inspection Trip . . . . .	R

## Post-Graduate Studies in Mechanical Engineering

For the student who is interested in extending his preparation for work in advanced design, scientific research and development, or teaching, the Department offers post-graduate studies leading to the degrees of Master of Science and Doctor of Philosophy. The requirements for these degrees are described in the Graduate School Bulletin.

The Department of Mechanical Engineering is fully accredited by the Engineers' Council for Professional Development.

# *Graduate School*

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The University of Missouri offers graduate instruction in agriculture, including home economics; biological and physical sciences; education; engineering, including mathematics; fine arts; literature and philosophy; journalism; modern and classical languages; social sciences; and social work. The faculty of the Graduate School has charge of all graduate work in the University.

## **Admission**

Graduates of the colleges and universities comprising the Missouri College Union and of other reputable colleges and universities are admitted to the Graduate School. A student applying for admission is required to submit a transcript of his undergraduate record including a statement of his baccalaureate degree, and of any graduate work completed.

Admission to the Graduate School is not to be understood as implying admission to candidacy for advanced degrees, which is subject to the regulations indicated below.

Students desiring to do research in a laboratory science or to do research leading to the Ph.D. degree should write the chairman of the department in which he wishes to work in order that he may be advised as to whether or not facilities are available.

Students are admitted to the Graduate School by the Director of Admissions, from whom applications for admission may be obtained.

## **Dual Enrollment**

Seniors who at the beginning of any semester have a graduation requirement for the bachelor's degree of fifteen hours or less may be permitted, with the approval of the appropriate deans, to register simultaneously in the Graduate School for courses sufficient to make a full program. Such dual enrollment must be completed within one month of the beginning of the semester. The student is advised but not required to secure faculty approval for the courses which are to receive graduate credit. If he files a tentative program including these courses he can be assured that they will be included at a later date in a program for an advanced degree. If no such program is made out and approved by a faculty member there is no guarantee that they will be included in a program for an advanced degree. Appropriate forms for this program may be obtained from the Graduate office and when properly completed, filed with the Dean of the Graduate School.

All courses offered by the University are open to graduate students. Courses above 200 carry graduate credit if outside the major field. Courses above 300 carry graduate credit for all students. Courses above 400 are primarily for graduate students.

## **Degrees**

Admission to the Graduate School does not necessarily imply that a student becomes a candidate for an advanced degree. Some students will find it desirable

to take graduate work without planning for an advanced degree. Such students are welcomed to the Graduate School, especially if doing work of high quality, even though their advanced studies may not constitute an integrated program.

A majority of the students in the Graduate School wish to follow a well-planned program leading to formal recognition by the University in the form of a degree. A student becomes a candidate for an advanced degree after he has been in the University long enough to indicate by the quality of his work that he is capable not only of mastering definitely assigned tasks of an academic nature but also has the ability to organize his knowledge and develop a discriminating judgment, which is essential for advanced work. In order to become a candidate, a student plans for the degree in consultation with a major adviser of his own selection. In general, the field in which the candidate expects to do his major work will be the same field in which he has completed an undergraduate major. If he has not completed a satisfactory undergraduate major on entering the Graduate School, he will be expected to take enough additional undergraduate work to satisfy this requirement in addition to the requirements for the advanced degree.

*The Graduate School Announcement* gives details in connection with degree requirements. In general, these may be summarized under two headings: first, the work must be advanced in nature, and second, the quality of work must be high. The advanced nature of the work is implied in the above discussion of a prerequisite of an undergraduate major. The quality of work expected is such that a student should not expect to be a candidate for an advanced degree unless his undergraduate record is above average. At the conclusion of the work for an advanced degree an examination is always given, written or oral, or both.

There are five advanced degrees given by the University of Missouri. Three of these are master's degrees, which require approximately one year beyond the bachelor's degree. This year of work is devoted, to a large extent, to course work with the objective of giving a student a more thorough grounding in his specialized field and a more critical attitude toward the subject matter. Frequently a dissertation is required involving an original piece of research. The magnitude of this research problem, of course, cannot be great in view of the fact that it is a minor part of a program which totals approximately one year. These three master's degrees differ considerably in their objectives.

The degree of Master of Arts (A.M.) is designed to train a student for more advanced work and usually involves a dissertation. The degree is sometimes thought of as the first step towards the degree of Doctor of Philosophy. Successful completion of the work for this degree indicates that the student has, in general, obtained considerable mastery of a given subject matter field and also has some aptitude for research.

The degree of Master of Science (M.S.) is similar in its objective to the degree Master of Arts, the difference being primarily in the subject matter chosen. Most programs in science, including engineering, lead to this degree.

The degree of Master of Education (M.Ed.) has a quite different objective, as it is designed for those teachers or prospective teachers who have a rather definite vocational aim. No dissertation is required and the degree of specialization may not be great. On the contrary, a broad training is possible, including work in education and in one or more subject matter fields. The degree is designed to fit the needs of a particular student in his own teaching.

Two doctor's degrees are conferred by the University of Missouri. The degree of Doctor of Philosophy (Ph.D.) is primarily a research degree. After completing the degree of Master of Arts or the degree of Master of Science, a student normally devotes at least two more years fulfilling the requirements for the degree of

Doctor of Philosophy, a large fraction of this time being spent on a major research problem. Examinations of a general character which extend over several days are frequently required. The reading knowledge of French and German may well be anticipated by a student in his undergraduate studies. A student completing the program for the degree of Doctor of Philosophy is qualified to undertake original research either in a university or in industry. This breadth of training in subject matter combined with the more fundamental understanding of a subject acquired through a research investigation gives a student necessary background for college or university teaching.

The degree of Doctor of Education (Ed.D.) has objectives somewhat similar to those of the degree of Master of Education. The degree is a professional degree in the same sense as that in which the term is used for a degree in medicine or law. Less emphasis is placed upon research although a dissertation is required. There are no foreign language requirements. A student is expected to master the fundamentals of statistics and to use them if necessary in his dissertation. The degree is designed primarily for teachers and administrators in secondary schools.

A special bulletin of the Graduate School is issued periodically. This contains a detailed announcement of all courses that carry graduate credit, entrance requirements, rules and regulations of the Graduate School, and should be consulted by person desiring full information concerning the school.

*For the bulletin, or for further information concerning the work of the Graduate School, address the Office of the Dean, Graduate School, University of Missouri, 114 Jesse Hall, Columbia, Missouri.*



# *School of Journalism*

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The School of Journalism is a professional school. It is the oldest school devoted to education for journalism in the world, having begun instruction leading to a degree in the fall of 1908.

## **Teaching Plan**

The School's teaching plan requires four years of study above high school level for the Bachelor of Journalism degree, and five years of study for the combined degrees of Bachelor of Journalism and Bachelor of Arts.

The student working for the Bachelor of Journalism degree spends about three-fourths of his time in arts and science courses and one-fourth in journalism courses. The object is to give the student a knowledge of modern civilization, with emphasis upon American problems; a certain professional competence in the basic essentials of journalism, such as writing, editing, and advertising; and an appreciation of the newspaper as a social institution.

Specialization within journalism itself may be pursued after these basic essentials are cared for. A student may specialize in news and editorial work, advertising, rural or community journalism, newspaper management, photo journalism, agricultural journalism, home economics journalism, radio-television journalism, medical writing, or special writing for magazines and newspapers. Because of the time element, he cannot combine more than two of these specializations within the limitations of the usual four-year University program.

The School does not offer its professional work in journalism by correspondence.

## **Equipment**

The Journalism unit is formed by Jay H. Neff Hall, the gift of Ward A. Neff, a graduate, in memory of his father, who was formerly a Kansas City publisher; and Walter Williams Hall, dedicated to the memory of Dean Walter Williams, founder of the Missouri School of Journalism. These buildings, connected by an archway and tower, are located at the northeast corner of Francis Quadrangle. They constitute a modern and completely equipped newspaper and educational plant, well fitted for work in all departments of journalism.

All news, editorial, feature, photographic, and advertising work on *The Columbia Missourian*, a daily newspaper of general circulation for the city and county, is done by students in journalism, under direct supervision of faculty members, all of whom are men or women with professional experience. Thus laboratory practice is combined with work in the classrooms. It trains for a high standard of ethics and insures a better understanding of the problems that confront workers in the newspaper profession.

KOMU-TV, the University's commercial television station, operates on Channel 8 in Columbia with an experienced professional staff, offering qualified students opportunities for instruction, training and experience in news writing and processing, newsreel photography, all phases of programming, television advertising, and station management. The station is affiliated with NBC and ABC networks and serves viewers throughout the Central Missouri area. The KOMU-TV studios, offices, transmitter and 774-foot tower are on the South Farm, near Columbia.

Instruction is given in processing and daily radio broadcasting of both local and leased-wire-service news, through the facilities of radio station KFRU, Columbia, Missouri.

The Frank Lee Martin Memorial Library contains over 13,137 volumes relating to journalism and advertising, and receives about two hundred newspapers and two hundred periodicals from all over the world. In the University libraries are 721,150 volumes.

### **Typewriting**

It is expected that the student shall have a working knowledge of typewriting before entering the school.

### **Summer Session and Intersessions**

The School of Journalism offers some lecture courses and all laboratory courses during the Summer Session. Information will be found in the Summer Session Schedule of Courses.

Students adequately prepared may enroll for the Intersessions or short sessions which are held between regular University terms and during the Christmas, Thanksgiving and Easter vacations. In this catalog these courses are identified under "Statement of Courses" as "ss." Work in laboratory courses only and admission is by application and registration at the time specified in current bulletins.

### **Graduate Study**

A student should consult both the Dean of the Graduate School and the Dean of the School of Journalism before planning a program of work for a higher degree. The Master of Arts degree requires thirty-two hours of approved graduate courses, and the production of a satisfactory thesis. The degree of Doctor of Philosophy requires a period of at least six semesters without serious interruption, an acceptable dissertation, and the satisfactory meeting of all other requirements of the Graduate School. Requirements for the Ph.D. degree are not computed in terms of times and courses; the degree is conferred only on evidence of an actual contribution to knowledge of a character approved by competent judges.

### **Curriculum on the Operation and Care of Linotype**

A vocational curriculum on the care and operation of linotypes, with supplementary training in typesetting, typography, makeup, and presswork, is conducted under the general administration of the School of Journalism. These courses do not carry University credit.

### **Scholarships, Prizes, and Awards**

In addition to those scholarships, prizes, and awards open to all students in the University, a number are offered each year for students in journalism. The undergraduate scholarships are the Walter Williams Scholarship, the Lafayette Young Scholarship, the Benjamin Franklin Scholarship, the Theodore Roosevelt Scholarship, the John P. Herrick Scholarship, the Mrs. John Pierce Herrick Scholarship, the Harold Swanberg Medical Journalism Scholarship, the Borden Scholarship award in Journalism, the Reader's Digest Travel Fund, the Mary S. Pryor

Scholarship, the Greater Kansas City Newspaper Guild Scholarship, the Kansas City Press Club Scholarship, the Journalism Alumni Scholarship, the Oliver K. Bovard Memorial Journalism Scholarship, the Journalism Students' Association Scholarship, the Jay L. Torrey Scholarship, the Eugene Field Scholarship, and the John W. Jewell Scholarships. The Francis Scholarship in Creative Literature is open to all women students in the University showing special ability in the languages, the social sciences, or journalism. The Walter Williams Memorial Fellowship in International Press Problems is open to students working toward a doctorate, with a major in journalism. Prizes include the Chinese-American Essay Prize, the Kappa Tau Alpha Prize, the Alpha Delta Sigma Prize, the Gamma Alpha Chi Prize, the Sigma Delta Chi Prize, the Theta Sigma Phi Prize, the Kappa Alpha Mu Prize, and news and feature story prizes. Awards are the Walter Williams Award in Journalism, the Week-in-St. Louis Advertising Club Awards, the Agricultural Journalism Award, and the Sigma Delta Chi Honor Awards.

### **Journalism Week**

Addresses by journalists of state, national, and international importance are arranged from time to time throughout the school year. A large number of these are given at the annual Journalism Week, held in the last week of April or first week in May, which has brought wide recognition to the School. Meetings are open to the public. Anyone interested may obtain information about the program by writing a few weeks in advance to the Dean of the School of Journalism.

### **Bulletins on Journalism**

The School of Journalism tries to be of the greatest possible service to the profession of journalism in general, as well as to give instruction on the campus. One of the School's activities is the publication of a series of bulletins for distribution among workers in journalism. These now number 136 and most of those still in print may be obtained free.

For bulletins, address the Dean, School of Journalism, University of Missouri, Columbia.

### **Admission**

All communications regarding entrance should be addressed to the Director of Admissions, University of Missouri, Columbia, Missouri, who has charge of all matters relating to admission to any division of the University.

To enter the School of Journalism, obtain an application blank from the Director of Admissions and return it, giving the information required. Students eligible for admission will be notified by the Director of Admissions.

Before a student may be admitted to the School of Journalism, it will be necessary for him to pass the English Proficiency Test for Students in Journalism. This test is given each semester and in the Summer Session, and also not later than two days before each registration period. A student may take the test during the term immediately preceding his registration in Journalism. He must make application to the Director of Admissions 30 days before the end of that term, and will be notified of the testing date if eligible. (A student who has completed the course English 60—Exposition, in the University of Missouri, and has passed the course with a grade of "M" or better, will not be required to take the English Proficiency Test.)

Students admitted to the School of Journalism must present a grade average

of "M." Credit presented from an institution other than the University of Missouri must meet this requirement in terms of grade marks of that institution. Students are not admitted with a condition.

The School's students are made up of the following classes:

A. Students who have completed 60 credit hours (exclusive of the required work in physical training and military science) in the College of Arts and Science at the University of Missouri, or the equivalent. In the 60 hours of credit for admission, the following are specific requirements:

1. Ten hours in one foreign language, plus one additional course in the reading of the chosen language. If the student presents for admission two units in a single foreign language and continues with that language in college, he will be excused from the first five hours of this requirement. If he presents for admission three units in one foreign language and continues with that language in college, or has done two units so well that he can take a reading course in this language, he will be excused from the first ten hours of the requirement. If he presents for admission four units in one foreign language, and can pass an achievement test on the work of course three, he will be excused from the entire requirement.
2. One semester of either physical science (Astronomy, Chemistry, Geology, Physics), of biological science (Botany, General Experimental Psychology, Zoology), including laboratory, (with a minimum of four hours credit).
3. One semester of General Economics (with a minimum of three hours credit.)
4. One semester of American Government, or the equivalent (with a minimum of three hours of credit).
5. Six hours of credit in English Literature in addition to the six hours of Composition and Rhetoric. A student who is required to complete but one semester's work in Composition and Rhetoric, after the English placement test, shall be required to complete an additional course, either English 50 or 60, in order to satisfy the requirement.

While not required for admission, one or more of the following courses is urgently advised—General Sociology, Elementary Accounting, General Psychology, and Introduction to Philosophy.

An approved examination demonstrating achievement on the level of any of the five specific requirements for entrance will be accepted in lieu of course credits. Satisfaction of any requirements on this basis will not excuse any student from any part of the total credit requirement.

Students admitted as indicated above may complete the requirements for the Bachelor of Journalism degree in two years. Students who have more than two years of college credit may reduce the length of their stay, but the sequence of courses makes it necessary for every student to spread his professional courses over at least three semesters, sometimes adding an Intersession. The student who combines his studies in the School of Journalism with studies in the College of Arts and Science may obtain degrees in both in five years or less.

B. Students from other Divisions of the University, to whom certain courses in Journalism are open.

C. Students who have been graduated with an acceptable bachelor's degree from recognized colleges or universities, who will be admitted without reference to the specific requirements. A student so admitted may, however, be required to

include in his program such of the usual preliminary courses as may be considered necessary to acquire a satisfactory background for work in the school, including History 251 and not less than three additional hours of upperclass history. He must pass, before admission, the English Proficiency Test for Students in Journalism, which is administered through the office of the Director of Admissions.

### Requirements for Graduation

The School of Journalism confers one undergraduate degree, Bachelor of Journalism (B.J.). Appropriate notation is made on the diploma of the student who has specialized in Agricultural Journalism.

To obtain the degree of Bachelor of Journalism (B.J.), the student must fulfill the following conditions:

A. He must be regularly admitted to the School.

B. He must complete at least thirty credit hours and thirty grade points (see paragraph below) in professional Journalism, including these basic courses totaling sixteen credit hours:

	<i>Hours</i>
100f, 101w—History and Principles of Journalism .....	6
103f, w, s—News .....	3
110f, w, s—Copyreading I .....	2
111f, w, s, ss—Copyreading II .....	2
120f, w, s—Advertising Principles and Practice .....	3
189f, w, s—Senior Assembly .....	0

In addition he must complete certain courses required of those who elect specific majors in Journalism, as

#### NEWS-EDITORIAL MAJOR

(An additional 10 credit hours required)

	<i>Hours</i>
106f, w, s, ss—Reporting .....	3
307f, w, s, ss—Advanced Reporting .....	3
111f, w, s, ss—Copyreading II (additional) .....	2
Elective .....	2

#### ADVERTISING AND PRODUCTION MAJOR

(An additional 12 credit hours required)

	<i>Hours</i>
321f, w—Advertising Copy, Layout, and Production .....	3
323f, w, s, ss—Advertising Salesmanship .....	3
328f, w, s, ss—Classified Advertising .....	2
or	
329f, w, s, ss—Advanced Advertising Salesmanship .....	2
336f, w, s—Typography and Printing Processes .....	2
Electives from the following group .....	2
322f—Psychology in Advertising (alternate fall semesters) .....	2
324f, w, s—Advertising Campaigns .....	2
325f, w—Newspaper Promotion .....	2
326f, w, s—Radio-Television Advertising .....	2
327f, w—Retail & Direct Advertising .....	3
330f, w, s—National Advertising Markets and Media .....	2
331f, w—Advertising Problems .....	2
332f, w—Public Relations .....	3
333f, w, s—Television Commercial Copy and Promotion .....	2

## SPECIAL WRITING MAJOR

(An additional 10 credit hours required)

	Hours
106f, w, s, ss—Reporting .....	3
Electives from the following group .....	7
360f, w, s—Feature and Special Articles .....	3
361f, w, s—Magazine Article Writing .....	2
305f, w, s—Book Reviewing .....	2
364w—Industrial and Business Periodicals .....	2

## THE WEEKLY AND SMALL DAILY MAJOR

(An additional 13 credit hours required)

	Hours
106f, w, s, ss—Reporting .....	3
336f, w, s—Typography and Printing Processes .....	2
171w—The Weekly and Small Daily: Editorial Side .....	3
172f—The Weekly and Small Daily: Business Side .....	3
373w—The Community Newspaper .....	2

## NEWSPAPER MANAGEMENT MAJOR

(An additional 10 credit hours required)

	Hours
325f, w—Newspaper Promotion .....	2
172f—The Weekly and Small Daily: Business Side .....	3
374f, w, s—Newspaper Circulation .....	3
375f, w, s—Newspaper Organization and Management .....	2

## PHOTO-JOURNALISM MAJOR

(An additional 10 credit hours required)

	Hours
138f, w, s—Principles of Photoengraving .....	2
140f, w, s—Press Photography .....	3
141f, w, s—Advanced Press Photography .....	2
142f, w, s—Advertising and Free Lance Photography .....	2
Electives from the following group .....	1
143f, w, s, ss—Staff Photography .....	1-3
343f, w, s, ss—Advanced Staff Photography .....	1-2
344f, w, s—Picture Editing and Picture Transmission .....	3

## RADIO-TELEVISION MAJOR

(An additional 12 credit hours required)

	Hours
154f, w, s—Radio-Television Theory and Techniques .....	2
Electives from the following group .....	10
106f, w, s—Reporting .....	3
155f, w, s—Radio and Television News .....	2
156f, w, s—Radio-Television News Processing .....	3
157f, w, s, ss—Newscasting .....	3
304f, w, s—Communications Law .....	2
322f, (alternate)—Psychology in Advertising .....	2
326f, w, s—Radio-Television Advertising .....	2
333f, w, s—Television Commercial Copy & Promotion .....	2
353f, w, s—Cinematography .....	2
356f, w, s—Television Production .....	3
358f, w, s, ss—Television News Laboratory .....	3
359f, w, s—Special Events in Radio and Television .....	3

C. He must complete at least twenty hours in the College of Arts and Science, the School of Business and Public Administration, or other divisions intended for upperclassmen (listed elsewhere in this catalog by numbers 100 and above) after he has attained junior status. The courses included in these twenty upperclass hours must be approved by the Dean of the School of Journalism, and must include History 251, Recent United States History, and not less than three additional hours of upperclass history.

D. He must present at least ten hours of elective credit for work done either in journalism or in other divisions at his own option, and with the approval of the Dean of the School of Journalism. Thus the student presents sixty hours for admission and adds thirty hours of professional journalism courses, twenty hours of upperclass arts and science or other division credit, and ten hours of electives, making 120 hours of credit required for graduation.

E. In addition to these credit hours, the student's record must satisfy the following requirements:

An average grade of M on admission.

An average grade of M in professional journalism courses.

An average grade of M in his record on graduation. This requires that a student who presents on his total record more than the required number of hours must balance the additional hours by an equal number of grade points.

In computing these averages, work done at other institutions and accepted for admission or for advanced standing at the time of admission will be rated invariably as of M grade.

No student in the School of Journalism may take more than sixteen hours a semester except that a student who has established an S average the year before may carry seventeen or eighteen hours, and one who has established an E average may carry nineteen hours; in both instances with special permission of the Dean. No student may take less than twelve hours of work in one semester, except that the Dean may reduce the minimum in necessary cases. Eight hours is the maximum for the Summer Session.

## Special Courses

A special course sequence is provided leading to the degree of Bachelor of Journalism (in Agricultural Journalism) and two others for students who wish to specialize in a combination of home economics and journalism subjects, or in medical writing.

*For complete requirements for special sequences and for further information concerning the work of the School of Journalism refer to the Announcement of the School of Journalism, or address the Office of the Dean, School of Journalism, University of Missouri, 100 Jay H. Neff Hall, Columbia, Missouri.*



# *School of Law*

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Established in 1872, the School of Law is one of the oldest law schools west of the Mississippi River. Since its establishment it has kept in advance of the requirements for admission to the bar.

The School has been approved by the Section on Legal Education and Admission to the Bar of the American Bar Association since its first classification of American law schools, and it is a charter member of the Association of American Law Schools.

## **The Law Building**

Lee H. Tate Hall, the School's building, a modern and completely equipped structure, is located at the southeast corner of Francis Quadrangle. It was erected in 1927, as a memorial to the late Lee H. Tate, a graduate of the School in the class of 1913. This fine and useful memorial was made possible largely through the generosity of the late Mr. and Mrs. Frank R. Tate of St. Louis, the parents of Lee H. Tate.

## **The Law Library**

The law library contains approximately 106,000 volumes and includes both the original and the reprints of the English reports, the Irish, Scotch, and Canadian reports; several sets of the reports of the Supreme Court of the United States; the reports of all of the federal courts; all of the state reports; full sets of the National Reporter System; the necessary digests, and a valuable collection of statutes, session laws, standard treatises, legal periodicals and encyclopedias; a general selection of the various services reporting administrative regulations and rulings, new court decisions, new statutes and amendments to existing laws.

## **Aims and Methods of the School**

The School of Law exists to provide a thorough training in the law so as to equip students for the practice in all jurisdictions where the Anglo-American system of law prevails and particularly to serve the state and its bar. The School also recognizes a duty to the state to prepare its graduates for public service and public leadership. Students who do not intend to practice find the course valuable training for citizenship and for public careers.

The School of Law does not seek merely a large number of students, and the entrance requirements are such as to admit only those whose education and maturity fit them for serious study. Through the study and discussion of cases and statutes the School seeks to impart an organized knowledge of the principles of the Anglo-American system of law, to develop a capacity for legal analysis of problems with which lawyers and judges must deal, and to inculcate a highly developed sense of professional responsibility.

Emphasis is placed upon the origin and growth of legal principles, upon the social factors which produced them, and upon their fitness in the light of present conditions. As a part of the training for the practice of law, it is desirable that prior to graduation all students in the School of Law spend at least one summer in

a law office as an apprentice. A student may thus acquire training of a practical nature which it is impossible to give in the School, and at the same time acquire professional attitudes and a realistic acquaintanceship with professional problems.

The School attempts to serve the bar of the state by the publication of the Missouri Law Review, and by co-operating in various ways with the bar to further the best interests of the profession and in the development of jurisprudence of the state.

The case method of instruction is employed, supplemented by statutory and other legal materials and by problems and opportunities for individual work in legal writing. Particular effort is made to train the students in the procedural side of the law. The instruction of the classroom is supplemented by the work of the Case Clubs, and in the trial of cases as a part of the course in Trial Practice. In many courses emphasis is placed on the drafting of legal instruments and research. The methods conform to the most modern standards of legal education.

### Requirements for Admission

The following persons are eligible for admission to the School of Law:

First, persons who have received a bachelor's degree from the University of Missouri or from any institution accredited therewith; and

Second, persons who have not received a bachelor's degree, but who have completed in residence at the University of Missouri or any other university or college accredited therewith, at least ninety (90) semester hours of college work acceptable for a bachelor's degree at the University of Missouri.

The following courses (whether or not required of all students) may not be used in satisfying the ninety (90) hour requirement: correspondence courses; and non-theory courses in military, air, and naval science, hygiene, domestic arts, physical education, vocal or instrumental music, practice teaching, teaching methods and techniques, and similar non-theory courses.

All of the college work undertaken by persons who have not received a bachelor's degree, exclusive of correspondence courses and such courses as the non-theory courses described above, must have been passed either with a scholastic average of "M", "C", or their equivalents, or with a scholastic average at least equal to the average required for graduation in the institutions attended, whichever average is higher.

Each student admitted will be required to furnish a written statement as to his previous attendance at other law schools, and as to his previous applications for admission to other law schools.

The School of Law may refuse admission to any person whose previous record shows work of an inferior or unsatisfactory quality.

### Advanced Standing

A maximum of one year's credit may be allowed toward the degree of Bachelor of Laws for work successfully completed in another law school which at the time the credit was earned was a member of the Association of American Law Schools. The right is reserved to refuse such credit, in whole or in part, or to allow it conditionally, and such credit may be withdrawn for poor work here. A person transferring from another law school with advanced standing must show that at the time he began the study of law at the other law school he could have met the requirements then in force for admission to the University of Missouri School of Law.

Applications for advanced standing should be made to the Dean and accompanied by certified transcript of records showing college and law credits.

### Pre-legal Preparation

While no prescribed course of study is required of pre-legal students for admission to the School of Law, courses that require a maximum amount of work and independent thinking on their part and which will require them to exert their best efforts will constitute the best preparation for the study of law. A more complete statement may be found in the Announcement of the Law School.

### Combined Curriculum in Arts and Law

Seniors in the College of Arts and Science may elect courses from the first year in the School of Law for a maximum credit of thirty hours. Such thirty hours of law work are acceptable to the Faculty of the College of Arts and Science towards a Bachelor of Arts degree. A combined curriculum of this character will enable the student to obtain the degrees of Bachelor of Arts and Bachelor of Laws in six years, or by attending summer sessions the period of study under the combined curriculum may be reduced.

All specific course requirements for the Bachelor of Arts degree under the combined curriculum in Arts and Law must be completed by the end of the junior year in the College of Arts and Science. If this is to be accomplished a student will need to be fully advised throughout his undergraduate registration. Information concerning these requirements will be furnished upon request by the Dean of the College of Arts and Science.

### Requirements for Graduation

The curriculum of the School of Law extends through three academic years of two semesters each.

Upon favorable recommendations of the Faculty of Law, the degree of Bachelor of Laws will be conferred upon those students who:

1. Have pursued in residence the study of law for at least three academic years, or the equivalent, two of which, including the last, must have been completed in this School. In order to count resident study in satisfaction of this time requirement a student in this school must carry courses aggregating not fewer than twelve hours per semester. A student in this School carrying courses aggregating fewer than twelve hours per semester will receive only proportional time credit. In case a student fails to pass nine hours of work in a semester he shall not receive residence credit in excess of the ratio that the hours passed bear to nine.
2. Have passed examinations in all required courses.
3. Have passed examinations in law courses aggregating not fewer than eighty-four credit hours and have secured at least fifty-six points. One point is given for each hour in those courses in which the student receives the grade of M; two points for each hour in those courses in which the student receives the grade of S; and three points for each hour in those courses in which the student receives the grade of E. All students are required to earn the fifty-six points necessary for graduation from the first eighty-four hours of work taken in this School. The point requirement will be proportionately reduced for students who are allowed credit toward the degree for work successfully completed in another law school, except that credits transferred for work taken in another school in which a grade below "M" is received may

not be counted to reduce the number of points required for graduation from this school. Such credits, however, may be counted in the total number of hours required for graduation.

Students who discontinue their residence in this School for two or more consecutive years must, after their return to this School, meet the degree requirements in force at the time of their readmission.

No student will be permitted to carry more than fifteen hours of classwork per week in any semester or summer session except under extraordinary circumstances and with the permission of the Dean.

The curriculum requiring three years residence for its completion is one arranged for full-time students and is prescribed by the standards of the American Bar Association issued on February 1, 1930. Those requirements provide that an approved school "shall require its students to pursue a course of three years' duration if they devote substantially all of their working time to their studies and a longer course equivalent in the number of working hours if they devote only part of their working time to their studies."

Unless, therefore, a student enrolled in the regular full-time course in this School devotes substantially all of his time to his law work, he is not meeting the requirements of the American Bar Association. Accordingly, a student who is engaged in outside work which is calculated to prevent devoting substantially his full working time to the study of law will be required to lengthen the period of his study. The standards of the American Bar Association provide that a part-time course "shall cover a period of at least four years of at least 36 weeks each and shall be the equivalent of a full-time course." Students in this School who are not devoting substantially all of their working time to their studies will be required to arrange their schedule and curriculum on the basis of a part-time course.

# *School of Medicine*

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The School of Medicine of the University of Missouri was built upon the Medical Department of Kemper College ("McDowell Medical College") founded in St. Louis in 1840. This was the first medical school established west of the Mississippi River. In 1845 it became a department of the University of Missouri. As such it functioned for ten years, being discontinued in 1855. The School was re-established in Columbia in December, 1872, with a curriculum of only two years, as most medical schools in the country. In 1891 the curriculum was extended to three years, and in 1899, to the full four years. In 1910 the last two years were discontinued.

In 1951 the General Assembly appropriated monies to enable the University to undertake the expansion of its program to a full four year curriculum leading to the degree of Doctor of Medicine. Additional appropriations were made in 1953 and the construction of a new hospital, medical school building, and nurses home is currently underway. The curriculum for the third year was instituted in the fall of 1955; the fourth year's work will be offered in the fall of 1956.

The School of Medicine is an integral part of the University, located on the University campus. In addition to courses for medical students it offers courses to students enrolled in other divisions of the University, including the Graduate School, insofar as facilities permit.

The School of Medicine always has stood for the highest standards of medical education and was a pioneer in introducing and developing laboratory methods. A thorough course of instruction with a high standard of scholarship has been established and maintained.

The aim of the School of Medicine is threefold:

- (1) To give thorough laboratory and clinical training in all medical subjects.
- (2) To contribute to the advancement of medicine by original investigation in the various sciences upon which modern medicine is based.
- (3) To promote the diffusion of medical knowledge throughout the State.

## **Buildings and Equipment**

*University Medical Center:* The new University of Missouri Hospital, the Medical Sciences Building and the Nurses Home will comprise the Medical Center. At the present time the School of Medicine consists of four buildings: McAlester Hall, where most of the preclinical teaching is centered, and the University Hospital, comprising Parker Memorial, Noyes Hospital and the Student Health Center.

*Medical Library:* The Medical Library is centrally located in the corridor between the Hospital and the Medical Sciences Building. It has been designed to facilitate study and research, and will provide comfortable and well-lighted study space for 125 persons and shelf space for 100,000 volumes. In addition to the customary reading room and bookstack areas, there are thirty-two individual study carrells adjacent to the stacks, seven study and conference rooms, and a browsing area with display racks for 610 current periodicals. Equipment for reading microfilm is available.

The Library collections are in the process of being considerably augmented in order that they will be adequate for the new third and fourth year curriculum and

for the teaching and research programs of the new Medical Center. There are, at present, 22,000 bound volumes in the Library. Six hundred and thirty periodical titles are received currently and approximately three hundred of these are available in complete files. In addition, many titles in the biological and physical sciences may be found in the collections of the University Library.

### **Fees and Expenses**

Fees for the first year approximate \$319.00; the second year about \$312.00; and fees for both the third and fourth years approximate \$400.00. Textbooks and supplies average about \$125.00 the first year, \$235.00 for the second year, and about \$150.00 for both the third and fourth years. In addition, each student furnishes his own microscope.

### **Scholarships**

The Rollins Scholarship in the School of Medicine is a prize of \$50, which is awarded to that member of the first-year class who has made the best record during the course.

The University of Missouri Medical School Foundation offers an annual scholarship of \$50.00 to be awarded to a member of the sophomore class selected by the Faculty of Medicine for excellence in scholarship and scientific leadership.

The Dr. J. C. Parrish Scholarship of \$250.00, established in memory of the late Dr. J. C. Parrish, prominent physician of Vandalia, Missouri, and former Curator of the University of Missouri, is awarded annually to a member of the third year class selected by the Faculty of Medicine for excellence in scholarship and scientific leadership.

### **Extension Laboratory Service**

The Department of Pathology will, within the limit of its capacity, receive for examination and diagnosis such material as may be submitted by physicians of the state.

### **Requirements for Admission**

*Admission to First-Year Class:* The requirements for admission to the School of Medicine are the satisfactory completion of (1) a four-year high school course or its equivalent, and (2) three years of work or ninety normal hours of credit (exclusive of the required work in physical education and military science) in the College of Arts and Science of the University of Missouri or its equivalent. The credit must include normal credit hours as follows:

English Composition and Literature, 6 hours; German, French, Spanish, or Latin, 8 hours; General Zoology, 5 hours, of which at least 2 hours must be laboratory work; Comparative Anatomy, 5 hours, of which at least 2 hours must be laboratory. (At the discretion of the Committee on Admission 8 hours of General Zoology, of which at least 4 hours are laboratory, may be accepted in lieu of the 5 hours of General Zoology and the 5 hours of Comparative Anatomy). General Physics, 8 hours, of which at least 2 hours must be laboratory work; Inorganic Chemistry, 8 hours, of which at least 4 hours must be laboratory work; Organic Chemistry, 5 hours, of which at least 2 hours must be laboratory work.

No course which counts toward the degree in medicine may be included in the hours required for admission.

Selection of medical students from the applicants will be made by the Committee on Admissions. They will be selected upon the basis of their scholastic standing in their college work, upon their character as disclosed by personal interviews and recommendations, and by their grades on the Medical College Admission Test of the Association of American Medical Colleges. Applicants for the class entering in September, 1957 should take this test at their colleges in May, 1956. The last chance will be in November, 1956.

In the case of any applicant, the Committee reserves the right to require an examination in any or all pre-medical subjects.

The classes are limited in membership because of the inability of the school to accommodate all qualified applicants for admission. Application for admission should be in the hands of the Director of Admissions about ten to twelve months prior to the opening of the session.

Due to the large number of demands for places in our Medical School by qualified students who are residents of the State of Missouri, it is not possible to consider any applicants to the School of Medicine other than bona fide Missouri residents. Therefore, applications will be accepted only from those students who are residents of the State of Missouri.

All correspondence regarding admission should be addressed to the Director of Admissions, University of Missouri, Columbia, Missouri.

It is the policy of this school not to accept for admission students who have failed or have been dismissed by other medical schools.

## Curriculum and Degrees

All candidates for the degrees, Doctor of Medicine and Bachelor of Arts, must satisfy the legal requirement in History and Government as described under "General Regulations and Requirements" in the paragraph, "Requirement in American History, Institutions, and National and State Constitutions."

Where a student is working toward two bachelor's degrees, the requirement will apply to the first degree only.

*Doctor of Medicine:* Students may receive the degree of Doctor of Medicine (M.D.) upon the completion, while enrolled and in residence in the School of Medicine, of the required medical curriculum.

*Bachelor of Arts:* The combined course in Arts and Science and in Medicine is available only to students who have completed their junior year of college in residence in the University of Missouri. It leads to the degree of Bachelor of Arts conferred by the College of Arts and Science at the end of one year in Medicine. Such students must meet the requirements for admission to the School of Medicine and, in addition, complete the freshman, sophomore, and junior requirements of the College of Arts and Science and sufficient additional work in science so that a suitable group-major or major-minor program may be completed as required in the College of Arts and Science. Since this combined course necessitates a correctly planned program, the student should consult the official advisers of the College of Arts and Science not later than the second semester of the freshman year, and it is essential that he have the guidance of pre-medical advisers at each enrollment period.

Students who have received the degree of Bachelor of Arts in the combined course just mentioned may receive the degree of Bachelor of Science upon completion of the second-year curriculum in the School of Medicine.

A special bulletin of the School of Medicine is issued each year. This contains



a detailed announcement of all courses, entrance requirements, schedules, a roster of students and the rules and regulations of the School of Medicine. This bulletin should be consulted by persons desiring full information concerning the School of Medicine. For information, address Office of the Dean, Faculty of Medicine, University of Missouri, 117 McAlester Hall, Columbia, Missouri.

### **Hospital Buildings**

The first building of the University Hospital was made possible by the gift of William L. Parker and was therefore named the Parker Memorial Hospital. In the words of the donor, the hospital is "for the benefit of the School of Medicine." The surgical amphitheater and operating rooms were provided by a gift of the late Adolphus Busch. In 1924 a new building connected with Parker Memorial Hospital was completed and named the Noyes Hospital after Dean Guy Lincoln Noyes. The hospitals are equipped with modern service laboratory and complete X-ray, metabolic and electro-cardiographic equipment. During 1937 the new Student Health Center was completed and opened for use. In this building, in addition to the fully equipped X-ray and out-patient department for students, there is an entire floor utilized for treatment for contagious diseases.

The University Hospital has a capacity of 100 beds in addition to the 50 beds available in the Student Infirmary.

The new University of Missouri Hospital, currently under construction, will have a capacity of 441 beds and 35 bassinets plus a large modern out-patient department. These beds, in addition to those above, will bring the total bed capacity of the School of Medicine to 591 beds exclusive of bassinets. The new School of Medicine Building is designed for 75 students in each class.

In addition to these facilities, the School of Medicine maintains teaching affiliations with the Ellis Fischel State Cancer Hospital in Columbia and the State Psychopathic Hospital in Fulton.

### **Crippled Children's Service**

In 1927 and under an Act of the Legislature a state service for treatment of indigent crippled children was established under the administration of the University of Missouri. Clinics are held in various counties throughout the state and within budgetary limitations, treatment is available to any indigent child who in the opinion of proper medical examiners may be benefited by orthopedic treatment. Through a bequest by Mrs. Georgia Brown Blosser, there is now connected with the Crippled Children's Service the Georgia Brown Blosser Home at Marshall, Missouri. This was opened January 1, 1934. For further particulars, address the Director, State Crippled Children's Service, University of Missouri, Columbia, Missouri.

# *School of Nursing*

## *in the School of Medicine*

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In 1949 the Board of Curators, acquainted with the need of the people of Missouri for better health care, established the Department of Nursing Education within the School of Medicine. The Basic Professional Curriculum was approved by the Board in December, 1950, and the first students were admitted in September, 1951. The Supplemental Program for Graduate Nurses was approved in May, 1951. All students in the school are candidates for degrees.

The School of Nursing was established by action of the Board of Curators in June, 1954, replacing the Department of Nursing Education. It aims to assist its students to develop as individuals and as members of their profession, as well as to prepare them to render quality nursing service. It also aims to provide a sound academic and professional background for advanced degrees.

At the present time the School of Nursing is located at the corner of 9th Street and University Avenue, just east of Francis Quadrangle. This building contains offices, classrooms, a demonstration and practice laboratory, a reading room and a conference room. The laboratory for instruction in the care of patients is located in the University Hospital.

The new University Medical Center, scheduled for completion at an early date will house the School of Nursing. Students will have most or all of their clinical experiences in the University Hospital and Outpatient Department which are now under construction. The hospital will accommodate 441 adult patients and 35 new-born babies, bringing the total facilities of the University teaching center to 591 beds, exclusive of bassinets.

Students in nursing utilize the instructional and recreational facilities of the Medical School and other divisions of the University. Well-equipped laboratories and classrooms are used for teaching and practice in the various sciences; there are also large and small classrooms for lecture and discussion groups, and audio-visual aids are frequently employed.

Books and periodicals on nursing and related subjects are located in the library of the Medical School; a number of these titles are duplicated in the General Library. The School of Nursing also has current literature on nursing as well as a wide variety of reference materials. All hospital divisions will be equipped with ward libraries.

### **The Basic Professional Curriculum**

This curriculum leads to the degree of Bachelor of Science in Nursing and is designed to meet the needs of students who have had no previous education for nursing. The curriculum is accredited by the Missouri State Board of Nursing, and graduates of the School are eligible for admission to the licensing examinations in Missouri and other states.

The curriculum is arranged so that the first two semesters may be taken either at the University or in some other accredited college or university. During this time the work is largely academic and pre-professional in preparation for experi-

ence in the care of patients and their families. The clinical portion of the course is taken in the University Hospital or through affiliation with hospitals which have received full University approval. Completion of requirements is possible within four calendar years, but students may prolong the course to five or more years by planning with the academic adviser.

Students presenting satisfactory credits may be admitted from another accredited college or university at the beginning of any regular semester or summer session. Application for advanced standing credit should be made to the School of Nursing, and should be accompanied by certified transcript of records.

### Admission Requirements

Students who wish to enroll in the four-year nursing curriculum must meet the following requirements:

1. Graduation from an accredited four-year high school or prove equivalent competency by examination.
2. Present at least eleven academic units from the field of mathematics, social studies, science, foreign language, and three units of English. Additional units to total sixteen must be selected from these or from any other courses, except physical education, accepted by an accredited high school for its diploma. However, not more than two units in diversified occupations may be accepted.
3. Take the usual English Placement Test. Any student deficient in this test will be required to pass a course in composition and rhetoric, meeting five times a week for three hours credit during each of the first two semesters.
4. Pass the usual speech test or take a two hour course in speech.

### Program of Studies

#### FIRST YEAR

<i>First Semester</i>	<i>Hours</i>	<i>Second Semester</i>	<i>Hours</i>
Engl. 1—Composition and Rhet. ....	3	Engl. 2—Comp. & Rhet. ....	3
Zoology 1—General Zoology ....	5	Chem. 1—Inorganic Chemistry ....	5
Home Ec. 32—Foods ....	3	Socio. 1—General Sociology ....	3
Psych. 1—General Psychology ....	3	Nurs. 10—Interpersonal Relations ...	2
Nurs. 2—Orientation to Nursing ....	2	Nurs. 50—Growth & Development of the Individual ....	3
Nurs. 1—Introduction to College ....	0	Physical Education ....	1
Physical Education ....	1		
	<hr/> 17		<hr/> 17

<i>Summer Session</i>	<i>Hours</i>
Anatomy 201—Elem. Anatomy ....	4
Home Ec. 130—Food in Relation to Health ....	3
Physical Education ....	1
	<hr/> 8

#### SECOND YEAR

<i>First Semester</i>	<i>Hours</i>	<i>Second Semester</i>	<i>Hours</i>
Phys. 201—Ele. of Physiology ....	5	Educ. A102—Educ. Psych. ....	3
Bact. 105—Pub. Health Micro ....	4	Nurs. 120—Med. Surg. Nurs. ....	5
Nurs. 100—Fund. of Pt. Care I ....	3	Nurs. 121—Med. Surg. Nurs. ....	3
Nurs. 101—Ele. Materia Medica ....	1	Nurs. 102—Fund. of Pt. Care II ....	3
Nurs. 119—Int. to Med. Surg. Nurs. .	2		
Physical Education ....	1		
	<hr/> 16		<hr/> 14

<i>Summer Session</i>	<i>Hours</i>
Speech 175—Public Speaking . . . . .	3
Nurs. 122—Med. Surg. Nursing . . . . .	1
Nurs. 123—Med. Surg. Nursing . . . . .	1
	<hr/>
	5

## THIRD YEAR

<i>First Semester</i>	<i>Hours</i>	<i>Second Semester</i>	<i>Hours</i>
Nurs. 124—Med. Surg. Nursing . . . . .	4	Nurs. 125—Med. Surg. Nursing . . . . .	2
Nurs. 103—Fund. of Pt. Care III . . . . .	1	Nurs. 140—Ped. & Ped. Nursing . . . . .	4
Nurs. 130—Obs. & Obstetric Nurs. . . . .	4	Humanities Electives . . . . .	6
Sociology Elective . . . . .	3		<hr/>
Humanities Elective . . . . .	3		12
	<hr/>		
	15		

<i>Summer Session</i>	<i>Hours</i>
Nurs. 150—Public Health Nurs. . . . .	3
	<hr/>
	3

## FOURTH YEAR

<i>First Semester</i>	<i>Hours</i>	<i>Second Semester</i>	<i>Hours</i>
Nurs. 170—Contemporary Nursing I . . . . .	2	Nurs. 171—Contemporary Nurs. II . . . . .	3
Nurs. 160—Psych. & Psych. Nurs. . . . .	5	Nurs. 175—Senior Nursing . . . . .	3
History 20—Amer. History (5)		Humanities Elective . . . . .	3
or			<hr/>
Pol. Sci. 1—Amer. Govt. (5) . . . . .	5		9
	<hr/>		
	12		

## Supplemental Program for Graduate Nurses

The School of Nursing offers a professional curriculum for graduate nurses who have completed a diploma course in a state accredited school of nursing and who are candidates for the degree of Bachelor of Science in Nursing. Enrollment in the program is limited to graduate nurses who are eligible for admission to the University and who are licensed to practice in some state or territory of the United States.

This program provides opportunity for study of subjects designed to broaden the student's cultural appreciation and understanding as a person and as a citizen, and for an enriched study of professional nursing. It offers a stronger foundation for nursing service and attempts to give general knowledge previous to specialization.

Advanced Standing Credit: Credit for courses completed in other accredited colleges or universities may be accepted on transfer provided they are of recent origin and a grade of M or better was obtained. Normally, transfer credit will be given only for those courses regularly approved in the University. Official notice of advanced standing credit is given students whose credentials are filed with the Director of Admissions in sufficient time before the opening of the term for which application is made.

The Graduate Nurse Qualifying Examination, Plan C, is given twice annually by the University Counseling Bureau; a psychological examination and a test for reading ability are also required. All students who are candidates for degrees must pass these tests during their first semester in the University, or (if they are part-time students) by the time they have completed eighteen (18) semester hours of credit.

Fifty-two hours of advanced standing credit are given to those students who do creditable work during their first semester on campus, pass the qualifying examination, and are recommended for such credit by the faculty of the School of Nursing.

### Requirements for the Degree

Candidates for the degree are required to present a minimum of 124 hours and 124 points. For the purpose of evaluation, E equals 3 points; S, two points; M, one point. No points are given for I and F grades.

The last twenty-four hours of work must be taken in residence. No more than twenty hours earned through extension or correspondence will be accepted as credit toward the degree.

Candidates must pass the Junior English Examination if grades on the English Placement Tests indicate inferior achievement in this area, as determined by the University Counseling Bureau, or if courses in Composition and Rhetoric were taken in some other college or university.

The following groups or courses must be completed:

	<i>Hours</i>
English 1 and 2, Composition and Rhetoric	6
Humanities, of which six hours must be literature (Fine arts, literature and philosophy)	12
Speech, Public Speaking	3
Physical Science	5
(Chemistry, physics, geology, astronomy, mathematics)	
Social Science, including 5 hours of American Hist. or Govt.	16
(Economics, history, political science, sociology, social work, psychology, rural sociology. Educational psychology is required)	
Nursing	20
(Administration, teaching, public health, history and trends)	
Free electives	10

### Expenses

Students in the School of Nursing are charged the usual University fees when in residence. Students in the Basic Professional Curriculum do not pay such fees if they are receiving experience through affiliation with another institution, but may be responsible for fees to those institutions. The average total cost of fees, room, board and uniforms for the entire four-year basic program is about \$1600.00 at the present time; however, this figure may be changed when the new nurses' dormitory is completed.

# *School of Mines and Metallurgy*

## *(at Rolla)*

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In 1870, the General Assembly, in accepting the donation by the federal government of lands for educational purposes, established an Agricultural College and School of Mines and Metallurgy, "the leading object of these colleges" being "to teach such branches as are related to agriculture and mechanic arts and mining, including military tactics, and without excluding other scientific and classified studies, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life." The Statutes fix the status of the School of Mines and Metallurgy as a division of the University of Missouri. Its affairs are under the immediate supervision of the Executive Committee, consisting of three members of the Board of Curators of the University.

### **Location**

The School of Mines and Metallurgy is at Rolla, the county seat of Phelps County, on the St. Louis and San Francisco Railroad, approximately halfway between St. Louis and Springfield, at the intersection of United States Highways 63 and 66.

### **Equipment**

*Grounds and Athletic Field:* The campus of the School of Mines and Metallurgy is situated in the highest part of the City of Rolla and is thirty-two acres in extent. The Jackling Athletic Field has a baseball diamond, a football gridiron, and a 440-yard running track, and tennis courts. The golf links of the school, containing approximately eighty acres, is situated just west of the city limits and within four blocks of the campus.

*Buildings:* There are twenty permanent buildings on the campus: Mining Building, Metallurgy Building, Harris Hall, Engineering Laboratories Building, Norwood Hall, Experiment Station Building, Chemical Engineering Building, Chemistry Hall, Rolla Building, Military Building, Parker Hall, Jackling Gymnasium, Dean's Residence, Power Plant, Cafeteria, Dormitory, Infirmary, Warehouse, and Workshop. In addition there are a number of temporary classroom buildings and dormitories.

*Library:* The library contains 86,302 carefully selected volumes, not including unbound material. Works on engineering, mathematics, chemistry, physics, mining, metallurgy, geology and mineralogy afford students reading in connection with their classwork. The library also contains standard works in English and American poetry, fiction, biography, and history. It is well provided with encyclopedias and works of general reference.

### **Laboratories**

*Mining Engineering:* The lecture rooms, offices, exhibit room, drafting room and laboratories of mining and petroleum are housed in the Mining Building.

Working models and displays of mineral occurrences, mining methods, head frames, mine timbering, petroleum production apparatus, mine rescue equipment, and various other mining and petroleum appliances are maintained in the exhibit room.

The Mining Department is completely equipped and furnished with classrooms, shop facilities, dark room, design-drafting room, instrument storage, laboratories, and surveying supplies to carry on all phases of the work offered in mining engineering. In addition, a full-scale experimental mine and quarry, located about one and one-half miles from the campus, is maintained for study and research in mining methods, and mine and mineral land surveying.

Petroleum Engineering is furnished with a modern student laboratory, research laboratory, and special equipment. The latter includes, in part: flash point testers, hydrometers, centrifuges for dehydration of crudes, Saybolt viscosimeter, porosity and permeability measuring devices, screen analysis equipment, a working model for gas lift and plunger lift, complete equipment for the preparation and study of drilling muds and oil wells cements, apparatus for routine testing of petroleum derivatives, various types of meters for the measurement of gas and air, dead-weight tester for calibration of gauges. Equipment is also available with which to test wells in the field during the usual field trips.

*Geology and Mineralogy:* The equipment includes reference, working, and cabinet collections of minerals, ores, rock, and fossils; a working collection of wooden and glass models and natural crystals; full sets of maps and reports, and sets of geological relief models. There is also a collection of 3,500 specimens representing the mineral wealth of Missouri. Rock-breaking and sectioning machines, instruments for geological survey, and microscopes of petrographic work are included in the equipment.

An unusually fine collection of micro-fossils has been built up, and the laboratories are fully equipped for work in micro-paleontology.

*Metallurgical Engineering:* The Department of Metallurgical Engineering has equipped its laboratories for process metallurgy, electrometallurgy, spectrography, mineral dressing, metallography, metal conditioning, and radiography. A new foundry laboratory has recently been added.

The equipment consists of electric furnaces, sintering assembly, electrolytic generators, cells, leaching units, grating spectrograph, and appurtenances, mineral dressing jigs, tables, flotation machines, heavy media separation assembly, crushing and grinding machines, student and bench photographic microscopes, magnafux, dilatometer, heat treating furnaces, metallurgical X-ray assembly.

These facilities enable students to conduct research work of advanced nature.

*Civil Engineering:* The equipment for field practice includes 33 transits, 8 plane tables, 28 levels, and other necessary equipment. A number of transits are equipped with solar attachments and others with auxiliary telescopes for mine surveying. Apparatus is provided for laboratory work in hydraulics and structural material. A highway testing laboratory is equipped with apparatus for the testing of cement, sand, gravel, and stone, according to prescribed specifications.

*Mechanical Engineering:* The equipment includes steam driven A.C. and D.C. generators, water tube and fire tube boilers, turbines, separate steam engines used for test, compressors, fans, centrifugal and reciprocating pumping machinery, condensers and auxiliaries, internal combustion engines, and such pieces of laboratory apparatus as are needed in making tests on all of these.

The various shops, in which the student is given training in forging and machine



tool work, are well equipped to accommodate classes. There is a six-station oxy-acetylene welding outfit in connection with the shops.

*Electrical Engineering:* The equipment of the electrical engineering laboratories includes instruments for the study of the methods of electrical measurements and for the testing of the magnetic properties of iron and steel; practically all types of modern electric machines and the necessary instruments for making standard tests on the machines; power control equipment and instruments and apparatus for the study of wire and radio communication and the principles of electronics.

*Chemical Engineering:* One entire building and the major portion of another are devoted to Chemical Engineering and Chemistry. The lecture rooms are provided with adequate selected materials for exhibits and classroom demonstrations. Projectors and motion picture apparatus are also available.

Individual laboratories are maintained for general, analytical, physical, organic chemistry and chemical engineering. All of these laboratories are well equipped for research in the respective fields, as well as for the required work in the various curricula.

A comprehensive technical library is available to the students. It contains a large number of technical books, bulletins, and periodicals which thoroughly cover the field of chemistry, chemical engineering, and the allied subjects.

*Ceramic Engineering:* The Department of Ceramic Engineering is equipped with semi-commercial scale equipment for making and studying all kinds of ceramic ware, including pottery, chinaware, porcelain, building brick, sewer pipe, drain tile, firebrick, spark plugs, electric insulators, etc. The equipment includes potter's wheels, jiggers, lathes, a complete sliphouse outfit, an auger machine, dry presses, gypsum molds, wooden molds, etc., with which the dry press, stiff mud, soft mud, throwing, turning, jiggering, and pressing methods of forming the ware may be employed.

The kilns used in the firing of the ware include a muffle kiln, a high temperature direct-fired kiln, pot furnaces of various kinds, and electric furnaces of the metal, gran-annular and glo-bar resistor type.

A physical testing laboratory is fully equipped for all of the standard tests on raw clay. The many articles of equipment include elutriators, tensile strength and modulus of rupture machines, volumeters of various types, apparatus for hydrogen ion determination, etc.

An X-ray laboratory for the use of various departments is housed in the Ceramic Department. The equipment consists of X-ray tubes capable of emitting various X-radiations, cameras of the Debye and Laue types, and a recording photometer for measuring and evaluating intensity of X-ray lines on films.

The grinding and preparation laboratory is equipped with jaw crushers, rolls, disc pulverizers, squirrel cage disintegrators, dry pans, and riddles.

In addition, special equipment is installed for all the standard tests on ceramic materials, including a chemical laboratory for analysis, electric furnaces for P.C.E. test, and kilns for testing refractories under load at high temperature and other standard refractory testing carried on at elevated temperatures.

*Drawing:* Eight large rooms on the second floor of the Mining Building are used as drawing laboratories and lecture rooms. These are equipped with locker desks, large drawing boards, steel tee squares, steel protractors and other instruments intended for precise drawing in advanced classes. A large collection of models is available for drawing exercises. A separate copy room equipped with

modern Pease electric blueprinting outfit, mimeograph, and other miscellaneous copying and printing equipment is maintained.

*Physics:* The department has the necessary equipment for instruction in physical measurements in mechanics, sound, heat, light, and electricity.

*Research:* The mining and metallurgical research laboratories are provided with the necessary equipment, both for scientific study of the fundamental physical and chemical principles underlying mining and metallurgical technology and for the testing of commercial processes on an experimental or semi-commercial scale.

## Degrees

*Bachelor's Degree:* Bachelor of Science, Bachelor of Science in Mining Engineering, Bachelor of Science in Metallurgical Engineering, Bachelor of Science in Civil Engineering, Bachelor of Science in Mechanical Engineering, Bachelor of Science in Electrical Engineering, Bachelor of Science in Chemical Engineering, and Bachelor of Science in Ceramic Engineering.

The candidate for the degree of Bachelor of Science, or Bachelor of Science in an engineering curriculum, shall complete, in residence for at least the senior year, the prescribed course of study in the corresponding curriculum.

*Combination Curricula:* Combination curricula leading to two engineering degrees can be arranged for any two of the foregoing degrees. The amount of additional time will be at least forty semester hours in excess of that required for one degree. For instance, a joint curriculum, Mechanical and Electrical Engineering, can be taken in five years. Where the curricula are more diverse, six years may be required.

*Master's Degrees:* Master of Science, Master of Science in Mining Engineering, Master of Science in Metallurgical Engineering, Master of Science in Civil Engineering, Master of Science in Mechanical Engineering, Master of Science in Electrical Engineering, Master of Science in Chemical Engineering, Master of Science in Ceramic Engineering.

The candidate for the degree of Master of Science shall hold the degree of Bachelor of Science, or its equivalent, from an institution of recognized standing. The candidate for the degree of Master of Science in an engineering curriculum shall hold the degree of Bachelor of Science in that curriculum from an institution of recognized standing. Candidates for either degree must complete in residence a one-year's course of graduate work, approved by the Committee on Graduate Study, and shall submit an acceptable thesis.

*Engineer of Mines, Metallurgical Engineer, Civil Engineer, Mechanical Engineer, Electrical Engineer, Chemical Engineer, and Ceramic Engineer:* The candidate for an engineering degree shall hold a degree of Bachelor of Science or Master of Science in an engineering curriculum from this institution, and shall submit an acceptable thesis covering professional investigation within the chosen field, together with a satisfactory record of at least seven years' professional experience in this field, provided that if the degree of Bachelor or Master of Science has been granted in the same Department in which the engineering degree is desired, then a satisfactory record of at least five years of professional experience shall be submitted.

An engineer holding two bachelor's degrees may obtain two engineering degrees provided that he satisfy the requirements as stated above for each of the two

degrees. This means that at least five years must elapse between the granting of two engineering degrees. Application for engineering degrees must be in the hands of the Registrar not later than October 1 of the school year in which the degree is to be granted, and copies of thesis must be in the hands of the head of the department in which the degree is sought not later than January 1, of the same year, and must be in final form by March 15 of the same year.

*Doctor of Philosophy:* Candidates for the degree of Doctor of Philosophy (in Mining, Metallurgy, Ceramics and Geology) must register with the Graduate School of the University of Missouri at Columbia and be subject to all the regulations of the Graduate School. A statement of the rules governing the granting of the degree of Doctor of Philosophy may be found on page 146. Work done in residence either at Rolla or at Columbia may count toward the degree. The examinations are conducted by a committee appointed by the Dean of the Graduate School at Columbia. The degree is conferred by the University of Missouri.

## Curricula

*Curricula Offered:* The School of Mines and Metallurgy offers the following curricula. The Roman numerals identify the curricula:

- |                               |                            |
|-------------------------------|----------------------------|
| I. Mining Engineering         | V. Mechanical Engineering  |
| a. Mining                     | VI. Electrical Engineering |
| b. Mining Geology             | VII. Chemical Engineering  |
| c. Petroleum Engineering      | a. Chemical Engineering    |
| II. Metallurgical Engineering | b. Petroleum Refining      |
| III. Civil Engineering        | VIII. Ceramic Engineering  |
| IV. Science                   |                            |

The several courses of study are arranged to contain all the necessary fundamental sciences and languages and the essential technical subjects in such order as to lead to a logical and coherent technical education. In recognition of the demand from the mineral industry and the engineering professions for specific technical training, certain definite options are offered. For example, the student interested in Mining Engineering as a fundamental profession is offered the opportunity to specialize in mining, mining geology, or petroleum engineering. The choice of an option ordinarily is made in the sophomore year. Preceding the work of the junior year, the courses are largely fundamental, and all regular students are required to take full work in English, physics, general chemistry, and mathematics.

Two options in Chemical Engineering are offered—Chemical Engineering and Petroleum Refining.

The Science Curriculum, IV, offers opportunity to specialize in chemistry, geology, or physics. The work of the last two years is largely elective under the advice of the head of the department in which the student is majoring.

*Credit Required for Degree:* In order to receive a degree it will be necessary to obtain credit in all of the required subjects listed in one of the regular curricula and sufficient additional credit in elective subjects to make a total of one hundred forty-eight credit hours, exclusive of required physical education, military science, and special lectures.

*Graduate Courses:* Graduate work is offered in all departments. The work is elective under the advice of the faculty.

*A special catalog of the School of Mines and Metallurgy is issued each year. It contains a detailed announcement of all curricula, statement of courses, entrance requirements, rules and regulations of the School of Mines and Metallurgy, and should be consulted by persons desiring full information concerning this school. For a copy of this catalog, or for information concerning the work of the School of Mines and Metallurgy, address Curtis L. Wilson, Dean, School of Mines and Metallurgy, Rolla, Missouri.*

# *The Missouri State Military School*

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Under the provisions of the Act of Congress approved July 2, 1862, usually referred to as the Morrill Act, the University of Missouri was designated as a land grant university. The act requires the University of Missouri to maintain military training in its curriculum as its contribution toward national defense, in return for which instructors, equipment, uniforms, and funds therefor are furnished to the University by the United States.

Military training is offered through an Army Reserve Officers' Training Corps, a Naval Reserve Officers' Training Corps and an Air Force Reserve Officers' Training Corps. Students are taught the fundamentals of the military profession with a view to attaining proficiency in military science and providing qualified members for the reserve components of the services.

Every male student enrolled in the University of Missouri, unless excused by a faculty committee, must pursue a basic two years course in military training during his freshman and sophomore years. The successful completion of the military courses required of him is a prerequisite for graduation. Completion of four semesters' work in either army, naval or air science during the freshman and sophomore years fulfills the military requirements of the University.

With the exception of the Regular Naval ROTC which is a four year program, enrollment in all ROTC courses beyond the required basic courses is purely voluntary. By order of the Board of Curators the completion of the Advanced Course in Army and Air Force ROTC, the entire Regular Naval ROTC and the last two years of the Contract Naval ROTC programs, enrollment in which at the outset is purely voluntary, once entered upon, shall be a prerequisite for graduation unless completion is excused by the appropriate agency of the United States Government.

All students taking ROTC instruction compose the University Corps of Cadets and Midshipmen. The laws of Missouri (R.S.Mo. 1949, 172.560-172.600) designate this part of the University program The Missouri State Military School, and prescribe conditions under which the Corps may be given an official status by the state government.

## **Air Force Reserve Officers' Training Corps**

The Air Force ROTC is established under authority of the National Defense Act of 1916, as amended. Its purpose is to train selected college students for commissioning as officers in the United States Air Force Reserve. At the University of Missouri it performs the additional function of providing basic military training to many students in their freshman and sophomore years who do not desire, or are not selected, to complete the further training necessary for a commission.

The Air Force ROTC at the University of Missouri is organized as a senior unit. It is administered by commissioned officers of the United States Air Force under the jurisdiction of the Air University, a major Air Force command. The assigned officers serve as members of the University instructional staff. The ranking officer, USAF, who is designated Professor of Air Science, heads this unit. He serves in the dual capacity of commanding officer of the detachment of Air Force personnel assigned to the University as well as chairman of the Department of Air

Force ROTC, an academic department of the University. A number of airmen are also assigned to assist in administration of the program.

All students taking air science instruction are organized into the Air Force Corps of Cadets, an organization paralleling a standard Air Force wing. The prescribed uniform is furnished each student by the Air Force through the University and is worn as directed by the Professor of Air Science. Students enrolled in air science courses are not members of the United States Air Force.

**Training:** Training consists of a basic course and an advanced course, each of two years duration. The basic course is usually given to freshman and sophomore students. The elective advanced course is normally undertaken by students in their junior and senior years. All students undergo a program of academic classroom instruction as well as outdoors training in drill, leadership, and the exercise of command.

Students pursuing the Air Force ROTC course may receive credits as indicated in the following table:

<i>College or School</i>	<i>Basic Course</i>	<i>Advanced Course</i>	<i>Total Credit</i>
Arts and Science .....	4	12	16
Agriculture .....	4	12	16
Engineering .....	0	3	3
Business and Public Administration .....	0	12	12
Education .....	0	12	12
Journalism .....	0	12	12
Medicine .....	0	0	0
Law .....	0	0	0
Veterinary Medicine .....	0	0	0

See "Statement of Courses", elsewhere in this catalog, for a description of basic and advanced courses.

#### BASIC COURSE

In satisfying the University requirement that each student pursue a basic course of ROTC during his freshman and sophomore years, a student may enroll in the Air Force basic program. The freshman course, Air Science I, and the sophomore course, Air Science II, each meet three periods per week and together constitute the required basic course.

A student once enrolled in a senior division ROTC program of either Army or Air Force must normally continue all subsequent training in that service. A student previously enrolled in a junior division ROTC program (usually in a high school) may apply for either Army, Navy or Air Force at the University of Missouri.

Selected basic students may be deferred from the draft. These students must agree to enter the advanced course, if accepted. Further, they must meet the established physical, mental and academic standards for ultimate commissioning in the Air Force Reserve. A deferment may be terminated if the student fails to maintain prescribed standards of academic and military achievement and conduct.

Each basic student is furnished a uniform and textbook material, for which a deposit of \$10.00 is required. Upon return of this equipment in satisfactory condition the deposit is refunded. The student may be held responsible for any damage to the uniform or textbooks in excess of normal wear.

#### ADVANCED COURSE

Qualified students may apply for the advanced course. This course consists of four semesters of academic work plus four to six weeks of camp training at an Air

Force base. Camp training is usually scheduled during the summer months between the junior and senior years. The object of this course is to qualify students for appointment as second lieutenants in the Air Force Reserve.

Applicants are selected for the advanced course jointly by the President of the University and the Professor of Air Science and are placed under contract with the government. The number of applicants selected depends on a quota furnished by AF ROTC headquarters.

*Conditions for Selection of Enrollees:* To be accepted into the advanced course the student must:

Be formally enrolled in the University and have at least two academic years remaining to complete all prerequisites for a baccalaureate or higher degree.

Agree to attend five hours per week of air science instruction and to pursue the prescribed course of camp training.

Agree to accept a commission, if tendered, at the completion of his advanced training; to serve on active duty for a period of not less than three years after receipt of such commission, subject to call by the Secretary of the Air Force; and to remain a member of a regular or reserve component of the Air Force until the eighth anniversary of the receipt of his commission.

Have completed the basic course or have equivalent credit for same.

(The Professor of Air Science may waive so much of the basic course as he considers equivalent to honorable active service in the Air Force, Army, Navy, Marine Corps, or Coast Guard provided he does not waive any portion which the cadet can complete prior to entrance into the advanced course. To satisfy entrance requirements for the advanced course, veterans entering an institution at freshman or sophomore level who desire a commission through AFROTC will be required to take in phase with non-veteran contemporaries the portion of the basic program which remains. Veterans who do not desire a commission through AFROTC and who served in the active service for at least one year may receive credit for the entire basic course, and if less than one year, but for more than six months, may receive credit for one year of the basic course. Advanced standing will not be granted for training received as a member of the Junior Division (high school) Army ROTC.)

Not have reached his twenty-fifth birthday at the time of acceptance into the advanced course. (Exception: a veteran must complete all requirements for commissioning prior to reaching his twenty-eighth birthday.)

Meet the prescribed physical standards for appointment as an officer in the Air Force Reserve.

Meet the prescribed mental, academic and moral standards.

*Conditions for Continuance and Completion of Training:* Normally a student will not be tendered a commission unless he possesses a baccalaureate or higher degree. Usually the time of acquisition of a degree will coincide with the time of completion of the advanced course.

Once the student has been accepted into the advanced course, the contractual agreement between the University of Missouri and the Air Force requires that the ROTC course be satisfactorily completed before the University will grant the student a degree.

A student may be discharged from the advanced course because of inaptitude, lack of essential officer qualities, misconduct, or various similar reasons.

*Benefits and Privileges:* In lieu of subsistence a monetary allowance at a daily rate announced annually by the Secretary of the Air Force (usually about 90c) is



paid quarterly during the period of enrollment in the advanced course except during the period of the summer camp. This allowance is paid for approximately 595 days.

The pay of the first enlisted grade (about \$78.00 monthly) is received by each student while in attendance at summer camp. Travel expenses between camp and home, both ways, are also paid at an established rate per mile (usually about 5c).

An Air Force officer uniform is furnished each student. This uniform is the property of the University, which normally gives it to the student at the time he is commissioned or receives a Certificate of Completion.

Texts are furnished on a loan basis without charge.

Advanced students are deferred from the draft.

A commission as a second lieutenant in the Air Force Reserve is normally tendered to the student upon satisfactory completion of the advanced course and acquisition of a baccalaureate or higher degree.

### Army Reserve Officers' Training Corps

The Army Reserve Officers Training Corps was established under the authority of the National Defense Act of 1916, as amended. Its purpose is to provide basic military training to male students, and to train selected students to the level of proficiency required for commissioned officers of the United States Army Reserve.

The instructional staff of the Army ROTC of the University of Missouri is headed by the Professor of Military Science and Tactics, who is a colonel of the United States Army. The staff includes selected Army officers with the academic rank of associate and assistant professors, and senior non-commissioned officers, with the academic rank of instructors.

Textbooks and uniforms are furnished on a loan basis. Advanced Course students retain their uniforms on completion of the four-year course. Training equipment is provided by the Federal Government.

*Deposits and Fees:* Basic Course students deposit ten dollars (\$10.00) at the beginning of each academic year. This deposit is refunded upon return of the uniform and equipment in satisfactory condition. The student is required to pay for property which he loses or damages.

A fee of two dollars (\$2.00) is required for each semester of the Army ROTC Advanced Course.

*Selective Service (1-D) Deferment:* After one semester in residence, military training deferments are offered to students who meet certain criteria of academic and military performance. Deferment is established in a written agreement between the student and the University. Under its terms, the student agrees to pursue the full four year ROTC course, if eligible. He is deferred from being drafted, to enable him to complete the four-year military training program together with his other academic work. The deferment remains in effect throughout the period of training in the Army ROTC at this University. Failure to maintain adequate academic standards, failure to re-enroll each semester, or demonstrated inaptitude for continued military training will result in cancellation of the deferment.

### BASIC COURSE

The Basic Course consists of four semesters of three class hours per week. The Department of the Army policy of co-alignment requires that a student pursue that level of military instruction which corresponds to his over-all academic status.

The first four semesters of the Army ROTC program are normally undertaken in the freshman and sophomore years. Students who elect to transfer to another branch of the Defense forces at the University should do so no later than the end of the first year. Those students with no previous training who enter the University as sophomores must satisfy the University requirement for mandatory military training. Such students will be enrolled in the first year Basic Course.

*First Year:* The first year of the Army ROTC Basic Course consists of a series of subcourses common to all of the combat arms. It seeks to develop in the student certain basic military techniques such as foot drill, the handling of individual weapons, and the ability to use military maps. It also includes the principles of combat for small infantry units.

*Second Year:* The second year provides further development in military bearing, leadership, and exercise of command. Specialized Field Artillery training is undertaken during the year. The principles of employment, and care of artillery weapons, ammunition and equipment constitute the main subject matter. During the latter part of the second year, tentative selections are made for the Advanced Course.

#### ADVANCED COURSE

Qualified students, if accepted by the Professor of Military Science and Tactics, may elect to take the Advanced (Field Artillery) Course. The course consists of four semesters of academic work of five class hours per week, and a six-weeks summer training camp between the junior and senior years. The objective of the Advanced Course is to train students to the level of proficiency required for commissioning as second lieutenants of artillery in the United States Army Reserve. A small quota for commissions in other branches of the Army is available each year to students exceptionally qualified in science or other specialties, upon application and acceptance.

Certain outstanding students who achieve the status of Distinguished Military Graduates may apply for direct appointments as second lieutenants in the Regular Army.

*Conditions of Service:* Applicants selected for the Advanced Course are civilians and must enter a contract with the United States Government. The contract provides as follows:

1. The student agrees to complete the Army ROTC Advanced Course and to attend summer camp at the time and place specified by proper authority.
2. The Department of the Army agrees to pay "commutation of subsistence" at the current rate of 90 cents per day, payable continuously for a maximum of 595 days. Subsistence pay is suspended during the summer camp period, during which pay is at the rate of the first enlisted grade (at present \$78.00 per month).
3. The contract is subject to cancellation if ROTC training is interrupted for two calendar years.

*Individual Qualifications for Admittance:* Qualifications for admittance to the Advanced Course include the following:

- a. Completion of the ROTC Basic Course (four semesters), or its equivalent. More than twelve months honorable service in any of the Defense Forces, including the Coast Guard, is acceptable as the full equivalent of the basic course. Less than twelve months honorable service in any of the above

Forces but more than six months, or three full years training in a Junior Division (High School) ROTC Program is acceptable as credit for the first year (two semesters) ROTC Basic Course. No credit is allowed for shorter periods of such training, nor is credit allowed for training in the National Guard or U. S. Army Reserve.

- b. Applicant must be able to qualify for commission as 2nd Lieutenant USAR prior to reaching 28 years of age.
- c. Physical Standards. Standards prescribed for appointment in the United States Army Reserve (Army Regulation 40-105) are applicable. Appropriate allowance may be made for correctible physical defects.
- d. Mental and Educational Standards:

Applicant must successfully complete the prescribed qualification (Intelligence) test.

Applicant must be a student in good academic standing at the University of Missouri.

Applicant must have a requirement of two full years of academic work still remaining toward a baccalaureate or higher degree at the time of commencing the advanced course.

Applicant must have a working knowledge of elementary geometry, trigonometry and logarithms. PMST has arranged a special non-credit abbreviated course for those deficient. Applicants who did not take Basic ROTC in Field Artillery are required to take special non-credit background courses in Gun Section Drill, Field Artillery Organization, Aerial Photographs and Field Artillery Communication.

*Academic Credit:* Students pursuing the ROTC courses at the University of Missouri receive credit as indicated in the following tables:

<i>College</i>	<i>Basic Course</i>	<i>Advanced Course</i>	<i>Total Credit Toward Degree</i>
Arts & Science .....	4	12	16
Engineering .....	0	3	3
Business & Public Administration, Education, and Journalism .....	0	12	12
Medicine and Law .....	0	0	0

### Naval Reserve Officers' Training Corps

The mission of the Naval Reserve Officers' Training Corps is to provide, by a permanent system of training and instruction in essential naval subjects at civil educational institutions, a source from which qualified officers may be obtained for the Regular Navy and Marine Corps and their respective Reserve Corps. Enrollment in the NROTC unit fulfills the military training requirement of the University.

The NROTC Unit at the University of Missouri is composed of young men in three classifications, namely: Contract Students, Regular Students and Naval Science Students.

#### CONTRACT STUDENTS

Students selected by the Professor of Naval Science, uniformed at government expense, and during the junior and senior years paid the value of one commuted ration a day while under instruction. They are also furnished on loan the text-

books used in Naval Science courses. They obligate themselves to complete the prescribed Naval Science curriculum, to make one summer cruise of from three to four weeks duration, and on graduation to accept a commission as Ensign, USNR, or Second Lieutenant, USMCR. These students are deferred from the draft, but in return must agree to serve two years active duty after commissioning, if called, and to remain a member of the regular or reserve component until the sixth anniversary of receipt of a commission. They may, upon commissioning, request active duty, and if approved an application can be submitted for transfer to the Regular Navy or Marine Corps. The quota of Contract Students is set by the Navy Department and varies from year to year.

#### REGULAR STUDENTS

Students selected for the program by the Navy Department and who have been appointed Midshipmen, USNR. Selection is based upon a nationwide competitive aptitude test. The Navy provides tuition, fees, and textbooks for a period not exceeding four years. The students are uniformed at government expense and receive retainer pay at the rate of \$600 per year. They obligate themselves to complete the prescribed Naval Science curriculum; to attend three summer cruises or training periods from six to eight weeks; to accept a commission as Ensign, USN, or Second Lieutenant, USMC, on graduation; and to serve on active duty for three years after commissioning, unless released earlier by the Navy Department. These students are deferred from the draft.

#### NAVAL SCIENCE STUDENTS

Students selected from those who wish to enroll in a Naval Science subject for credit or educational benefit. A student failing to qualify for Contract or Regular status may be accepted as a Naval Science student and later accepted as a Regular or Contract. Enrollment as a Naval Science student meets the military training requirements of the University.

*General Eligibility Requirements:* A Contract and Regular student must fulfill the following requirements:

- a. Be a male citizen of the United States.
- b. At the time of his enrollment, if a minor, have the consent of his parent or guardian.
- c. Agree to accept a commission in the Navy, or Marine Corps, if a Regular student, if offered, or in the organized Reserves if a Contract student.
- d. Be unmarried and agree to remain unmarried until commissioned.
- e. Be physically qualified.
- f. Have attained the 17th anniversary of his birth on or before July first of the year of enrollment and be of such age that he will not have passed the 25th anniversary of his birth on July first of the year he will be commissioned (i. e., not over 21 on July first for initial enrollment at the beginning freshman level.) In certain cases and with the consent of the Professor of Naval Science, a Contract student may have the minimum age requirements waived.

*Administration:* This unit is administered by commissioned officers detailed by the Navy Department under the direction of a Captain, U. S. Navy, or Colonel,

U. S. Marine Corps, who is designated a Professor of Naval Science. These officers also instruct in Naval Science subjects, being responsible for the naval training and indoctrination of all naval students. They are considered members of the Faculty and are given commensurate rank thereon.

Petty Officers enlisted in the Navy or Marine Corps assist in practical instruction and in the maintenance and care of government property.

*Enrollment:* Candidates are enrolled only at the beginning of the first semester each year. The maximum number to be newly enrolled varies from year to year in accordance with a quota set by the Navy Department, Washington, D.C.

Those interested in enrolling in the NROTC Unit are invited to communicate with the Professor of Naval Science either by mail or in person.

Naval ROTC students are on the same footing as any other student. They are subject to all rules and regulations of the University and are expected to participate in student activities and to enter fully into the normal student life. They are not housed and administered as a unit. Each man will obtain living and messing accommodations in the same manner as any other student. The uniform will be worn during Naval Drill periods and on special occasions.

*Outline of Instruction:* For Regular and Contract students the course of instruction covers a four-year period. The academic calendar of the University is followed.

An NROTC student may select, subject to the approval of the academic authorities, any major field of study leading to a first baccalaureate degree except pre-dental, pre-medical, pre-theological, pre-veterinary, dentistry, medicine, theology, veterinary medicine, pharmacy, music or art. Twenty-four semester hours of naval subjects are required. These include the eight Naval Science courses, catalogue numbers, 1, 2, 25, 26, 100, 101, 102, and 103, normally taken in numerical order. Any student interested in the Marine Corps will take 1 through 26 inclusive, followed by courses 104, 105, 106, and 107, which pertain to the Marine Corps. Each Naval Science course consists of three one-hour classroom periods and two one-hour laboratory periods each week. In addition the student must meet the following requirements:

1. By end of sophomore year have satisfactorily completed
  - a. One year of college physics (Regular students only)
  - b. Mathematics through trigonometry. (Regular and Contract students).  
These requirements may be met by satisfactory completion in either college or secondary school.
2. The following electives are highly desirable and are recommended for Regular and Contract students.
  - a. A sequence in mathematics, extending through calculus, and including spherical trigonometry.
  - b. A second year of physical science, such as advanced electricity and elementary electronics, for other than engineering students.
  - c. A one year course in personnel management and administration.
  - d. A one year course in the "Foundations of National Power", or a comparable course approved by the academic authorities.
  - e. Two years of a foreign language (modern Romance, Germanic, Slavic, or Oriental), or demonstrate to the academic authorities by examination

that he possesses a good reading knowledge and can make an acceptable written translation of one of the languages in question.

f. A course in public speaking.

Practical instruction will be given during summer aboard ship and at an aviation base.

*Academic Courses:* A scale of academic credit for Naval Science courses has been established by each school and college of the University. This will enable an NROTC student to qualify for a baccalaureate degree in four years and also to complete the required Navy subjects during the same period.

# *Adult Education and Extension Service*

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The University of Missouri not only wishes to bring a complete practical education within the reach of every citizen of the state but is now in a position to render a broader service off the campus to the various communities, organizations, and individuals of the state. To make this broad service possible, the Adult Education and Extension Service was established.

The consolidation of the Adult Education and Extension Service has greatly increased the activity of the division in that many new services have been added. This division of the University now offers the following services:

1. Correspondence Courses for College and High School Credit.
2. Extension Courses for College Credit.
3. Extension Courses for Non-credit.
4. Technical Institutes for Industrial Personnel.
5. Educational Conferences.
6. Short Courses.
7. The Visual Education Department Services.
8. Speech Clinics
9. State-Wide Itinerant Fireman Training.
10. Dramatic Play Service.
11. Rural Health Institutes.
12. State-Wide Itinerant Law Enforcement Training.

*Correspondence Courses:* Correspondence courses on the college level are available in many subjects and areas as the bulletin on Correspondence Courses will indicate. All college credit courses given by correspondence through this division count for regular credit in the University and for approved credit on state certificates. Courses are available on both the graduate and undergraduate level. No credit earned by correspondence can be applied toward a Doctor's degree.

*Cost of College Courses:* The correspondence course enrollment fee is \$5.00 per credit hour; thus a course offered for three hours of credit will cost \$15.00, plus postage.

Because of the shortage of teachers, this division has made available a number of supervised correspondence courses in such subjects as English, French, German, Latin, mathematics, agriculture, botany, general science, physics, social studies, geography, Spanish, and commercial subjects on the high school level. High School courses taken by correspondence may count for entrance credit to the University.

*Cost of High School Courses:* The fee is \$12.50 per unit of credit, plus postage for individual students.

Under the supervised correspondence study plan, the fee is \$10.00 per unit, plus postage, per student if ten or more students are enrolled in the same course from the same school.

*Extension Centers and Classes:* The Adult Education and Extension Service offers a wide variety of educational opportunities off the campus through Extension Centers or Extension classes. Both credit and non-credit work is available. Students enrolling in an extension class for college credit are charged a fee of \$8.00



per credit hour. The fees charged for the non-credit courses are determined according to the course desired.

*Credit for Extension Work:* No credit received in an extension class may be applied toward the Doctor's degree, at the University of Missouri. Eight hours of credit earned off the campus is the maximum which will be applied toward the Master's degree, at the University of Missouri. Students applying for graduate credit in extension courses must obtain approval of the Chairman of the department concerned and in some cases, the Dean of the Graduate School.

*Visual Education Department:* The Visual Education Department is a sub-department within the Adult Education and Extension Service. There are available over four thousand reels of 16mm. sound films. These films are especially suitable for classroom use. The film strip library contains over two hundred strips on various subjects. Schools, colleges, churches, farmers' clubs, and other groups may secure the use of these facilities upon payment of a small rental fee. This department serves as a depository for films from the U. S. Department of Agriculture and other governmental departments.

*For information and special bulletins regarding any of the above services, address Director, Adult Education and Extension Service, University of Missouri, Columbia, Missouri.*

# *Description of Courses*

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All courses offered in the University are described on the following pages and are listed by departments or fields of learning, arranged alphabetically. The Schedule of Courses issued approximately four weeks prior to the opening of each semester lists the period, the building, and the room assigned to each course offered in that semester.

The University reserves the right to cancel without further notice any course listed in this catalog or in the schedule or to withdraw any course which has not an adequate enrollment at the close of the registration period.

## **Course Numbers**

Each course bears a distinguishing number which identifies it within the department and indicates, broadly, its rank. The significance of the course number is indicated in the numbering scheme, which is as follows:

### **Numbers—**

1 to 24 indicate courses regularly open to freshmen.

25 to 99, courses primarily for sophomores.

100 to 199, courses primarily for upperclassmen.

200 to 299, courses for undergraduates and for graduate students except those whose graduate major is in the department in which the course is given.

300 to 399, courses for undergraduates and for graduate students without restriction as to a student's graduate major.

400 to 499, primarily for graduate students. Undergraduate students are admitted to courses in this series only with the approval of the Dean of the division in which the course is offered.

## **Credit**

The semester hour which is the unit of credit in the University is the equivalent of a subject pursued one period a week for one semester of approximately sixteen weeks, or for a total of approximately sixteen periods for one term.

The number of hours of credit for each course is given in parentheses following the title of the course; thus, Statistics (4). In case the credit is variable, to be fixed in consultation with the teacher, that fact is indicated either by the words "credit to be arranged" or by the minimum and maximum credit, as Research (2-8).

## **Semester Designation**

The small letters following in the same line the title of the course and the credit it carries indicate in which semester the course is expected to be offered. Thus *f* indicates the course is to be offered the first semester; *w* the second semester; *s*, the summer session; *ss*, the intersession, a period between the close of the summer session and the opening of the first semester when certain laboratory courses in Journalism are offered. No attempt is made to designate all the courses that may be offered in the summer session, but only those usually offered. The Summer Session Announcement and Schedule of Courses should be consulted for the complete list.

The Schedule of Courses published for each semester lists all courses to be offered for the semester with time of meeting indicated.

## ACCOUNTING AND STATISTICS

## Accounting

*Courses Accepted in the College of Arts and Science*

- 36 Elementary Accounting I (3) f, w.**  
Prerequisite, 15 points. A study of the fundamental principles of accounting and their application. Analysis of the balance sheet and income statement. MEMBERS OF THE STAFF.
- 37 Elementary Accounting II (3) f, w.**  
Prerequisite, course 36, or equivalent training. A continuation of the study of accounting principles and procedures with emphasis on the accounts of the corporation. MEMBERS OF THE STAFF.
- 425 Advanced Accounting Theory (5) f.**  
Prerequisite, 317. An orientation course presenting the cultural situation which gives importance to modern accounting. Critical appraisals of trends in theory and functions of current accounting. MR. SILVOSO.

*Courses Not Accepted in the College of Arts and Science*

- 103 Accounting for Small Business (1-2) f, w.**  
Prerequisite, 37. Solution and discussion of problems illustrating various accounting procedures, with emphasis on the requirements of business enterprises operated on a small scale. MEMBERS OF THE STAFF.
- 301 Problems in Accounting (1-3) f, w.**  
Independent investigations and reports on topics approved by the instructor. MEMBERS OF THE STAFF.
- 317 Intermediate Accounting (3) f, w.**  
Prerequisites, 37 and General Economics. The financial statements of a going enterprise; organization and interpretation; classification and determination of the contents and values of accounts. MR. SILVOSO; MR. RICHARD; MR. EVERETT; MR. BESS.
- 319 Advanced Accounting (3) f, w.**  
Prerequisite, 317. Application of accounting principles to special topics such as branch house accounting, fiduciary accounting, partnerships, installment sales, consignment sales, annuities, and bonds. MR. BAUER; MR. KOHLER.
- 321 Industrial Accounting (3) f, w.**  
Prerequisite, 317. The technique of accounting control as applied to industrial enterprise. Historical and critical appraisal of product, process cost systems, and standard costs. MR. RICHARD.
- 323 Consolidated Statements (2) f, w.**  
Prerequisite, 317. Problems of adjusting accounting statements to current complex forms of business organization; holding company and partnership control over groups of corporations. Emphasis on working papers. MR. RICHARD; MR. BESS.
- 325 Governmental Accounting and Auditing (3) f.**  
Prerequisites, 317, or 37 and Political Science 310 and senior standing. Principles and operation of fund accounting; financial reporting, budgetary control, and auditing for effective financial administration of governmental and non-profit institutions. MR. KOHLER; MR. EVERETT.
- 328 Managerial Accounts and Statistics (3) f, w.**  
Prerequisites, 1 and 317. Accounting and statistical functions in the management of large-scale business; stressing the effects of big business upon accounts and statistics, including cost accounting for sales. MR. SILVOSO.
- 334 Auditing (3) f, w.**  
Prerequisite, 317. Principles underlying the verification, analysis, and interpretation of accounting records and statements, with emphasis on preparation of working papers and audit reports. MR. BAUER, MR. SILVOSO.

**373 Tax Accounting (3) f, w.**

Prerequisites, 317, or 37 and Economics and Business 321 and senior standing. Accounting principles and procedures required by current laws and regulations relating to federal and state income taxes and social security taxes. MR. BAUER; MR. KOHLER; MR. SILVOSO.

**390 C.P.A. Problems (3) f, w.**

Prerequisites, 317 and 319. Application of accounting principles to problems of a professional level. An analysis and study of representative problems from C.P.A. examinations. MR. RICHARD; MR. BESS.

**401 Problems in Accounting (1-3) f, w.**

Independent investigations and reports on topics approved by the instructor. MEMBERS OF THE STAFF.

**410 Seminar in Accounting (3) w.**

Presentation and critical analysis of problems in accounting theory and practice. MEMBERS OF THE STAFF.

**413 Controversial Accounting Problems (3) w.**

Prerequisites, 317 and consent of instructor. Problems on which the views of accountants differ, noting especially divergencies between accounting theory and rules of thumb developed in practice. MR. KOHLER.

**414 Income Determination (3) w.**

Prerequisites, 321 and 328. A study of the historical development of the process of arriving at net income and the relation of this process to accounting theory. MR. SILVOSO.

**415 Advanced Principles of Accounting (3) f.**

Prerequisite, ten hours of accounting. Technical theory carrying further the theoretical aspects of undergraduate courses with especial emphasis upon discussions of principles in recent accounting literature. MR. KOHLER.

**421 Advanced Cost Accounting Theory (3) f.**

Prerequisites, 317 and 321. A study of current theoretical developments in cost accounting and their relationship to accounting as a whole. MR. RICHARD.

**491 Research in Accounting (Credit to be arranged) f, w.**

MEMBERS OF THE STAFF.

## Statistics

Course 1 is regularly accepted in the College of Arts and Science, and courses 205, 208, 303, 309, 340, 341, 360, and 370 are accepted when in an approved area of concentration.

**1 Elementary Statistical Analysis (4) f, w.**

Introduction to scientific study and interpretation of data; sampling; tests of homogeneity of experimental data and the reliability of computed values; t and F tests; Chi-Square. MR. HARTKEMEIER.

**200 Problems in Statistics (1-3) f, w.**

Graduate students in other departments who are interested in selected types of statistical analysis should register for this course, but only after receiving approval of instructor. Not open to undergraduate students. MEMBERS OF THE STAFF.

**205 Index Numbers (2) f.**

Prerequisites, one course in statistics and one course in economics. Construction and interpretation of index numbers; problems of weighing and splicing; measuring the cost of family maintenance; adjustment of data for inflation and deflation. MR. HARTKEMEIER; MR. KING.

**208 Punch Card Methods (3) f, w.**

Prerequisites, 1 or junior standing. Organization of large volumes of data to facilitate analysis by modern methods involving International Business Machine punchcard alphabetical equipment. MR. COMBS.

- 234 Applied Statistics I (3) f.**  
Prerequisite, 1. For students not majoring in statistics. Elements of sampling, tests of hypotheses, regression, and correlation. (Students completing this course may receive half credit only for 303 and 309.) MR. KING.
- 235 Applied Statistics II (3) w.**  
Prerequisites, 1 and Economics and Business 41 or 51. For students not majoring in statistics. This course covers less intensively the material included in courses 340 and 341. (Students completing this course may receive half credit only for 340 and 341). MR. KING.
- 300 Problems in Statistics (1-3) f, w.**  
Graduate students in this department interested in selected types of statistical analysis not covered in formal courses should register for this course, but only after receiving approval of instructor. MEMBERS OF THE STAFF.
- 303 Univariate Analysis (3) f.**  
Prerequisite, 1. A study of frequency distributions, descriptive and inductive statistics, principles of sampling, sampling distributions, estimation, and theory underlying tests of hypotheses. MR. KING.
- 309 Multivariate Analysis (3) w.**  
Prerequisite, 303. Measurement of relationship among variables; simple, partial, and multiple correlation. MEMBERS OF THE STAFF.
- 340 Secular Trend (3) f.**  
Prerequisites, 1 or Mathematics 175. Measurement of long-time movements, adjustment and smoothing of data, quantitative meaning of normal. Method of moving averages, least squares, selected points, etc. MEMBERS OF THE STAFF.
- 341 Periodic Variation (3) w.**  
Prerequisites, 340 or Mathematics 175. Measurement of movements in data that repeat themselves in a constant pattern or a shifting pattern, quarterly, monthly, weekly, daily, hourly. Periodogram analysis. MEMBERS OF THE STAFF.
- 360 Quality Control (3) w.**  
Prerequisite, 303. A study of statistical techniques that have application in control of repetitive processes in industry and business, with emphasis on the theoretical basis. Acceptance sampling with an objective analysis of producer's and consumer's risks in terms of probability; tolerance limits; and confidence limits. MR. KING.
- 370 Survey Sampling (3) f.**  
Prerequisite, 303. Design of probability sampling methods for estimation of characteristics of finite populations. Consideration of bias, response errors, non-probability sampling, and other associated problems. MR. KING.
- 400 Problems in Statistics (1-3) f, w.**  
MEMBERS OF THE STAFF.
- 407 Statistical Methods for Research Workers (5) w.**  
Prerequisites, three courses in statistics. Design of projects and experiments; selection of appropriate methods; interpretation of results. MR. HARTKEMEIER.
- 420 Cycles and Forecasting (5) w.**  
Prerequisites, three courses in statistics. Theory, history, and statistics of business and other cycles, problems of their prediction and control, and their relation to speculative and investment transactions. MR. HARTKEMEIER.
- 428 Analysis of Variance (5) f.**  
Prerequisites, three courses in statistics. One criterion of classification, two criteria, latin square, unordered groups in one classification, disproportionate frequencies, use of interactions as measures of sampling variation, three or more criteria, design of experiments. MR. HARTKEMEIER.
- 470 Advanced Statistical Analysis (3) w.**  
Presentation and critical analysis of problems in statistical theory and practice. MR. HARTKEMEIER.

**480 Non-Linear Multiple Correlation (2) f.**

Prerequisites, three courses in statistics, including 309. Methods of fitting non-linear planes and surfaces resulting from the joint effects of two or more factors. MR. HARTKEMEIER.

**490 Research in Statistics (Credit to be arranged) f, w.**

MR. HARTKEMEIER.

**AGRICULTURAL CHEMISTRY****210 General Agricultural Chemistry (5) f, w.**

Prerequisite, 3 hours of organic chemistry. A chemical study of the materials recognized as pertaining to agriculture. MR. MUHRER; MR. O'DELL.

**212 Physiological Chemistry of Domestic Animals (5) f.**

Prerequisite, 3 hours of organic chemistry. Required of candidates for the degree, Doctor of Veterinary Medicine. Open to graduate students in lieu of 210. MR. O'DELL.

**220 Agricultural Analysis (3-5) w.**

Prerequisite, Chemistry 25. Quantitative analysis of agricultural products. MR. GEHRKE; MR. COWAN.

**310 Chemical Spectroscopy (1-2) w.**

Prerequisite, quantitative analysis, general physics; physical chemistry and a course in light are desirable. The theory and application of atomic and molecular spectra. Use in qualitative and quantitative analysis. One lecture, one laboratory period. MR. PICKETT.

**312 Instrumental Methods of Analysis (1-2) f.**

Prerequisites, quantitative analysis and physical chemistry. Methods of instrumentation applied to chemical analysis including polarography, potentiometry, and colorimetry. One lecture, one laboratory period. MR. PICKETT.

**400 Problems (2-6) f, w, s.**

MR. BRODY; MISS FLYNN; MR. GEHRKE; MR. HIBBARD; MR. MARSHALL; MR. MAYER; MR. MUHRER; MR. MURNEEK; MR. O'DELL.

**402 Advanced Physiological Chemistry of Domestic Animals (3) w.**

Prerequisites, Organic Chemistry 212, and Agricultural Chemistry 210 or equivalent. Designed for students fitting themselves for investigations in animal industry. Offered in 1956-57 and alternate years. MR. MUHRER.

**404 Plant Chemistry (3-5) f.**

Prerequisite, Organic Chemistry 212. The biochemistry of plant growth. Plant constituents, their occurrence, transformations and metabolism. MR. HIBBARD.

**406 Phytohormones and Vitamins (3) f.**

Prerequisites, elementary botany, plant physiology and six hours of organic chemistry. The chemistry, physiology and practical applications of phytohormones and vitamins in development of plants. Offered in alternate years. Not offered in 1956-57. MR. MURNEEK.

**408 Dairy Chemistry (3) w. (Same as Dairy Husbandry 408).**

Prerequisite, Agricultural Chemistry 210 or equivalent. Dairy Technology 415 is recommended. The colloidal and physico-chemical properties of the constituents of milk. Three lectures. MR. GEHRKE.

**410 Seminar (1) f, w.**

MEMBERS OF THE STAFF.

**412 Hormone Chemistry (3) w.**

Prerequisite, Organic Chemistry 212. The chemistry and mechanism of action of the hormones with especial emphasis on relations between chemical structure and biological activity. MR. MAYER.

**413 Physiology of Reproduction (3) f. (Same as Animal Husbandry 413).**

Prerequisite, graduate standing, or equivalent training. The physiology and biochemistry of the reproductive organs and associated endocrines. MR. MAYER.

- 414 Physiological Chemistry of Micro-Organisms (3) w.**  
Prerequisites, Agricultural Chemistry 210, Organic Chemistry 212, Botany 202, or equivalent. Essential nutrients, metabolic activities, environmental requirements, and bacteriostatic and bacteriocidal mechanisms. MISS FLYNN.
- 416 Colloid Chemistry (3 or 5) w. (Same as Chemistry 416).**  
Prerequisite, 3 hours of physical chemistry. Principles of colloid chemistry. Lectures only, 3 hours; with laboratory, 5 hours. MR. MARSHALL.
- 418 Amino-Acid and Vitamin Assay (3) f.**  
Prerequisites, quantitative analysis, bacteriology, organic chemistry, or equivalent training. Spectroscopy is recommended. Quantitative analysis of amino acids and vitamins by chemical, physical and biological methods. MISS FLYNN.
- 419 Rumen Bacteriology (3) w. (Same as Dairy Husbandry 419).**  
Prerequisites, Botany 202 and Agricultural Chemistry 210. Rumen microorganisms. methods of study, functions and environmental factors. Offered in 1956-57, and alternate years. MR. JENSEN and MR. EDMONDSON.
- 420 Chemistry of Vitamins (3) w.**  
Prerequisites, Organic Chemistry 212, and Agricultural Chemistry 210 or equivalent. Discovery, isolation, structure and functions. Offered in alternate years. Not offered in 1956-57. MR. O'DELL.
- 421 Enzymes (2) f.**  
Prerequisite, organic chemistry. Biochemistry is recommended. The chemistry and mechanism of selected examples. Two lectures. MR. GEHRKE.
- 440 Bioenergetics and Growth (3) w. (Same as Dairy Husbandry 440).**  
Energy transformation and time relations of growth, senescence and related processes. MR. BRODY; MR. KIBLER.
- 450 Research (2-8) f, w, s.**  
Does not include the preparation of a dissertation. MEMBERS OF THE STAFF.
- 490 Research (2-8) f, w, s.**  
Includes the preparation of a dissertation. MEMBERS OF THE STAFF.

## AGRICULTURAL AND HOME ECONOMICS EXTENSION

- 201 Apprentice Training in County Home Agent Work (4) w, s.**  
Prerequisite junior standing. Enrollment by permission only. This course occupies the full time of the student for a minimum period of eight weeks. A combination of study and observation of field work in agricultural extension under supervision of experienced extension workers. MRS. ZIMMERMAN; MR. ROGERS.
- 202 Apprentice Training in County Agricultural Agent Work (4) w, s.**  
A combination of study, observation, and field work in agricultural extension under supervision of experienced extension workers. This course occupies the full time of the student for a minimum period of eight weeks. Students must have completed their junior year in college. Enrollment by permission only. MR. ROGERS; MRS. ZIMMERMAN.
- 210 Agricultural Services (3) w.**  
Prerequisite, junior standing. Study of mass communications media and visual teaching aids available to workers serving agriculture. MR. WINNER.
- 301 Extension Methods in Public Affairs (2) w, s.**  
Techniques in presenting public affairs information and methods of assisting people to appraise the probable effect of various public policies on agriculture.
- 400 Problems (Credit to be arranged) f, w, s.**  
Independent investigations of extension problems. MR. ROGERS.
- 401 Principles and Procedures in Extension Teaching (2) w, s.**  
Designed primarily for experienced workers. Principles and techniques involved in extension teaching. The relation of methods in teaching will be studied from the point of view of reaching and teaching more people. MR. ROGERS.



- 402 Organizing and Planning of Extension Work (2) s.**  
Program determination, teaching plans, and ways of measuring extension progress. For experienced workers. MEMBERS OF THE STAFF.
- 404 Extension Evaluation (2) s.**  
Adaptation of the principles of evaluation to Extension program development, execution, and appraisal. Includes defining of objectives, determination of the population and sampling techniques, construction of measuring devices, and collection, summarization, analysis, and interpretation of information collected. MEMBERS OF THE STAFF.
- 450 Research (Credit to be arranged) f, w, s.**  
A problem course in methods of conducting and administering extension work in agriculture and home economics but does not terminate in a thesis. MR. ROGERS.

## AGRICULTURAL ECONOMICS

- 1 Agricultural Economics (5) f, w.**  
A study of the principles of Economics with special application in the field of agriculture. MEMBERS OF THE STAFF.
- 120 Farm Accounts (3) f.**  
Farm record keeping and summarization of inventories and cash accounts, with attention to detailed records, such as feed and labor records, plus cost accounting based on the debit-credit entry system as applied to the farm business. MR. SPANGLER.
- 200 Problems (Credit to be arranged) f, w, s.**  
Prerequisite, the introductory course in the phase of agricultural economics in which the special problem falls. MEMBERS OF THE STAFF.
- 220 General Agricultural Marketing (3) f, w.**  
Prerequisite, course 1. A general study of the marketing system for farm products from a functional viewpoint. MR. MCKINSEY; MR. GRADY.
- 250 Economics of Agricultural Production and Distribution (3) w.**  
Prerequisite, course 1 or equivalent. Application of general economic principles to production and distribution of agricultural products. MR. JOHN MILLER.
- 290 Marketing of Milk, Poultry, and Related Products (3) f.**  
Prerequisite, course 220 or equivalent training. Economic factors affecting the supply of and demand for dairy and poultry products. MR. JOHN MILLER; MR. WHITTED.
- 291 Marketing of Cotton, Grain, Livestock and Related Products (3) f.**  
Prerequisite, course 220 or equivalent. The supply of and demand for cotton, grain, livestock, meats, wool and other farm products. MR. MCKINSEY; MR. KIEHL.
- 301 Field Training in Agricultural Marketing (Credit to be arranged)**  
Prerequisites, courses 220 and 290 or 291. A combination of study, observation, and employment of student in various commodity marketing fields under the supervision of staff personnel. A course of study to be followed and regular reports will be part of the course. Students must have completed their Junior year in college. Enrollment by permission only. MEMBERS OF THE STAFF.
- 307 Agricultural Credit (3) w.**  
Prerequisite, course 1. Financing agriculture with emphasis on the sources and use of credit and the operation of credit institutions serving agriculture. MR. FRANK MILLER.
- 310 General Farm Management (3) f.**  
Prerequisites, Soils 100 and an introductory course in principles of economics or equivalent training. How to study the farm business, principles in organizing the farm business, economic factors affecting farm business success, with emphasis on getting started in farming.
- 315 Types of Farming in the United States (2) f.**  
Prerequisite, course 310. The typical farming systems in the major types of farming areas of the United States. MR. JOHNSON.

- 321 **Economic History of Agriculture (2) w.**  
Prerequisite, course 1. A general historical survey of the economic development of American agriculture. MR. JOHNSON.
- 325 **Elementary Agricultural Statistics (3) f, w.**  
This course includes study of the collection, analysis, and presentation of agricultural statistics. MR. FRAME.
- 330 **Economics of Broiler Production and Marketing (2) f.**  
Prerequisite, course 250 in Agricultural Economics Department or 302 in Poultry Department. An economic evaluation of alternative methods of broiler production and marketing. Offered in 1956-57 and alternate years. MR. JOHN MILLER.
- 341 **Farmers' Cooperative Business Organizations (2) f.**  
Prerequisite, course 1 or equivalent training. The organization, practices, and problems of farmers' cooperative business organizations. MR. JOHN MILLER.
- 351 **Agricultural Prices (3) f.**  
Prerequisite, course 1 or its equivalent. A discussion of price movements and the factors accounting for changes in prices. MR. GRADY.
- 360 **Land Economics (2) f.**  
Prerequisite, course 1. An examination of land utilization emphasizing conservation, land classification, utilization, valuation, taxation, and policies. MR. FRANK MILLER.
- 365 **Economic Aspects of American Agricultural Policies (3) f.**  
Prerequisite, course 250. An examination of American agricultural policies from the standpoint of their effects. MR. JOHNSON.
- 370 **Land Renting Problems (2) f.**  
Prerequisites, 120, 310, and 250 or its equivalent. The economic and farm management aspects of determining rent rates, acquiring and operating farms for rent. MR. FRANK MILLER.
- 375 **Farm Mortgage Problems (2) w.**  
Prerequisites, same as for course 370. The use of mortgages in financing the purchase and operation of a farm. MR. FRANK MILLER.
- 400 **Problems (Credit to be arranged) f, w, s.**  
Special studies or research of graduate caliber not requiring the preparation of a thesis. MEMBERS OF THE STAFF.
- 410 **Seminar (1) f, w.**  
Special lectures and reports on economic problems in agriculture. MEMBERS OF THE STAFF.
- 430 **Advanced Agricultural Prices (3) w.**  
Prerequisite, course 351. A study of the technical methods of analyzing prices of agricultural products. MR. KIEHL.
- 435 **Advanced Farm Management (4) w.**  
Prerequisite, course 310. Farm business analysis from the standpoints of both the farm and the individual enterprise, along with other breakdowns such as partnership sharing; actual field work on farm planning leading to one complete plan, record, and analysis of one farm.
- 440 **Economics of Marketing Milk and Milk Products (3) f.**  
Prerequisites, courses 220 and 250. An advanced study of the economic problems encountered in marketing dairy products, with special attention to price determination and the growing significance of public regulation to dairy processors and consumers. MR. WHITTED.
- 445 **Economics of Marketing Cotton (2) w.**  
Prerequisites, courses 220 and 250. Economic problems arising from current marketing practices. Special attention will be given to economic and technological developments which affect the domestic and international market prospect. MR. MCKINSEY.

- 450 Economics of Marketing Livestock and Livestock Products (3) w.**  
Prerequisites, courses 220 and 250. An analysis of current economic problems encountered in the marketing of livestock and its products, with emphasis on possible solutions. MR. KIEHL.
- 455 Economics of Marketing Poultry and Poultry Products (3) f.**  
Prerequisites, courses 220 and 250. An analysis of current economic problems encountered in the marketing of poultry and its products, and factors in determining poultry product prices with emphasis on possible solutions. MR. JOHN MILLER.
- 460 Agricultural Statistics: Tests of Significance (3) w.**  
Prerequisite, a grade of M or B in course 325 or equivalent. The Binomial and Normal distributions, statistical inference including Chi square and analysis of variance. Recommended for students in the experimental sciences. MR. FRAME.
- 461 Agricultural Statistics: Correlation Analysis (2 or 3) w.**  
Prerequisite, 325 or its equivalent. Methods of fitting straight lines and different types of curves; gross, partial and multiple correlation analysis of quantitative data. See Instructor. MR. FRAME.
- 465 Current Economic Problems of Agriculture (3) w.**  
Prerequisites, 16 hours of agricultural economics including 250 and 365 or their equivalent. Analysis of the important economic problems of the farmer, together with proposed remedies. MR. JOHNSON.
- 480 Research Methods in Agricultural Economics (2) f.**  
Research methods including sources of information, manner of collecting and analyzing, and expressing results. The student will develop a research project outline. MEMBERS OF THE STAFF.
- 490 Research in Agricultural Economics (Credit to be arranged) f, w, s.**  
Teacher selected by student.

## AGRICULTURAL ENGINEERING

- 1 Elementary Farm Power and Machinery (3) f, w.**  
Mechanics of engines, tractors, and common farm machines. Operating adjustments and practices as related to performance and maintenance. MR. JONES; MEMBERS OF THE STAFF.
- 10 Farm Shop Work (3) f, w.**  
Selection and use of hand and power tools for the farm shop. Basic tool processes used in repair and maintenance of farm equipment, including tool sharpening woodworking and metalwork. MR. DAY; MEMBERS OF THE STAFF.
- 21 Land Surveying (3) f.**  
Prerequisites, trigonometry. Elementary surveying primarily for students in forestry. MR. BEASLEY.
- 103 Elementary Farm Buildings (3) f, w.**  
Prerequisite, Mathematics 2 or equivalent. Functional requirements of farm buildings. Planning buildings with emphasis on sanitation, ventilation, materials, convenience and economy. Farmstead arrangement. MR. HODGES.
- 110 Farm Machinery Maintenance and Repair (3) f, w.**  
Prerequisites, courses 1 and 10; junior standing. Advanced work in methods of repairing farm machinery and equipment, principally oxy-acetylene and electric welding and lathe work. MR. MCKIBBEN.
- 201 Farm Water Management (3) f, w.**  
Prerequisites, 3 hours of mathematics and Soils 100. The place of farm water management practices in maintaining soil productivity. Farm surveying. Design and layout of terrace systems. MR. BEASLEY.

- 203 Farm Buildings (3) f.**  
Prerequisites, engineering drawing and college physics. Analysis of farm building requirements. Building materials, construction practices, costs. Heat and moisture relationships, ventilation and insulation. MR. STEWART.
- 215 Electricity on the Farm (3) w.**  
Prerequisites, college physics and junior standing. Electricity in the home and on the farm, with particular emphasis on its use in productive farm enterprises. MR. DAY.
- 221 Soil Conservation Engineering (3) w.**  
Prerequisites, Surveying and Soils 100. A study of factors affecting run-off from agricultural lands. The design and layout of terrace systems. MR. BEASLEY.
- 240 Farm Power and Machinery (3) f.**  
Prerequisites, trigonometry and college physics. Principles of construction and operation of field and farmstead machinery. Selection and management of power and machinery for economical crop production and processing. MR. BROOKER.
- 300 Problems (1-5) f, w, s.**  
Primarily for advanced undergraduates. Problems assigned, or elected by the student subject to approval. MEMBERS OF THE STAFF.
- 301 Farm Drainage and Irrigation (2) w.**  
Prerequisites, course 201 or equivalent. Design and layout of farm drainage and irrigation systems. MR. BEASLEY; MR. CURRY.
- 303 Farm Building Design (3) w.**  
Prerequisites, course 203 and mechanics of materials. Functional planning and structural design of various farm buildings. MR. STEWART; MR. HODGES.
- 315 Farm Electrification Engineering (3) f.**  
Prerequisite, 8 hours of Physics and Mathematics 175. Electric power distribution on farms. Wiring and lighting farm buildings; motors and controls; farm electrical equipment. MR. DAY.
- 321 Irrigation and Drainage Engineering (3) f.**  
Prerequisites, course 221 and Fluid Mechanics. Irrigation with special emphasis on supplemental irrigation. Open ditch and tile drainage. Advanced studies in the design of water management structures. MR. BEASLEY; MR. CURRY.
- 325 Home and Farmstead Improvement (2) s.**  
Prerequisite, course 103 or equivalent. Arrangement of buildings on the farmstead. Remodeling and modernizing the farm home and farm buildings. Planning for efficiency, comfort, and convenience. MR. HODGES.
- 340 Advanced Farm Power and Machinery (3) w.**  
Prerequisites, course 240 and Mathematics 175. Analytical study of the construction and operating characteristics of tractors and selected farm machines. Use of instruments and experimental apparatus. MR. BROOKER.
- 400 Problems (Credit to be arranged) f, w, s.**  
Analytical study of problems in agricultural engineering. MEMBERS OF THE STAFF.
- 403 Advanced Farm Buildings (3) f.**  
Prerequisite, course 303 or equivalent. Advanced study of farm buildings and farm building design. MR. STEWART.
- 410 Seminar (1) f, w.**  
Studies of recent investigations in agricultural engineering and related fields; discussion of current literature; preparation and presentation of papers. MEMBERS OF THE STAFF.
- 415 Buildings and Equipment for Processing Farm Crops (3) f.**  
Prerequisites, courses 303 and 340. Design of buildings for storage and processing of selected crops. Methods and equipment for cleaning, grinding, conveying, mixing and drying of farm products. MR. HODGES.

- 420 Animal Shelter Engineering (1) w.**  
Reviews of literature and research in animal shelter engineering with special reference to environmental physiology. MR. STEWART.
- 440 Mechanical Farm Equipment (3) w.**  
Prerequisites, graduate standing and equivalent of course 340. Advanced study of farm power and mechanical equipment with emphasis on recent developments. MR. JONES; MR. BROOKER.
- 450 Research (Credit to be arranged) f, w, s.**  
Independent investigation of some problem in the field of agricultural engineering, to be presented as a report, but not leading necessarily to a thesis. MEMBERS OF THE STAFF.
- 490 Research (Credit to be arranged) f, w, s.**  
Original research in farm power and machinery, farm buildings, drainage, or erosion control. Thesis required. MEMBERS OF THE STAFF.

## AIR FORCE ROTC

- 21 Air Science (1) f.**  
Introduction to AFROTC; Introduction to Aviation; Fundamentals of Global Geography; Leadership Laboratory. MEMBERS OF THE STAFF.
- 22 Air Science (1) w.**  
Prerequisite, Course 21. International Tensions and Security Organizations; Military Instruments of National Security; Leadership Laboratory. MEMBERS OF THE STAFF.
- 25 Air Science (1) f.**  
Prerequisite, Course 22. Careers in the United States Air Force; Moral Responsibility of Air Force Leaders; Introduction to Aerial Warfare; Targets; Weapons; Leadership Laboratory. MEMBERS OF THE STAFF.
- 26 Air Science (1) w.**  
Prerequisite, Course 25. Aircraft; Bases; Operations; Leadership Laboratory. MEMBERS OF THE STAFF.
- 123 Air Science (3) f.**  
Prerequisite, Course 26. Introduction to Advanced AFROTC; Creative Problem Solving; Communicating in the Air Force; Instructing in the Air Force; Leadership Laboratory. MEMBERS OF THE STAFF.
- 124 Air Science (3) w.**  
Prerequisite, Course 123. Military Justice System; Air Navigation; Weather; Air Force Commander and Staff; Air Force Base Functions; Leadership Laboratory. MEMBERS OF THE STAFF.
- 127 Air Science (3) f.**  
Prerequisite, Course 124. Moral Responsibility of Air Force Leaders; Leadership and Management Seminar; Military Aviation and Evolution of Warfare; Leadership Laboratory. MEMBERS OF THE STAFF.
- 128 Air Science (3) w.**  
Prerequisite, Course 127. Military Aspects of World Political Geography; Career Guidance; Briefing for Commissioned Service; Leadership Laboratory. MEMBERS OF THE STAFF.

## ANATOMY

- 201 Elementary Anatomy (4) f, s.**  
Prerequisite, 5 hours of General Zoology. The course is designed for nurses and non-medical students. The fundamentals of embryology, gross and microscopic anatomy are studied. DR. LATIMER AND ASSISTANTS.
- 203 Embryology and Histology (7) f.**  
A study of the development of the individual, based upon man and the higher mammals, and of the microscopic structure of the tissues and organs of the human body. The course is correlated with the dissection in Gross Anatomy. DR. LOWRANCE; DR. LANDRY AND ASSISTANTS.

- 204 Embryology and Histology (2) w.**  
A continuation of course 203. DR. LOWRANCE; DR. LANDRY AND ASSISTANTS.
- 205 Gross Anatomy (7) f.**  
A study of the gross structure of the human body, covering the dissection of the thorax, axilla, superior extremities, back, neck and head. DR. OVERHOLSER; DR. DOENGES AND ASSISTANTS.
- 206 Gross Anatomy (7) w.**  
A continuation of course 205, covering the dissection of the abdomen, pelvis, perineum and lower extremities. DR. OVERHOLSER; DR. DOENGES AND ASSISTANTS.
- 207 Neuroanatomy (4) w.**  
The gross and microscopic structure of the central and autonomic nervous systems are studied. DR. LATIMER; DR. LANDRY AND ASSISTANTS.
- 208 Applied Anatomy (2) f.**  
The course is devoted to the practical consideration of the principle structures stressed in clinical surgery and medicine. DR. STEPHENSON; DR. LATIMER.
- 300 Problems (Credit to be arranged) f, w, s.**  
The intensive study of regions or systems which may include developmental and microscopic as well as gross anatomy. MEMBERS OF THE STAFF.
- 301 Functional Anatomy of the Muscular and Skeletal Systems (3) f, w, s.**  
Prerequisites, Comparative Anatomy, Elementary Anatomy or Gross Anatomy and Elementary Physiology. A study of the function of the muscular and skeletal systems in the performance of body movements, and of the mechanical and phylogenetic factors involved in muscle and skeletal structure. DR. LANDRY.
- 401 Developmental Anatomy of Fetus and Child (Credit to be arranged) f, w, s.**  
Special consideration of quantitative changes leading to attainment of adult structure. DR. LOWRANCE.
- 410 Seminar (1) f, w.**  
The presentation and discussion of original investigations and current literature. DR. OVERHOLSER AND STAFF.
- 450 Research (Credit to be arranged) f, w, s.**  
Work fully equal to research done under course 490, but not leading to the preparation of a dissertation. MEMBERS OF THE STAFF.
- 490 Research (Credit to be arranged) f, w, s.**  
Work leading to the preparation of a dissertation. MEMBERS OF THE STAFF.

## ANIMAL HUSBANDRY

- 1 Animal Husbandry (3) f, w.**  
A survey of the livestock industry. The fundamentals of livestock judging and its relation to production. The work covers horses, cattle, sheep, and swine. MR. COMFORT; MEMBERS OF THE STAFF.
- 11 Breeds of Livestock (3) w.**  
Prerequisite, course 1. History, development, and type of the leading breeds of livestock; pedigrees and performances of superior individuals. MR. KAYS.
- 101 Livestock Judging (3) f, w.**  
Prerequisite, course 1. A study of the various classes of farm animals, with particular reference to utility and breed characteristics. Comparative judging, reference reading, illustrated lectures. MR. BRADLEY, MR. TRIBBLE, MR. THOMPSON.
- 104 Meats (3) f, w.**  
Prerequisite, course 1. A survey of the livestock and meat industry relationship, live-animal—carcass comparisons, slaughter, cutting, curing, smoking, identification, selection, processing, distribution, and utilization. MR. BRADY; MR. HENRICKSON; MR. BIRMINGHAM; MR. ZOBRISKY; MR. HEDRICK; MR. MULLINS.

- 202 Principles of Animal Nutrition (3) f, w.**  
Must be preceded or accompanied by organic chemistry, course 15. The fundamentals of animal nutrition and their application to livestock production. MR. PFANDER.
- 203 Animal Breeding (3) f, w.**  
Prerequisite, General Zoology 1, or equivalent. An introduction to breeding methods for improvement of livestock and to principles of animal reproduction. MR. LASLEY.
- 204 Advanced Meats (3) f, w.**  
Prerequisite, course 104. Carcass yields, cut out values, fabrication, boning, cutting, pre-packaging, and pricing. Wholesale, retail and institutional distribution. MR. HENRICKSON; MR. HEDRICK.
- 211 Advanced Livestock Judging (3) f.**  
Prerequisite, course 101. Comparative judging and selecting of farm animals for specific uses; includes excursions to livestock shows and noted breeding farms. MR. DYER; MR. BRADLEY.
- 214 Meat Classification, Grading and Judging (2) f.**  
Prerequisite, course 204. A study of the factors affecting quality; to include meat classification, grading, and judging of beef, pork, and lamb. MR. HENRICKSON; MR. HEDRICK.
- 224 Meat Selection and Identification (3) f, w.**  
(For students in Home Economics)  
Prerequisite, H. E. course 31. A study of meat with reference to selection, identification, utilization, wholesale and retail buying. MR. BIRMINGHAM.
- 234 Meat Processing (3) w.**  
(For students in the School of Veterinary Medicine only)  
Prerequisite, course 1. Livestock—meat relationships; live animal—carcass comparisons; anatomical characteristics; processing, distribution, and utilization. MR. BRADY; MR. HENRICKSON.
- 300 Problems (1-2) f, w, s.**  
Current problems in animal breeding, nutrition, livestock production, and meats. Assigned topics. Each student may, under supervision, undertake a project outlining objectives, planning, keeping records, and summarizing results in a written report. MEMBERS OF THE STAFF.
- 301 Field Course in Animal Husbandry (2-4) Intersession.**  
Prerequisites, courses 201, 202, 203, 204, or equivalent. A study of production, management, marketing, and processing of meat and meat products including visits to successful Missouri commercial and purebred livestock farms, livestock markets and meat processing plants. MEMBERS OF THE STAFF.
- 303 Laboratory Techniques in Livestock Breeding (3) f.**  
Prerequisite, course 203. Practice in collection, evaluation and storage of semen; insemination techniques, and methods of pregnancy diagnosis. MR. LASLEY.
- 304 Meat Technology (5) w.**  
Prerequisite, course Agr. Chem. 210, or equivalent. Characteristics of meat and meat products as relates to processing operation, manufacture, and marketing. MR. BRADY.
- 311 Horse Production (2) f.**  
Prerequisites, courses 1, 201, and 202. Use, care and production of horses, including breeding, feeding, and management of all classes. MR. KAYS.
- 313 Genetics of Livestock Improvement (3) f, s.**  
Prerequisites, course 203, or equivalent. Application of genetic principles to improvement of domestic animals. Consideration of methods available to breeders and their effectiveness. MR. LASLEY.
- 321 Beef Production (3) f.**  
Prerequisites, courses 1, 201, and 202. Systems of beef production, including breeding, feeding, and management of commercial and purebred beef cattle. MR. COMFORT.



- 331 Sheep Production (2) w.**  
Prerequisites, courses 1, 201, and 202. Systems of sheep and wool production, including breeding, feeding, and management of commercial and purebred sheep. MR. DYER; MR. BRADLEY.
- 341 Pork Production (3) w.**  
Prerequisites, courses 1, 201, and 202. Systems of pork production including breeding, feeding, and management of commercial and purebred swine. MR. TRIBBLE.
- 352 Animal Nutrition (2-2½) s.**  
Prerequisite, course 202. Feed requirements and utilization. Evaluation of rations. Recent developments and application of research finding. Offered in alternate years. Not offered in 1956-57. MR. PFANDER.
- 401 Livestock Management (2) w.**  
Prerequisites, courses 321, 331, and 341, or equivalent. The operation of livestock farms. Special studies concerning the various classes of livestock and their products. MR. WEAVER.
- 402 Animal Nutrition (2-3) w.**  
Prerequisites, courses Animal Husbandry 202 and Ag. Chem. 210, or equivalent. A study of the more important contributions to the knowledge of animal nutrition; designed for students specializing in some phase of animal industry. MR. PFANDER.
- 403 Animal Breeding Investigations (2-3) w.**  
Prerequisites, courses 303 and 313, or equivalent. Consideration of current and historical literature in animal genetics and reproductive physiology, with emphasis on experimental design and techniques, methods of analysis and interpretation of results. MR. LASLEY; MR. MAYER.
- 404 Meat Investigations (3) f.**  
Prerequisite, course 304, or equivalent. Discussion of the literature. Special reports, assigned readings, techniques, and interpretation of results. MR. BRADY.
- 410 Seminar (1) w.**  
Critical consideration of research and other selected subjects. Review of current literature. MEMBERS OF THE STAFF.
- 411 Livestock Feeding Investigations (2).**  
Prerequisite, course 402, or equivalent. A study of the more important investigations in feeding beef cattle, hogs, and sheep. MR. DYER; MR. WEAVER; MR. PFANDER.
- 413 Physiology of Reproduction (3) f.**  
Prerequisite, course 303, or equivalent. The physiology and chemistry of the male and female reproductive organs, and a study of their secretions and associated endocrines. MR. MAYER.
- 420 Design and Analysis in Animal Experimentation (3) f.**  
Prerequisites, Agricultural Economics 460, 461, or equivalent. Principles of efficient experimental design and statistical analysis as applied to animal investigations. Offered in 1956-57 and alternate years. MR. STEPHENSON.
- 423 Genetics of Populations (4) f.**  
Prerequisites, Animal Husbandry 313, Agricultural Economics 461, or equivalent. Genetic composition of populations and conditions which influence their rate of change. Relative effectiveness of various breeding plans. Offered in alternate years. Not offered in 1956-57. MR. STEPHENSON.
- 430 The Organization, Operation, Functions, and Policies of Agricultural Experiment Stations (1) f.**  
Assigned readings and reports. MR. LONGWELL.
- 432 Ruminant Nutrition (3) f.**  
Prerequisite, course 402, or equivalent. Lectures, laboratory, assigned readings on the physiology, chemistry, microbiology, and pathology of the ruminant with special attention to the digestion, absorption, and metabolism of roughages. Offered in alternate years. Not offered in 1956-57. MR. PFANDER.

- 450 Research (Credit to be arranged) f, w, s.**  
Investigation in animal breeding, nutrition, livestock production, and meats. The results are to be presented in a carefully organized written report. MEMBERS OF THE STAFF.
- 490 Research (Credit to be arranged) f, w, s.**  
Investigation in animal breeding, nutrition, livestock production, and meats. The results are to be presented in a carefully organized thesis. MEMBERS OF THE STAFF.

## ARMY ROTC

Satisfactory completion of Basic Courses 1, 2, 33, and 44 (or acceptable equivalents) are a prerequisite for Advanced Courses 105, 106, 107 and 108.

- 1 Basic Military Science (1) f.**  
Drill and Leadership; Map Reading; First Aid and Sanitation.
- 2 Basic Military Science (1) w.**  
Individual Weapons; Military Organization; Military Problems; Combat Formations; Tactics of Rifle Squads; Drill and Leadership.
- 33 Artillery Organization and Materiel (1) f.**  
Field Artillery Organization; Gun Section Drill; Materiel; Aerial Photograph Reading; Tactical Principles of Combat; Leadership and Command.
- 44 Artillery Organization and Materiel (1) w.**  
Communications; Gun Section Drill; Fire Control Instruments; Anti-Aircraft Gunnery; Leadership and Command.
- 105 Artillery Techniques (3) f.**  
Firing Battery; Motor Transportation; Terrain Analysis; Field Artillery Tactics; Anti-Aircraft Artillery; Leadership and Command.
- 106 Artillery Techniques (3) w.**  
Observed Artillery Fires; Fire Direction; Artillery Survey; Leadership and Command.
- 107 Artillery Advanced Techniques and Tactics (3) f.**  
Artillery Gunnery; Military Command and Staff Work; Military Law and Boards; Leadership and Command.
- 108 Artillery Advanced Techniques and Tactics (3) w.**  
Psychological Warfare; Artillery in Combined Arms Team; New Developments; Anti-Aircraft Artillery Tactics and Techniques; Military Teaching Methods; Geographical Foundations of National Power; Military Administration; Leadership and Command.

## ART

- 3 Appreciation of Art (2) f, w.**  
No prerequisites. Illustrated discussion with examples from varied historic and contemporary art fields on the nature of art, its functions, and methods of creative expression. MR. PEART.

## Drawing, Painting, and Design

- 2 Introduction to Art (3) f, w.**  
No prerequisites. Basic practice in drawing, painting, and design. An exploratory course for beginners and a prerequisite to all other studio courses, except course 5. MEMBERS OF THE STAFF.
- 5 Elementary Drawing (2) f, w.**  
No prerequisites. Basic practice in the fundamentals of drawing. Various approaches to drawing problems in black and white. Studies from the human figure and still life. MRS. MONTMINY.

- 19 Composition I (2) f, w.**  
Prerequisite, course 2 and one semester of drawing. Theory and practice of making pictures. Intended to quicken the appreciation of technical art values as well as to prepare for more advanced studies. MR. SHANE; MRS. MONTMINY.
- 40 Water Color (2) f, w.**  
Prerequisite, course 2. Theory and practice of painting in water color from still life, landscape, and figure. MR. HANSEN.
- 70 Design I (3) f, w.**  
Prerequisite, course 2. Basic study of the elements and principles of two-dimensional design, employing a variety of tools and materials. MR. MCKININ.
- 168 Drawing I (3) f, w.**  
Prerequisite, course 2. Drawing in charcoal, crayon, ink, and other media from the human figure. MR. HANSEN; MR. SHANE.
- 378 Drawing II (3) f, w.**  
Prerequisite, course 168. Study of the human figure continued. MR. HANSEN; MR. SHANE.
- 388 Drawing III (3) f, w.**  
Prerequisite, course 378. Advanced study of the human figure. MR. HANSEN; MR. SHANE.
- 398 Drawing IV (3) f, w.**  
Prerequisite, course 388. Advanced study continued. MR. HANSEN; MR. SHANE.
- 177 Painting I (3) f, w.**  
Prerequisite, course 2 and one semester of drawing. A fundamental course in oil painting with emphasis on color and space organization. MR. HANSEN; MR. SHANE.
- 377 Painting II (3) f, w.**  
Prerequisite, course 177. A continuation of painting using still life and landscape as subject matter. MR. HANSEN; MR. SHANE.
- 387 Painting III (3) f, w.**  
Prerequisite, course 377. Advanced study in oil painting. MR. HANSEN; MR. SHANE.
- 397 Painting IV (3) f, w.**  
Prerequisite, course 387. Advanced study continued. MR. HANSEN; MR. SHANE.
- 359 Composition II (2) f, w.**  
Prerequisite, course 19. Form and color organization of paintings in gouache and oil. MR. SHANE; MRS. MONTMINY.
- 379 Composition III (2) f, w.**  
Continuation of course 359. MR. SHANE; MRS. MONTMINY.
- 389 Composition IV (2) f, w.**  
Continuation of course 379. MR. SHANE; MRS. MONTMINY.
- 360 Design II (3) f, w.**  
Prerequisite, course 70. Practical application of design principles with increasing emphasis on dynamics of structure and organization. MR. MCGEE.
- 370 Design III (3) f, w.**  
Prerequisite, course 360. Emphasis on three-dimensional problems of structure, materials, color and organization. MR. MCGEE.
- 380 Design IV (3) f, w.**  
Prerequisite, course 370. Studies in mass and movement. MR. MCGEE.
- 400 Problems (8) f, w.**  
Advanced work in drawing, painting, and design. MEMBERS OF THE STAFF.
- 406 Design V (3) f, w.**  
Prerequisite, course 380. Advanced projects combining two-dimensional and three-dimensional studies. MR. MCGEE.

- 407 **Painting V (3) f, w.**  
Prerequisite, course 397. MR. HANSEN; MR. SHANE.
- 408 **Drawing V (3) f, w.**  
Prerequisite, course 398. MR. HANSEN; MR. SHANE.
- 409 **Composition V (2) f, w.**  
Prerequisite, course 389. MR. SHANE; MRS. MONTMINY.
- 420 **Graduate Collaboration (4) f, w.**  
Collaborative projects involving two or more students in the Department of Art. MEMBERS OF THE STAFF.
- 440 **Historic Research in Drawing, Painting and Design (4) f, w.**  
Investigation of historic precedent in drawing, painting, and design. MEMBERS OF THE STAFF.
- 460 **Advanced Composition (Credit to be arranged) f, w.**  
Projects in the designing of easel pictures and mural decoration. MR. HANSEN; MR. SHANE.

## Art Crafts

- 55 **Artercraft Fundamentals (2) f, w.**  
Open to all students. Practical work in handling various craft materials. Encourages creative expression in artercraft activities. MR. BUSSABARGER; MRS. FRICK.
- 75 **Artercraft I (3) f, w.**  
Prerequisite, course 2. Construction and decoration involving the fundamental principles of design as related to materials. Block printing, wood carving, modeling, etching, and engraving. MR. MCGEE.
- 150 **Artercraft II (2) f, w.**  
Prerequisite, course 75. Primarily a study of sculptural form, employing wood, metal, plaster, and plastics. MR. MCGEE.
- 375 **Artercraft III (1-4) f, w.**  
Prerequisite, course 75 and one semester of drawing or design. A study in graphic arts procedures, employing various methods of reproducing an original drawing. Silk-screen, wood block, and metal plate. MR. MCGEE.
- 109 **Bookbinding I (2) w.**  
No prerequisite. Includes the making of books and the binding of magazines. MISS WULFEKAMMER.
- 120 **Weaving I (2) f, w.**  
Prerequisite, course 2. Weaving of textiles on hand and foot power looms. Learning the mechanics of a loom. Reading and writing pattern drafts. Experimenting with yarns to create fabrics. MISS WULFEKAMMER.
- 121 **Weaving II (2) f, w.**  
Prerequisite, 120. Experiments in weaving methods. Theory of creative design as applied to the woven fabric. Study of color, texture and pattern draft. MISS WULFEKAMMER.
- 340 **Weaving III (2) f, w.**  
Prerequisite, course 121. Advanced problems in textile designing and weaving. MISS WULFEKAMMER.
- 130 **Ceramic Art I (3) f, w.**  
Prerequisite, course 2. Pottery and ceramic sculpture including the processes of casting, decoration, firing and glazing. Emphasis on contemporary structural design and function. MR. BUSSABARGER.
- 331 **Ceramic Art II (3) f, w.**  
Continuation of course 130, which is prerequisite to this course. MR. BUSSABARGER.

- 335 Ceramic Art III (2) f, w.**  
Experimentation with high fire clay bodies and glazes. Prerequisite, course 331. MR. BUSSABARGER.
- 351 Jewelry I (2) f, w.**  
Prerequisite, course 2. Jewelry design and construction, including processes of soldering, forming, stone setting, and finishing. MR. MCKININ.
- 352 Jewelry II (2) f, w.**  
Prerequisite, course 351. Raising methods and centrifugal casting techniques, with emphasis on sculptural form. MR. MCKININ.
- 401 Problems in Artcrafts (8) f, w.**  
Advanced individual projects in the artcrafts. MEMBERS OF THE STAFF.
- 441 Historic Research in Artcrafts (4) f, w.**  
MEMBERS OF THE STAFF.

## History of Art

- 111 Introduction to Ancient Mediaeval Art (2) f.**  
Architecture, sculpture and painting of the Near East, Greece and Rome, and mediaeval Europe. Illustrated lectures and collateral reading. MR. THOMAS.
- 112 Introduction to Renaissance and Modern Art (2) w.**  
Continuation of course 11, tracing the general evolution of art from the fourteenth century to modern times. Illustrated lectures. MR. THOMAS.
- 114 Modern Painting (3) f, w.**  
Painting in France, Spain, England, and Germany from the seventeenth century to the present, with particular emphasis on contemporary international movements. MR. THOMAS.
- 120 The Art of America (3) f, w.**  
A discussion of painting, sculpture, architecture, and handicrafts from the seventeenth century to the present day. MR. PEART.
- 151 History of Motion Pictures (2) f, w.**  
Origin and growth of motion pictures. Some study of methods and techniques exemplified in notable films, leading to a better appreciation of the medium. Prerequisite, sophomore standing. MR. JOHNSON.
- 312 History of Italian Renaissance Art (3) f.**  
A study of Italian architecture, painting, and sculpture from the fourteenth to the seventeenth century. Illustrated lectures. Offered in 1956-57, and every third year. MR. THOMAS.
- 313 History of the Northern Renaissance (3) w.**  
A study of Flemish, German, and Dutch art from the fourteenth to the seventeenth century. Illustrated lectures. Offered in 1956-57 and every third year. MR. THOMAS.
- 316 History of Italian Renaissance Sculpture (2) f, w.**  
The relationship of Italian sculpture with the contemporary architecture and painting from the thirteenth to the seventeenth century. Illustrated lectures. MR. THOMAS.
- 318 Primitive Art (3) f.**  
A study of prehistoric, primitive, and peasant art with discussion of the history of the crafts and with emphasis on their relation to western and contemporary art. Offered every third year. Next offered 1958-59. MR. THOMAS.
- 319 Medieval Art (3) w.**  
A study of Early Christian, Byzantine, Islamic, and Western Art during the Middle Ages with particular emphasis on contemporary philosophy, literature, and symbolism. Offered every third year. Next offered 1958-59. MR. THOMAS.
- 320 Oriental Art I (3) f.**  
Architecture, sculpture, and painting of the late ancient and Islamic Near East and India. Illustrated lectures. Offered every third year. Next offered 1957-58. MR. THOMAS.

**321 Oriental Art II (3) w.**

Architecture, sculpture, and painting of Buddhist India, Southeast Asia, China, Japan, and Central Asia. Illustrated lectures. Offered every third year. Next offered 1957-58. MR. THOMAS.

**410 History of Art Seminar (Credit to be arranged) f, w.**

Prerequisite, at least 5 hours of art history. The seminar involves individual research on assigned subjects. MR. THOMAS.

**490 Research and Thesis (Credit to be arranged) f, w.**

Independent investigation of some chosen or assigned topic, to result in a thesis presented for the degree of Master of Arts. MR. THOMAS.

**ASTRONOMY****1 Introduction to Astronomy (5) f, w.**

Prerequisites, one unit of algebra and one unit of plane geometry. A survey of research methods used in astronomy; a description of the astronomical universe emphasizing physical conditions; study of problems related to the structure of our galaxy.

**BACTERIOLOGY AND PREVENTIVE MEDICINE**

(See MICROBIOLOGY)

**BIOCHEMISTRY****106 Medical Biochemistry (6) f.**

Prerequisite, 8 hours of general chemistry, 5 hours of organic chemistry (some quantitative chemistry is recommended). A lecture and laboratory resume of the aspects of physical and quantitative chemistry important in biochemistry, the chemistry of carbohydrates, proteins, lipids, vitamins, minerals, hormones and composition of tissues. DR. LUCKEY AND STAFF.

**108 Medical Biochemistry (4) w.**

Prerequisite, biochemistry 106 or equivalent. Lectures and experiments on the chemistry of enzymes, energy, respiration, metabolism of carbohydrates, lipids, proteins and nutrition. DR. LUCKEY AND STAFF.

**203 Elementary Biochemistry (3) w.**

Prerequisite, 3 hours of organic chemistry. An outline of the fundamentals of biochemistry. DR. LUCKEY AND STAFF.

**301 Biochemistry (5) w.**

This course is designed for graduate students and is organized to stress the fundamental aspects of biochemistry. Open to advanced students suitably prepared. Not accepted for Medical School credit. DR. LUCKEY AND STAFF.

**304 General Biochemistry Lectures (5) f.**

Prerequisites, organic chemistry, quantitative chemistry, biology. Lectures covering the principles of biochemistry with a comparison of bioconstituents and reactions in micro-organisms, plants and animals. DRS. LUCKEY, THOMAS, KOEPPE AND FRANZ.

**305 Biochemistry Laboratory (2) f.**

Prerequisites, organic chemistry and quantitative chemistry. A broad view of principles and methods of biochemistry via laboratory practice. DRS. LUCKEY, THOMAS, KOEPPE AND FRANZ.

**306 General Biochemistry Lectures. (4) w.**

Prerequisite, one course in biochemistry. Enzymes, metabolism and nutrition are presented to give some understanding of the chemistry of life. Comparative metabolism and nutrition are included. DRS. LUCKEY, THOMAS, KOEPPE AND FRANZ.

- 307 Biochemistry Laboratory. (1) w.**  
Prerequisite, one semester of biochemistry. Experiments in enzymes, metabolism and nutrition. DRS. LUCKEY, THOMAS, KOEPPE AND FRANZ.
- 310 Techniques in Biochemistry (3) f.**  
Prerequisite, one course in biochemistry. This course is designed to give the advanced student greater understanding in the practice of biochemistry. DR. LUCKEY AND STAFF.
- 400 Problems (2-5) w, s.**  
Assigned problems in supervised research. STAFF.
- 404 Comparative Biochemistry (2) f.**  
Prerequisite, biochemistry. Lectures and assignments to give a comparison of compounds and reactions which occur in different classes of living organisms. DR. LUCKEY AND STAFF.
- 406 Comparative Nutrition and Metabolism (2) w.**  
Prerequisite, biochemistry. Lectures and assignments covering a broad view of metabolism and nutrition in living organisms representative of viruses, bacteria, yeasts, molds, plants, invertebrates, reptiles, birds, and mammals. DR. LUCKEY AND STAFF.
- 410 Biochemistry Seminar (1) w.**  
Review of current literature and individual presentation of research or classical science topics. STAFF.
- 461 Industrial Biochemistry (3) w.**  
Prerequisite, biochemistry 304 or equivalent. A study of biochemical processes applied to fermentations, the production of foods, beverages, chemicals and various biological preparations. STAFF.
- 464 Protein Chemistry (2) w.**  
Prerequisite, biochemistry 304 or equivalent. Lectures on the important chemical and physical characteristics of proteins and some of the methods used in isolating and characterizing them. DR. THOMAS.
- 490 Research (Credit to be arranged) w, s.**  
Research in biochemistry for properly qualified students with the counsel of a member of the faculty. STAFF.

## BOTANY

- 1 General Botany (5) f, w, s.**  
An introduction to fundamental principles of biology as illustrated by plants. MR. PALMQUIST AND MEMBERS OF THE STAFF.
- 10 Elementary Taxonomy (3) w.**  
Introductory study of the principles of classification of seed plants with emphasis on the local flora. Lectures, laboratory and field work. Restricted to students in forestry. MR. KUCERA.
- 101 Poisonous Plants (2) f.**  
An elementary taxonomy course with emphasis on plants important in veterinary medicine. Restricted to students in veterinary science. MR. KUCERA.
- 200 Problems (Credit to be arranged) f, w, s.**  
On consultation with the teachers concerned, properly prepared students (15 or more hours credit) may pursue special problems in the various fields of botany. MEMBERS OF THE STAFF.
- 201 Taxonomy (4) w, s.**  
Principles of classification of plants; use of keys and the identification of the local flora. MR. KUCERA.
- 202 General Bacteriology (4) f, w, s.**  
Prerequisites, General Botany or General Zoology, and General Inorganic Chemistry. A general course in the fundamental principles of bacteriology. MR. BROOKS.



- 203 Plant Physiology (5) f, w.**  
Prerequisite, General Botany and five hours credit in chemistry. Lectures and laboratory work on the physiology of the common cultivated plants. MR. LEVITT.
- 301 Plant Pathology (4) w.**  
A consideration of diseases of economic plants based on lectures, group study of representative diseases and individual study of selected diseases. MR. PETERSON.
- 302 Advanced Bacteriology (3) f.**  
Prerequisites, course 202 and 10 hours of Chemistry. A detailed and fundamental study of the basic principles of Bacteriology as a biological science. Lectures, laboratory, and discussions. MR. BROOKS.
- 303 Morphology of Seed Plants (3) w.**  
Evolution, structure, and development of seed plants. Offered in alternate years. Not offered in 1956-57. MR. VAN FLEET.
- 304 Morphology of Cryptogams (3) w.**  
The structure and development of algae, bryophytes, and primitive vascular plants. Offered in 1956-57 and alternate years. MR. VAN FLEET.
- 305 Histological Methods (3) w.**  
General principles and specific methods of sectioning, staining, and detecting plant tissues. MR. VAN FLEET.
- 306 Plant Ecology (3) f, s.**  
Prerequisite, course 1, 10 or 201. Plants and plant communities in relation to environment with special reference to local flora; lectures, laboratories, and field studies. MR. KUCERA.
- 307 Mycology (4) f.**  
An introduction to the study of fungi with emphasis upon their structure and development in relation to their activity. MR. PETERSON.
- 308 Plant Anatomy (4) f.**  
The developmental history and structure of vascular plants. Offered in alternate years. Not offered in 1956-57. MR. VAN FLEET.
- 309 Plant Geography (3) w.**  
Prerequisite, Botany 10 or 201. Species distributions over the earth; a consideration of population centers, migrations, external factors in isolation, and present-day dispersal. MR. KUCERA.
- 310 Aquatic Botany (3) f.**  
Prerequisites, course 1 and 201. A study of algae and higher forms of local aquatic plant life, including classification and the ecological relationships of the various groups. MR. KUCERA.
- 311 Agrostology (3 or 5) f.**  
Identification and classification of the native grass flora. Five hours credit includes lectures and special assignments. Offered in alternate years. Not offered in 1956-57. MR. KUCERA.
- 320 General Botany Materials and Problems (2) f.**  
Prerequisite, 10 hours biological science, including a course in general botany. A consideration of the objectives of a general course and the merits of various techniques of teaching. MR. PALMQUIST.
- 352 Taxonomy of Bacteria (2) w.**  
Prerequisites, course 202 and one other course in Bacteriology, 10 hours of chemistry. Theory and practice of bacterial classification-historical background, development of taxonomic systems, modern concepts and methods. Lectures and laboratory. Offered in 1956-57 and alternate years. MR. BROOKS.
- 360 Advanced Mycology (3) w.**  
Prerequisite, Course 307 or equivalent. Reading and discussion of the classical and current mycological literature and the pursuance of individual problems making use of such literature. MR. PETERSON.

- 400 Problems (Credit to be arranged) f, w, s.**  
Subjects in botany not included in the courses regularly offered. Designed especially for graduate students whose work demands additional directed training. MEMBERS OF THE STAFF.
- 402 Microbiological Materials and Methods (4) f.**  
Prerequisite, General Bacteriology or consent of the instructor. Instrumentation and research procedures in bacteriology, mycology and phytopathology. Offered in alternate years. Not offered in 1956-57. MR. PETERSON.
- 403 Physiological Responses to Environment (3) f.**  
The changes induced in plants by variations in water, light, temperature, etc. Offered in alternate years. Not offered in 1956-57. MR. LEVITT.
- 404 Carbon and Nitrogen Metabolism (3) w.**  
Respiration, photosynthesis, metabolism of proteins, alkaloids, and vitamins. MR. LEVITT.
- 405 Physiology of the Mineral Elements (3) f.**  
Essentiality, functions, metabolism, absorption, and translocation of the mineral elements. Offered in 1956-57 and in alternate years. MR. LEVITT.
- 409 Plant Morphogenesis (2) f.**  
Detection of prestructural differentiation in plants related to ultimate form. Offered in alternate years. Not offered in 1956-57. MR. VAN FLEET.
- 410 Seminar (1) f, w.**  
Special subjects of botanical work will be discussed including the results of local investigations. A reading knowledge of French and German is desirable. Required of all graduate students in Botany. MEMBERS OF THE STAFF.
- 420 Advanced Histological Methods (3) f.**  
Evaluation and application of histochemical and cytochemical methods in localization of enzymes, nucleic acids, amino acids and other cellular products. Offered in 1956-57 and in alternate years. MR. VAN FLEET.
- 452 Advanced Genetics (3) f.**  
(Same as Zoology 452).  
Prerequisite, Zoology 340, or equivalent. Reading and discussion on the nature of the gene, and its relation to development. MR. NOVITSKI.
- 453 Advanced Genetics (3) w.**  
(Same as Zoology 453).  
Prerequisite, Zoology 340, or equivalent. Reading and discussion of sex determination, quantitative inheritance, speciation, and related topics. MR. NOVITSKI.
- 456 Cytogenetics (3) f.**  
(Same as Zoology 456).  
Prerequisite, Zoology 335 or 340, or the equivalent. Reading and discussion on chromosome behavior and its genetic consequences. Offered in alternate years. Not offered in 1956-57.
- 457 Cytogenetics (3) w.**  
(Same as Zoology 457).  
Prerequisite, Zoology 335 or 340, or the equivalent. A laboratory study of mitosis, meiosis, and chromosomal aberrations, using smear methods. Offered in alternate years. Not offered in 1956-57.
- 458 Experimental Alteration of Heredity (3) f.**  
Prerequisite, Zoology 340, or equivalent. A detailed discussion of the mutation process in its broad sense, and of the physics underlying the artificial production of mutations.
- 460 Genetics of Fungi (3) f.**  
Prerequisite, Zoology 340, or the equivalent. Reading and discussion of the mechanism of heredity and variation in fungi. Offered in 1956-57 and alternate years.
- 461 Genetics of Microorganisms (3) w.**  
Prerequisite, Zoology 340, or the equivalent. Reading and discussion of heredity and variation of bacteriophages, bacteria, and protozoa. Offered in 1956-57 and alternate years.

**490 Research (Credit to be arranged) f, w, s.**

Students who have had adequate preparation will be assigned some special problem for investigation. A reading knowledge of French and German is essential. MEMBERS OF THE STAFF.

**CHEMICAL ENGINEERING****204 Chemical Engineering Materials (2) f, w.**

Prerequisites, Ch.E. 223. Properties of engineering materials used in chemical plants and equipment. MEMBERS OF THE STAFF.

**223 Introduction to Chemical Engineering (2) f, w, s.**

Prerequisite, eleven hours in chemistry. Industrial chemical processes and equipment. MEMBERS OF THE STAFF.

**225 Chemical Process Calculations I (3) f.**

Prerequisites, preceded or accompanied by course 223 and Chem. 231. Industrial stoichiometry, material and energy balances, thermophysics, thermochemistry, and related topics. MEMBERS OF THE STAFF.

**226 Chemical Process Calculations II (3) w.**

Prerequisite, course 225. A continuation of course 225.

**234 Principles of Chemical Engineering I (3) f.**

Prerequisite, preceded by course 223. Fluid flow, heat transfer, evaporation, and related topics. MEMBERS OF THE STAFF.

**235 Principles of Chemical Engineering II (3) f.**

Prerequisites, courses 225 and 234. Distillation, extraction, absorption, and related topics. MEMBERS OF THE STAFF.

**236 Principles of Chemical Engineering III (3) f.**

Prerequisite, course 235. Drying, filtration, mixing, size reduction and separation, and related topics. MEMBERS OF THE STAFF.

**243 Chemical Engineering Laboratory I (2) f.**

Prerequisite, course 235 and preceded or accompanied by course 236. A laboratory study of some of the principal unit operations of chemical engineering. MEMBERS OF THE STAFF.

**244 Chemical Engineering Laboratory II (2) w.**

Prerequisites, courses 243 and 236. A continuation of course 243. MEMBERS OF THE STAFF.

**251 Chemical Engineering Project (2) f, w, s.**

Individual work on a chemical engineering problem. MEMBERS OF THE STAFF.

**300 Problems (2-4) f, w, s.**

Directed study of the problems in the field of chemical engineering. MEMBERS OF THE STAFF.

**361 Chemical Engineering Thermodynamics I (3) f.**

Prerequisite, course 226. A study of thermodynamics with particular reference to its applications in chemical engineering. MEMBERS OF THE STAFF.

**362 Chemical Engineering Thermodynamics II (3) w.**

Prerequisite, course 361. A continuation of course 361. MEMBERS OF THE STAFF.

**370 Instrumentation (3) w.**

Prerequisite, senior standing in engineering or the sciences. Theory, design, selection, use, and limitations of various indicating, recording, integrating, and controlling devices used in the process industries. MEMBERS OF THE STAFF.

**385 Chemical Engineering Design I (3) f.**

Prerequisite, senior standing in chemical engineering. Integrated use of the engineering, chemical, and economic principles involved in the design and layout of chemical plants and equipment. MEMBERS OF THE STAFF.

- 386 Chemical Engineering Design II (3) w.**  
Prerequisite, courses 236, 361, and C.E. 101. The application of the principles of chemical engineering and mechanics to the selection, design, and layout of equipment for the process industries. MEMBERS OF THE STAFF.
- 400 Problems (2-5) f, w, s.**  
Experimental investigation of problems in the field of chemical engineering. MEMBERS OF THE STAFF.
- 410 Seminar (1) f, w.**  
Reviews of investigations and projects of importance in the field of chemical engineering. MEMBERS OF THE STAFF.
- 415 Fuels, Combustion and Furnaces (3) w.**  
Prerequisites, courses 235 and 362. Advanced work on these topics. MR. LUEBBERS.
- 420 Heat Transfer and Fluid Flow (3) f.**  
Prerequisites, courses 236 and 361. A study of advanced phases of these unit operations. MR. LUEBBERS.
- 421 Drying and Humidification (3) f.**  
Prerequisites, courses 236 and 361. Advanced work on these topics. MR. LORAH.
- 422 Distillation and Rectification (3) w.**  
Prerequisites, courses 236 and 362. Advanced work on these topics, with applications to multicomponent mixtures. MR. LORAH; MR. DECHAZAL.
- 423 Absorption and Extraction (3) w.**  
Prerequisite, course 236. Advanced study of gas absorption, liquid-liquid extraction, liquid-solid extraction, and related topics. MR. LORAH; MR. DECHAZAL.
- 424 Mechanical Separation (3) w.**  
Prerequisites, courses 226 and 235. Advanced study of mechanical separation and related topics. MR. LUEBBERS.
- 430 Chemical Engineering Economics (3) f.**  
Prerequisite, course 236. Discussion of factors other than technical engineering which determine feasibility of a chemical production enterprise. MR. LORAH.
- 450 Research (Credit to be arranged) f, w, s.**  
Independent investigation in the field of chemical engineering, to be presented as a report. Credit limit, 7 hours. MEMBERS OF THE STAFF.
- 451 Advanced Chemical Engineering Thermodynamics I (3) f.**  
Prerequisite, course 362. Advanced thermodynamics with particular reference to its application in chemical engineering. MR. DECHAZAL; MR. BEYER.
- 452 Advanced Chemical Engineering Thermodynamics II (3) w.**  
Prerequisite, course 451. A continuation of course 451. MR. DECHAZAL; MR. BEYER.
- 461 Process Development and Plant Design (3) w.**  
Prerequisite, course 386. Lectures and individual study of the chemical engineering and economic factors involved in the development of chemical manufacturing and processes.
- 490 Research (Credit to be arranged) f, w, s.**  
Independent investigation in the field of chemical engineering, to be presented in the form of a thesis. MEMBERS OF THE STAFF.

## CHEMISTRY

- 1 General Inorganic Chemistry (5) f, w, s.**  
An introductory course. MR. BENT; MR. NIELSEN; MISS ABBOTT; MR. ARCAD.
- 2 General Inorganic Chemistry (3) f, w, s.**  
Prerequisite, grade M or better in Chem. 1 required before enrolling in Chem. 2. MR. THOMAS.

- 15 Elementary Organic Chemistry (3) f, w, s.**  
Prerequisite, Chem. 1. Introductory course. Does not satisfy requirement for premedical students or for those majoring in chemistry. MEMBERS OF THE STAFF.
- 25 Analytical Chemistry (5) f, w.**  
Prerequisite, Chem. 1. Elective for students preparing to take medicine or home economics. A brief survey of the qualitative and quantitative analytical methods. MR. BRECKENRIDGE.
- 26 Qualitative Analysis (2) f, w.**  
Prerequisite, must be preceded or accompanied by Chemistry 2. A brief course for Engineering students. MR. BRECKENRIDGE.
- 27 Qualitative Analysis (3) f, w, s.**  
Prerequisite, must be preceded or accompanied by Chemistry 2. A laboratory course. MR. BRECKENRIDGE.
- 198 Distinction (3) f.**  
MEMBERS OF THE STAFF.
- 199 Distinction (3) w.**  
MEMBERS OF THE STAFF.
- 210 Organic Chemistry (3) f, w, s.**  
Prerequisite, ten hours in Chemistry; medical students admitted with eight hours. MEMBERS OF THE STAFF.
- 211 Organic Chemistry Laboratory (2) f, w, s.**  
Should accompany and cannot precede Chemistry 210. MEMBERS OF THE STAFF.
- 212 Organic Chemistry (3) f, w, s.**  
Prerequisite, 5 hours credit in organic chemistry (aliphatic compounds). Continuation of the subject matter of Chem. 210. Required of chemistry majors and chemical engineers. MEMBERS OF THE STAFF.
- 213 Organic Chemistry Laboratory (2) f, w, s.**  
Should accompany and cannot precede Chemistry 212. MEMBERS OF THE STAFF.
- 221 Quantitative Chemical Analysis (3) f, w, s.**  
Prerequisite, Chem. 27. The general principles. MR. BRECKENRIDGE.
- 222 Quantitative Chemical Analysis (3) f, w.**  
Prerequisite, Chem. 221. The analysis of commercial materials and products. MR. BRECKENRIDGE.
- 223 Quantitative Chemical Analysis (2) f, w, s.**  
A continuation of Chem. 221. MR. BRECKENRIDGE.
- 230 Physical Chemistry (3) w, s.**  
Prerequisites, college course in physics, 3 hours of quantitative analysis, 3 hours of organic chemistry. Recommended to students majoring in biological sciences, home economics, and agriculture. MR. STEARN.
- 231 Physical Chemistry (3) f, s.**  
Prerequisites, Chem. 210 and 221, college course in physics; preceded or accompanied by Mathematics 201. Must be accompanied by Chem. 232. Lectures only. MR. STEARN.
- 232 Physical Chemistry Laboratory (2) f, s.**  
Prerequisites, see Chem. 231 above; must be accompanied by Chem. 231 above. Laboratory only. MR. STEARN.
- 233 Physical Chemistry (3) w.**  
Prerequisites, Chem. 231 and 232. A continuation of Chem. 231. Lectures only. MR. STEARN.
- 234 Physical Chemistry Laboratory (2) w.**  
Prerequisites, Chem. 231 and 232. A continuation of Chem. 232. Must be accompanied by Chem. 233. Laboratory only. MR. STEARN.

- 310 Chemical Spectroscopy (1-2) w.**  
See Agricultural Chemistry. MR. PICKETT.
- 312 Instrumental Methods of Analysis (1-2) f.**  
See Agricultural Chemistry. MR. PICKETT.
- 314 Advanced Organic Syntheses (2-3)**  
Prerequisite, Chem. 212, but may be accompanied by Chem. 213. A continuation of Chem. 213. MEMBERS OF THE STAFF.
- 315 Intermediate Organic Chemistry (3) f.**  
An advanced treatment of the subject matter of Chem. 210 and 212. MEMBERS OF THE STAFF.
- 316 Intermediate Organic Chemistry (3) w.**  
A continuation of course 315. Prerequisite, Chem. 315 or its equivalent. MEMBERS OF THE STAFF.
- 325 Qualitative Organic Analysis (4) f, s.**  
Prerequisite, must be preceded by Chem. 212. MEMBERS OF THE STAFF.
- 326 Quantitative Organic Analysis (3) w.**  
Prerequisite, must be preceded by Chem. 223. Quantitative analysis of pure organic compounds, using micro and some semi-micro methods. MEMBERS OF THE STAFF.
- 328 Inorganic Micro Analysis (3) w.**  
MR. ARCAND.
- 331 Physico-Chemical Calculations (2-5) f, w.**  
Prerequisite, Chem. 231. MR. STEARN.
- 332 Chemical Thermodynamics (3) w.**  
Prerequisite, Chem. 231. The formal application of thermodynamic theory to the solution of chemical problems. MR. STEARN; MR. THOMAS.
- 341 Inorganic Chemistry (3) w.**  
Prerequisite, a minimum of 19 hours in Chemistry. MR. NIELSEN.
- 342 Inorganic Preparations (2) w.**  
Must be preceded or accompanied by Chemistry 341. MR. NIELSEN.
- 410 Seminar (1) f, w.**  
Meetings at which subjects of chemical interest are discussed by students and members of the teaching staff.
- 411 Advanced Organic Chemistry (3) f.**  
The lectures include condensation reactions, hydrocarbons, organo-metallic compounds, etc. MISS NIGHTINGALE.
- 412 Advanced Organic Chemistry (3) f.**  
The structural theory of organic chemistry. The chemical bond, structural isomerism, strain theory and steric effects, stereoisomerism and reaction stereo-specificity, tautomerism, internal electron displacements, absorption spectroscopy, determination of structure by physical methods. MR. DALE.
- 413 Chemistry of High Polymers (3) w.**  
A survey of the field of natural and synthetic organic high polymers. MR. RABJOHN.
- 414 Special Topics of Organic Chemistry (3) f.**  
The alicyclic and heterocyclic compounds. MISS NIGHTINGALE.
- 415 Advanced Organic Chemistry (3) w.**  
Aromatic properties, free radicals, molecular rearrangements, etc. MR. RABJOHN.
- 416 Colloid Chemistry (3-5) w.**  
See Agricultural Chemistry. MR. MARSHALL.
- 417 Applications of the Reactions of Organic Chemistry (2) w.**  
Prerequisite, at least one year of graduate organic chemistry. MR. RABJOHN.

- 418 **Advanced Inorganic Chemistry (3)**  
Open to those who have passed or are taking physical chemistry. One of the major objectives of this course is to supply a broad background for those who expect to teach general chemistry. MR. BENT.
- 419 **Theoretical Organic Chemistry (3) w.**  
Theoretical principles of ionic organic reactions and applications to individual reactions. MR. DALE.
- 427 **Advanced Analytical Chemistry (Credit to be arranged)**  
Prerequisite, Chem. 221. Chiefly laboratory work. The work of the course is varied to meet the needs of the individuals. MR. BRECKENRIDGE.
- 430 **Advanced Physical Chemistry (3)**  
MR. THOMAS; MR. STEARN.
- 432 **Chemical Kinetics (3) f, w, or s.**  
Application of the results of statistical mechanics to the problem of reaction velocities in homogenous reactions. MR. STEARN.
- 433 **Atomic and Molecular Structures (3)**  
An introduction to the fundamental ideas of wave mechanics with special emphasis on chemical applications. MR. STEARN.
- 434 **Theory of Solutions (3)**  
MR. STEARN.
- 435 **Nuclear Chemistry (2 or 3)**  
MR. STEARN.
- 436 **Photochemistry and Molecular Excitation (2)**  
The principles and experimental work of photochemistry; photosensitized reactions; inelastic collisions; principles and experimental methods of the field of critical potentials and related subjects. MR. THOMAS.
- 437 **Applications of Thermodynamics (3)**  
The stability of chemical compounds will be discussed with particular emphasis on chemical equilibrium involving organic materials. MR. BENT.
- 438 **Kinetic Theory (2)**  
MR. THOMAS.
- 450 **Research (Credit to be arranged) f, w, s.**  
Does not lead to a dissertation. MEMBERS OF THE STAFF.
- 490 **Research (Credit to be arranged) f, w, s.**  
Arrangements for research should be made by consultation with the professor or instructor with whom the research is elected. MEMBERS OF THE STAFF.

## CITIZENSHIP

- 1 **Citizenship (2) f.**  
Problems of American society in their relation to world facts and forces. Open to freshmen and sophomores only. Not offered 1956-57.
- 2 **Citizenship (2) w.**  
Political, economic, and social problems in the United States. Open to freshmen and sophomores only. Not offered 1956-57.

## CIVIL ENGINEERING

- 20 **Engineering Surveys (3) w.**  
Prerequisite, Mathematics 9 or equivalent. Use and adjustment of the usual surveying instruments, calculations, and land boundaries. MR. IRBY; MR. PORTER.
- 50 **Statics (3) f, w.**  
Prerequisites, Physics 23; preceded or accompanied by Mathematics 201. Vectors, force systems, friction, centroids, moment of inertia. MR. SANGSTER; MR. PETERSEN; MEMBERS OF THE STAFF.



**61 Higher Surveying (4) f.**

Prerequisites, course 20 and M.E. 1. Horizontal and vertical control for mapping. Construction and use of topographic maps. Astronomical determination of azimuth. MR. IRBY.

**82 Engineering Materials (2) f, w.**

Prerequisites, Chemistry I, and preceded or accompanied by Physics 23. Chemical and physical properties of materials used in engineering. Controls and reactions involved in the manufacture of materials. MR. MURPHY; MR. PORTER.

**101 Mechanics of Materials (3) f, w, s.**

Prerequisites, course 50 or M.E. 90. Must be accompanied by course 102. Stresses and strains in elastic materials; riveted joints, torsion, deflection, continuous beams, columns. MR. PETERSEN; MEMBERS OF THE STAFF.

**102 Mechanics of Materials Laboratory (1) f, w, s.**

To accompany course 101. MR. PETERSEN; MEMBERS OF THE STAFF.

**155 Dynamics (2) f, w.**

Prerequisite, course 50. Motion of a particle, kinetics of rigid bodies, work and energy, impulse and momentum, impact. MR. SANGSTER; MR. PETERSEN; MEMBERS OF THE STAFF.

**212 Route Surveys (4) f.**

Prerequisites, course 20 and junior standing. Curves and earthwork. The design of location of engineering routes, including cost estimates. MR. RUBEY; MR. IRBY.

**220 Structural Stresses (3) f, w.**

Prerequisites, registration in courses 101 and 102. Analysis of stresses in statically determinate structures. MR. EVANS; MR. WU; MEMBERS OF THE STAFF.

**221 Structural Steel Design (3) f, w.**

Prerequisites, courses 101, 102, and 220. Design of steel members in tension, compression, and bending; riveted and welded connections. MR. WU.

**222 Reinforced Concrete (3) f, w.**

Prerequisites, courses 101 and 102. Elements of reinforced concrete theory. MR. EVANS; MR. IRBY; MEMBERS OF THE STAFF.

**235 Highway Engineering I (3) f.**

Prerequisites, courses 20 and 82. Construction of roads and pavements. Location and design of highways. Fundamentals of soil mechanics and concrete mixtures. MR. IRBY.

**240 Fluid Mechanics (3) f, w, s.**

Prerequisite, course 155 or M.E. 90. Fundamental principles of the mechanics of fluids, including hydrostatics and hydrodynamics. Elementary principle of hydraulic motors. MR. WOOD; MR. SANGSTER; MR. PETERSEN.

**241 Fluid Mechanics Laboratory (1) f, w.**

Prerequisite, or accompanied by, course 240. Use and calibration of flow measuring devices. Tests of hydraulic machines. MR. WOOD; MR. SANGSTER; MR. PETERSEN.

**273 Structural Design (3) f or w.**

Prerequisites, courses 221, 222, and accompanied or preceded by course 372. Structures of reinforced concrete, steel, and timber; primarily buildings. MR. WU.

**292 Water Supply (2) f, s.**

Prerequisite, or accompanied by, course 341. The design of water supply systems, consumption, sources, collection, treatment, distribution, and their relation to public health. MR. MURPHY; MR. WOOD.

**293 Waste Water Treatment & Disposal (3) w.**

Prerequisite, or accompanied by, course 341. The design and construction of sewer systems; principles of waste water treatment and their relation to public health. MR. MURPHY.

- 300 Problems (2-4) f, w, s.**  
Directed investigation of problems in the field of civil engineering. MEMBERS OF THE STAFF.
- 333 Plain Concrete (3) f.**  
Theory of concrete mix design; concrete placing and curing practices; specifications, inspection and testing. Laboratory included. MR. PAUW.
- 341 Hydrology (3) f, w.**  
Prerequisite, or accompanied by, course 240. Fundamentals of hydrology and their applications to typical problems in sanitary and hydraulic engineering design and operation. MR. WOOD.
- 342 Hydraulics of Open Channels (3) f.**  
Prerequisite, course 240. Non-uniform flow, flow at critical depth, hydraulic jump, back-water, transition structures. MR. WOOD.
- 343 Hydraulic Machinery (3) f, w.**  
Prerequisite, course 240 or M.E. 230. Theory of design and operation of the principal types of hydraulic machines, including laboratory. MR. WOOD.
- 344 Flood Control Engineering (3) w.**  
Prerequisite, course 341. Flood hydrology and control; including channel improvements, reservoirs, levees, river walls, and related subjects. MR. SANGSTER.
- 348 Municipal and Rural Sanitation (3) w.**  
Prerequisite, junior standing. Principles of environmental sanitation as applied to community and rural problems of water supply, sewerage, housing, waste disposal, food sanitation, etc. MR. MURPHY.
- 349 Sanitary Analysis (3) f.**  
Prerequisites, Analytical Chemistry, General Bacteriology. Standard methods of water and sewage analysis. MR. MURPHY.
- 351 Experimental Stress Analysis (3) f or w.**  
Prerequisites, courses 101 and 102. Photoelastic, electric strain gage, and brittle lacquer methods of experimental stress analysis for static loads. Strain gage work, includes strain rosettes. MR. PAUW; MEMBERS OF THE STAFF.
- 352 Advanced Mechanics of Materials (3) f.**  
Prerequisites, courses 101 and 102. Continuation of 101 involving analysis of more complicated problems in stresses and strains. MEMBERS OF THE STAFF.
- 355 Soil Mechanics (3) w.**  
Prerequisites, courses 101 and 102. A detailed study of those physical and mechanical properties of soil which govern its behavior as an engineering material. MR. EVANS; MR. PAUW.
- 365 Engineering Administration (3) f, w.**  
Prerequisite, senior standing. The engineer's relation to management in connection with the promotion, design, construction, operation, and administration of industries and public works. Engineering economy. MR. RUBEN.
- 367 Construction and Contracting (3) w.**  
Prerequisite, senior standing or equivalent. Construction methods, estimating, bidding, organization, management, contracts and specifications. MR. RUBEN.
- 372 Foundations and Masonry Construction (3) f, w.**  
Prerequisite, course 222. Dams, retaining walls, bridge piers, and abutments, shallow bins, deep bins, foundations. MR. EVANS; MR. PAUW; MEMBERS OF THE STAFF.
- 374 Structural Design (4) f or w.**  
Prerequisites, courses 221, 222, and accompanied or preceded by course 372. Structures of reinforced concrete, steel and timber; primarily bridges. MR. WU.
- 375 Statically Indeterminate Structures (3) f.**  
Prerequisite, course 220. The analysis of rigid frames by the Slope-Deflection and Moment-Distribution Methods. MR. PAUW; MR. SAMI.

- 376 Statically Indeterminate Structures (3) w.**  
Prerequisite, course 220. The elastic theory and its application to statically indeterminate trusses and miscellaneous structures. MR. PAUW; MR. SAMI.
- 384 Road Materials (3) f or w.**  
Prerequisite, course 235. Properties of materials used in highway construction, with particular attention to the bituminous materials. Laboratory tests. MR. IRBY.
- 387 Transportation (2) f or w.**  
Prerequisite, or accompanied by, course 212. Relation of highway, railway, airway, pipe line, and waterway transportation, with emphasis on railways; construction, operation, and maintenance. MR. RUBEY.
- 396 Highway Engineering II (2) f or w.**  
Prerequisite, course 235. Administration, management and financing of highway programs. Maintenance and operation of highways. Studies of traffic and safety. MR. IRBY.
- 400 Problems (2-5) f, w, s.**  
Independent study of some problem in the field of civil engineering. MEMBERS OF THE STAFF.
- 403 Theory of Elasticity (3) f or w.**  
Prerequisite, Mathematics 301. Stress and strain in three dimensions; ellipsoids of stress and strain; theorems of compatibility; thermal stresses; the general torsion problem; stresses in plates and shells; special three-dimensional problems; analogies for stress analysis.
- 404 Theory of Plates and Shells (3) f or w.**  
Prerequisites, course 101 and registration in Mathematics 301. Bending. Small-and-large-deflection theories. Deformations and stress in shells.
- 405 Theory of Elastic Stability (3) f or w.**  
Prerequisites, course 101 and registration in Mathematics 301 or 310. Buckling of columns, beams, rings, curved bars, thin plates, and shells.
- 410 Seminar (1) f, w, s.**  
Reviews of recent investigations and projects of major importance in the field of civil engineering. MR. PAUW; MEMBERS OF THE STAFF.
- 427 Structural Theory and Design (5) f.**  
General theory of continuity, moment distribution, the column analogy, rigid frame bridges and buildings, fixed arches. MR. PAUW; MR. SAMI.
- 428 Structural Theory and Design (3) w.**  
Statically indeterminate stresses, secondary stresses. MR. PAUW; MR. SAMI.
- 430 Reinforced Concrete Theory (3) w.**  
Review of experimental and analytical data pertaining to reinforced concrete design. MR. PAUW; MR. SAMI.
- 434 Methods of Investigation (2) f or w.**  
Methods and instruments used in investigating engineering materials.
- 436 Soil Mechanics (3) f.**  
The theoretical substance of Soil Mechanics as applied to the solution of specific engineering problems. MR. EVANS; MR. PAUW.
- 438 Highway Transportation (3) f or w.**  
Prerequisites, courses 235 and 386. Economics of transportation on highways. Comparison of costs of vehicle operation. Project studies of the highway problem in general. MR. IRBY.
- 441 Advanced Hydraulic Engineering (3) f or w.**  
Prerequisite, course 341. Problems in design and construction relating to reservoirs, dams, conduits, waterways, and general hydraulic engineering. MR. WOOD.
- 442 Advanced Fluid Mechanics (3) f or w.**  
Prerequisite, course 240 and accompanied or preceded by Mathematics 301 or 303. Use of the flow net. Velocity potentials and stream functions. Acceleration, momentum, energy, and continuity equations. Fluid turbulence. The boundary layer. MR. SANGSTER; MR. PETERSEN.

- 446 Advanced Water Supply (3) f.**  
Prerequisite, course 292. Sources of supply, yield of drainage areas, storage reservoirs, dams, spillways, ground water, distribution system, treatment plants, and purification processes. MR. MURPHY.
- 447 Public Health Engineering (3) f.**  
Prerequisites, courses 292 and 293. Sanitary problems of the human environment. Reports, lectures and reading. MR. MURPHY; SPECIAL LECTURES.
- 448 Advanced Waste Water Treatment (3) w.**  
Prerequisite, course 293. The collection, treatment, and disposal of domestic and industrial wastes; drainage systems, sewage flow, and waste water treatment plants and processes. MR. MURPHY.
- 450 Research (Credit to be arranged) f, w, s.**  
An independent investigation of some problem or design in the field of civil engineering to be presented without thesis. MEMBERS OF THE STAFF.
- 490 Research (Credit to be arranged) f, w, s.**  
An independent investigation of some problem or design in the field of civil engineering, to be presented in the form of a thesis. MEMBERS OF THE STAFF.
- 496 Sanitary Engineering Laboratory (3) w.**  
Prerequisite, course 349. Interpretation of analytical results, microscopy of water, application of analytical procedure to experimental projects. Field work in stream pollution and plant operation. MR. MURPHY.

## CLASSICAL LANGUAGES AND ARCHAEOLOGY

### Greek

#### *Courses in the Greek Language*

- 3 Elementary Course (5) f.**  
The essentials of Attic Greek forms and constructions, with reading of easy selections of Attic Greek and portions of Xenophon's *Anabasis*. MR. WEINBERG; MR. LOCKHART.
- 5 Intermediate Course (5) w.**  
For students who have completed course 3. Continued reading of Xenophon's *Anabasis* and portions of the first books of Homer's *Iliad*. MR. WEINBERG; MR. LOCKHART.
- 205 Advanced Greek (2-5) f, w.**  
For students who have completed course 5. Grammar and reading adapted to the needs of the class. MR. GWATKIN.
- 305 Greek Drama (3) w.**  
Prerequisites, courses 3, 5, and 205, or the equivalent. Reading and literary interpretation of selected plays of Aeschylus, Sophocles, Euripides, and Aristophanes. Offered in alternate years. Not offered in 1956-57.
- 307 Greek Philosophers (3) w.**  
Prerequisites, courses 3, 5, and 205, or the equivalent. Plato's *Apology* and *Crito* and other Greek philosophical works. Offered in 1956-57 and alternate years. MR. GWATKIN.
- 311 Greek Historians (3) f.**  
Prerequisites, courses 3, 5, and 205, or the equivalent. Study of selected books of Herodotus and Thucydides. Offered in 1956-57 and alternate years. MISS BENJAMIN.
- 347 Greek Orators (3) f.**  
Prerequisites, courses 3, 5, and 205, or the equivalent. Study of selected orations of Lysias, and Demosthenes' *On the Crown*. Offered in alternate years. Not offered in 1956-57.

# Latin

## Courses in the Latin Language

Students entering with no high school units in Latin should take course 1; students entering with two high school units should take course 2; students entering with three or four high school units should take course 103, course 107, course 150, or course 151.

### 1 Beginning Latin (5) f.

For students who have not previously studied Latin. Training in the elements of the language, with easy reading. MR. GWATKIN.

### 2 Intermediate Latin (5) f, w.

Prerequisite, course 1 or two entrance units in Latin. Selected readings from Latin prose authors with intensive review of forms and constructions. MISS BENJAMIN.

### 103 Reading (3) w.

Prerequisites, courses 1 and 2, or three entrance units in Latin. Reading and interpretation of Vergil's *Aeneid*. MISS BENJAMIN.

### 107 Advanced Prose Reading (3) f.

Prerequisites, courses 1 and 2, or three entrance units in Latin. Readings in Latin prose, especially Cicero's philosophical essays. MISS BENJAMIN.

### 150 Pliny: Selected Letters (2) w.

Prerequisite, course 103 or 107, or four entrance units in Latin. Reading and interpretation of selected letters, with discussion of Roman society of the period. MR. GWATKIN.

### 151 Ovid: Selected Poems (3) w.

Prerequisite, course 103 or 107, or four entrance units in Latin. Reading and literary interpretation of selected poems of Ovid, including the *Metamorphoses*. MR. GWATKIN.

### 175 Latin Prose Composition (1) f.

Study of the vocabulary and idiom of the Latin language through the translation of English sentences into Latin. MISS BENJAMIN.

### 306 Latin Prose Composition (1-2) w.

Prerequisite, course 175. Connected writing of Latin; comparative study of Latin prose style. MISS BENJAMIN.

### 310 Horace: Selections (3) f, w.

Prerequisite, courses 100 and 101, or equivalent. Reading and literary interpretation of the poems of Horace, chosen from the *Odes*, *Epodes*, *Satires*, and *Epistles*. MR. GWATKIN.

### 314 Cicero's Letters (3) f.

Prerequisite, course 310, or equivalent. Selected letters of Cicero, with attention to his life, his style as a letter-writer, and in his characteristics as a man. MR. GWATKIN.

### 315-316 Rapid Reading (2) f, (2) w.

Prerequisite, course 310, or equivalent. Reading from authors of comparative ease with a view toward the development of the ability to read rapidly. MR. GWATKIN.

### 317 Catullus: Selected Poems (3) w.

Prerequisite, course 310, or equivalent. Reading of the poems of Catullus and a study of his position and influence in Latin literature. MR. GWATKIN.

### 319 Vergil's *Aeneid*: VI-XII (3) f.

Prerequisite, course 310, or equivalent. Translation of the later books of the *Aeneid* with metrical reading and literary interpretation. Not offered in 1956-57.

### 320 Latin Comedy (3) f.

Prerequisite, course 310, or equivalent. Reading of Plautus and Terence, with attention to their dependence upon Greek originals, and later influence. Not offered in 1956-57.

### 321 Juvenal's *Satires* (3) w.

Prerequisite, course 310, or equivalent. Reading and literary interpretation, with emphasis on the history of satire, and Juvenal's influence upon English writers. Not offered in 1956-57.

- 351 Tacitus (3) w.**  
Prerequisite, course 310, or equivalent. Reading and literary interpretation, with emphasis upon the history of Rome from Augustus to Nero. Not offered in 1956-57.
- 375 Vulgar Latin (3) w.**  
Prerequisite, four high school units, or the equivalent in college. The Latin of the common people and its development into the Romance languages. MR. GWATKIN.
- 409 Introduction to Graduate Study in Classics (3) f.**  
Systematic study of the history of Greek and Latin literature, translation of an author to be studied later in the seminar, and other topics. MR. GWATKIN.
- 410 Seminar (3) w.**  
Reports and discussion by the members of the seminar upon problems presented by the subject assigned for study. MR. GWATKIN.
- 490 Research and Thesis (1-8) f, w.**  
Independent investigation, under direction, of some chosen or assigned topic, to result in a thesis presented for the degree of Master of Arts. MR. GWATKIN; MR. WEINBERG; MISS BENJAMIN; MR. LOCKHART.  
For *The Teaching of Latin*, see Education D125.

## Classical Archaeology, Civilization, and Literature in Translation

### *Courses requiring no knowledge of Latin or Greek*

- 60 Classical Mythology (2) f, w.**  
The myths of Greece and Rome, as an aid to the interpretation of literature and art. MR. WEINBERG; MR. LOCKHART.
- 75 Greek for Students in the Sciences (1) w.**  
Study of derivation and meaning of scientific nomenclature. MR. GWATKIN.
- 112 Greek Literature in English Translation (2) f.**  
A general view of Greek literature intended primarily for non-classical students. MISS BENJAMIN.
- 113 Latin Literature in English Translation (2) w.**  
A general view of Latin literature intended primarily for non-classical students. MISS BENJAMIN.
- 225 Classical Drama in Translation (2) f.**  
Reading and interpretation of Greek and Roman tragedies and comedies in translation. Designed for non-classical students, and those interested in Speech and Dramatics. MR. GWATKIN.
- 227 Classical Oratory in Translation (2) w.**  
Reading and interpretation of orations from the Attic Orators and Cicero in translation. Designed for non-classical students, and those interested in Speech and Dramatics. MR. GWATKIN.
- 240 Greek Art and Archaeology (3) f.**  
A general survey of the development of material culture in Greece from earliest times to the Hellenistic period, designed for both classical and non-classical students. MR. WEINBERG.
- 245 Roman Art and Archaeology (3) w.**  
A general survey of the development of material culture in the Roman world from earliest times through the early Empire, designed for both classical and non-classical students. MR. WEINBERG.
- 352 Ancient Painting (2) f.**  
Survey of the art of painting in the Near East, the Aegean, and the classical world. For students of art history and classical civilization. Offered in 1956-57 and alternate years. MR. WEINBERG.

- 353 Ancient Sculpture (2) w.**  
Survey of the sculptor's art in the Near East, the Aegean and the classical world. For students of art history and classical civilization. Offered in 1956-57 and alternate years. MR. WEINBERG.
- 354 Ancient Architecture (2) f.**  
Survey of the art of building in the Near East, the Aegean, and the classical world. For students of art history and classical civilization. Offered in alternate years. Not offered in 1956-57.
- 355 Archaeological Methods (2) w.**  
The methods of excavating various types of sites, illustrated largely from the Mediterranean region, and of recording and preserving materials produced by such excavation. Admission by consent of the instructor. Offered in alternate years. Not offered in 1956-57.
- 361 Ancient Near Eastern Art and Archaeology (3) w.**  
Prerequisite, course 240 or 245 or consent of the instructor. A general survey of the development of material culture in the Near East from earliest times to the 5th century B. C. Offered in alternate years. Not offered in 1956-57.
- 365 Aegean Archaeology (3) w.**  
Prerequisite, course 240 or 245 or consent of the instructor. The study of Greek prehistoric civilizations of the Neolithic period and the Bronze Age, about 4000 to 1000 B. C. Offered in 1956-57 and alternate years. MR. WEINBERG.
- 420 Seminar in Classical Archaeology (3) f, w.**  
Special subjects of study assigned for individual research and discussion of reports by members of the seminar. MR. WEINBERG.

## DAIRY HUSBANDRY

- 1 Dairy Husbandry (3) f, w.**  
Fundamentals of the dairy industry, including selection of animals, herd improvement, milk and milk products, and common dairy tests. Prerequisite to all other courses in Dairy Husbandry. MR. CORNELISON; MR. MERILAN.
- 100 Dairy Products (3) f.**  
Principles and practices in the processing and manufacture of butter, cheese, ice cream, concentrated and dry milks and by-products. MR. REID.
- 110 Dairy Cattle Judging (2) f.**  
Dairy and breed types, comparative judging, selection fitting for show and sales. MR. CORNELISON.
- 120 Dairy Products Judging (2) f.**  
Physical properties and factors affecting flavor, body and texture of milk, butter, cheese, ice cream, concentrated and dry milks and by-products. MR. EDMONDSON; MR. JENSEN.
- 130 Dairy Products Testing (2) w.**  
Prerequisite, course 100 or 120. Methods of commercial testing and analysis of dairy products. MR. JENSEN.
- 200 Problems (Credit to be arranged) f, w, s.**  
For further studies in some phase of dairy husbandry or to supplement studies of graduates in other fields. MEMBERS OF THE STAFF.
- 210 Advanced Dairy Cattle Judging (2) w.**  
A continuation of the comparative judging in course 110, including excursions to leading herds and shows. MR. CORNELISON.
- 220 Advanced Dairy Products Judging (1) w.**  
A continuation of the comparative judging in course 120, including excursions to commercial markets. MR. EDMONDSON; MR. JENSEN.
- 300 Problems (Credit to be arranged) f, w, s.**  
Advanced problems in a selected field leading to an understanding of scientific problems and research methods. MEMBERS OF THE STAFF.



- 310 Dairy Production (3) f.**  
Prerequisite, Animal Nutrition 202, or equivalent. Milk production and herd management problems. MR. RAGSDALE.
- 320 Dairy Bacteriology (3) w.**  
Prerequisite, Botany 202, General Bacteriology. An applied course teaching the relationship of micro-organisms to milk, milk production, processing and manufacturing, and public health aspects. MR. EDMONDSON; MR. JENSEN; MR. SMITH.
- 325 Market Milk (3) f.**  
Prerequisite, course 100 or 310. Problems of the market milk producer, processor, and distributor. MR. JENSEN.
- 330 Butter and Cheese (3) f.**  
Prerequisite, course 100. An advanced study of principles and commercial practices in the manufacture and marketing of butter and cheeses. MR. REID.
- 335 Ice Cream, Concentrated and Dried Milks and By-Products (3) w.**  
Prerequisite, course 100. Advanced problems and factors involved in the processing, manufacture, and marketing of these products. MR. REID.
- 340 Dairy Plant Equipment (3) w.**  
Prerequisite, course 100. It is recommended that courses 325, 330 and 335 precede or accompany this course. A study of equipment commonly used in dairy manufacturing plants. Special attention will be given to the basic principles involved in design, operation and maintenance. MR. JENSEN.
- 345 Dairy Plant Management (2) w.**  
Prerequisite, course 100. The management of market milk plants, creameries, cheese factories, ice cream plants, condensaries, dry milk and dairy by-products plants. MR. REID.
- 350 Special Readings (Credit to be arranged) f, w, s.**  
Scientific publications in a chosen field are studied to acquaint the student with technical literature and research methods. MEMBERS OF THE STAFF.
- 360 Farm and Plant Inspection (2) w.**  
Prerequisites, courses 320 and 310 or 325. The principles, methods and practices of city milk control, including farm and plant inspection. MR. EDMONDSON; MR. JENSEN; MR. SMITH.
- 380 Dairy Cattle Breeding (3) w.**  
Prerequisite, Dairy Production 310 or Animal Breeding 203 or equivalent. Principles of breeding dairy cattle. Breeding programs. MR. CORNELISON; MR. BOWER.
- 385 Artificial Breeding of Dairy Cattle (3) f.**  
Prerequisite, Animal Breeding 203 or Dairy Cattle Breeding 380. The collection, evaluation, and storage of semen, insemination techniques. Artificial breeding associations. MR. MERILAN; MR. BOWER.
- 400 Problems (Credit to be arranged) f, w, s.**  
Advanced studies individual in character including a minor research problem. MEMBERS OF THE STAFF.
- 405 Bacteriology of Dairy Products (2) f.**  
Prerequisites, courses 100 and 320. The bacteriology of butter cultures, butter, cheeses, ice cream, concentrated milks, dry milk, fermented milks, and dairy by-products. MR. EDMONDSON; MR. JENSEN.
- 408 Dairy Chemistry (3) w. (Same as Agricultural Chemistry 408).**  
Prerequisite, Agricultural Chemistry 210 or equivalent. Dairy Technology is recommended. The colloidal and physico-chemical properties of the constituents of milk. MR. GEHRKE.
- 410 Seminar (1) f, w.**  
Students and members of the staff present critical reviews of scientific literature and results of their own research. MR. RAGSDALE; MR. EDMONDSON; MR. MERILAN, AND MEMBERS OF THE STAFF.

- 415 Dairy Technology (3) f.**  
The chemical and physical properties of milk and its constituents. MR. EDMONDSON; MR. JENSEN.
- 417 Bacterial Physiology (3) w.**  
Prerequisites, Dairy Bacteriology 320 or Sanitary Bacteriology 203 and Agricultural Chemistry 210 or Organic Chemistry 210. It is recommended that D. H. 405 Bacteriology of Dairy Products or 415 Dairy Technology precede or accompany this course. Advanced study of micro-organisms as may be influenced by chemical and physical environment, nutrition, metabolism; function of intermediary catalyst and important industrial fermentations. MR. EDMONDSON; MR. JENSEN.
- 419 Rumen Bacteriology (3) w. (Same as Agricultural Chemistry 419).**  
Prerequisites, Botany 202, General Bacteriology; Agricultural Chemistry 210, General Agricultural Chemistry, or equivalent. Lectures and laboratory study of rumen micro-organisms. Emphasis will be placed on bacteriological methods, functions of rumen bacteria and factors which modify the rumen environment. Offered in 1956-57 and alternate years. MR. JENSEN; MR. EDMONDSON; MR. MERILAN.
- 420 Endocrinology (3) f.**  
The hormones of the pituitary and the endocrine glands with special reference to their influence upon growth, reproduction, and milk secretion. MR. TURNER.
- 421 Recent Advances in Endocrinology (1) f, w.**  
A study of current endocrine literature. MR. TURNER.
- 425 Milk Secretion I (2) f.**  
The comparative anatomy of the mammary gland with special reference to the dairy cow. MR. TURNER.
- 430 Milk Secretion II (3) w.**  
The physiology and biochemistry of milk secretion. MR. TURNER.
- 435 Nutritional Properties of Dairy Products (2) f.**  
Nutritional problems with special reference to milk and its products. MR. BRODY; MR. EDMONDSON.
- 437 Environmental Physiology (3) f.**  
Lectures, discussions and laboratory studies on the direct and indirect effects of climatic factors on the physiology and productivity of animals with special reference to cattle. MR. BRODY.
- 440 Bioenergetics and Growth (3) w.**  
(Same as Agricultural Chemistry 440) Energy transformation and time relations of growth, senescence, and related processes. MR. BRODY; MR. KIBLER.
- 441 Recent Advances in Environmental Physiology (1) f, w.**  
Reviews of literature and current research with special reference to environmental physiology in relation to climatology of domestic animals. MR. BRODY.
- 445 Advanced Dairy Production (2) w.**  
Prerequisite, Dairy Production 310, or equivalent. Advanced phases of milk production. MR. RAGSDALE AND MEMBERS OF THE STAFF.
- 450 Research (Credit to be arranged) f, w, s.**  
Original investigations, usually in connection with one of the research projects of the Agricultural Experiment Station. MEMBERS OF THE STAFF.
- 490 Research (Credit to be arranged) f, w, s.**  
Same as course 450 with the results presented as a dissertation in the Graduate School. MEMBERS OF THE STAFF.

## DRAMATIC ART (See SPEECH)

**ECONOMICS AND BUSINESS***Courses Accepted in the College of Arts and Science*

- 51 General Economics (5) f, w.**  
Prerequisite, thirty honor points. An introduction to the subject of economics with emphasis on certain fundamental principles and their application to questions of policy. MR. WALKER; MR. MURDOCK; MR. LEEMAN.
- 199 Distinction (credit to be arranged) f, w.**
- 203 Corporation Finance (3) f, w.**  
Prerequisites, course 51 or 41 and 6 hours of accounting. The methods, policy and institutions involved in financing the business corporation; financial analysis of corporations. MR. TRACY; MR. NELSON; MR. STUBBS.
- 204 Principles of Marketing (3) f, w.**  
Prerequisite, course 51. A study of institutions, processes and problems involved in transferring goods from producers to consumers, with emphasis on economic and social aspects. MR. BAYLESS; MR. SHAWVER; MR. EDWARDS.
- 206 Transportation (3) f, w.**  
Prerequisite, course 51. The development, operation, and regulation of railroads and other agencies of transportation with special emphasis upon transportation costs and rates. MR. EDWARDS.
- 210 Labor Problems (5) f, w.**  
Prerequisite, course 51. A survey of the labor force, wages, unemployment, accidents, trade unionism and collective bargaining from the standpoint of public policy. MR. BAUDER.
- 218 General Insurance (4) f, w.**  
Prerequisite, junior standing. A study of the fundamentals of insurance, including fire and marine, casualty and surety, and life. MR. BRAY; MR. TRACY.
- 229 Money, Credit and Banking (3) f, w.**  
Prerequisites, course 51 and junior standing. The American monetary and banking systems and their influence upon economic activities. MR. WOOD; MR. LEEMAN; MR. MURDOCK; MR. STUBBS.
- 254 Business Law A (3) f, w.**  
Prerequisite, junior standing. Discussion of business relations in their legal aspects; an introduction to the law and the courts; cases and problems on the law of contracts, personal property and bailments, and sales. MR. PATTERSON AND MEMBERS OF THE STAFF.
- 300 Problems (credit to be arranged) f, w.**
- 311 Collective Bargaining (3) f.**  
Prerequisite, course 210. The content, negotiation and administration of collective labor agreements, and settlement of disputes. MR. BAUDER.
- 313 Life Insurance (3) f.**  
Prerequisites, course 218 and Mathematics 155. Programming the personal life insurance estate; use of life insurance for business purposes; preparation for C.L.U. examinations. MR. BRAY.
- 315 Public Revenues (4) f, w.**  
Prerequisites, eight hours of economics. The finance and financial methods of governments, with special reference to taxation and to tariff policy. MR. WALKER; MR. LEEMAN; MR. MURDOCK.
- 320 Government and Labor (3) f, w.**  
Prerequisite, course 210. Analysis and evaluation of legal regulation of the terms of the employment contract and of the law of labor relations. MR. BAUDER.

- 325 Foreign Trade (3) f, w.**  
Prerequisite, course 51 and junior standing. A survey of the theory of foreign trade; foreign exchange; foreign economic policies; and export and import practices. MR. WENNBORG.
- 333 Investments (3) f, w.**  
Prerequisite, course 203. A study of the investment area, media and institutional aids; formulation of broad personal investment programs. MR. NELSON.
- 340 Real Estate (3) f, w.**  
Prerequisite, senior standing. The real estate field with emphasis on its economic aspects. Principles underlying real estate value, the real estate market, appraisal, financing, taxation. MR. BRAY.
- 351 Intermediate Economic Theory (3) w.**  
Prerequisites, course 51 and junior standing. A study of the theory of price and the principles underlying the distribution of the national income. MR. MURDOCK.
- 353 Security Analysis (3) w.**  
Prerequisite, course 333. Classification and analysis of securities, markets, and industries. Formulation of investment policy for institutions and for aggressive personal investors. MR. TRACY.
- 361 Comparative Economic Systems (3) w.**  
Prerequisites, senior standing and 10 hours in economics. Consideration of the enterprise system, socialism, directed economics and economic planning. MR. LEEMAN.
- 368 Business Fluctuations (3) f.**  
Prerequisite, course 229. The factual background together with an analysis of the causes of economic fluctuations. MR. LEEMAN.
- Courses Not Accepted in the College of Arts and Science*
- 41 Industrial Economics (3) f, w.**  
Prerequisite, sophomore standing. Open only to students in the College of Engineering. An introduction to the study of economics designed for engineers. MR. HOLM.
- 202 Industrial Management (3) f, w.**  
Prerequisite, course 41 or 51. A study of the principles of industrial organization and management and their application to such fundamental matters as production, materials, and personnel. MR. MANHART; MR. HOLM.
- 207 Principles of Selling (2) f, w.**  
Prerequisite, course 204 and junior standing. Principles of salesmanship with particular emphasis on retail selling. MR. BAYLESS.
- 216 Credits and Collections (3) f, w.**  
Prerequisites, course 51 and Elementary Accounting. The organization and operation of credit department, including credit information and collection methods. MR. NELSON; MR. STUBBS.
- 236 Personnel Management (3) f, w.**  
Prerequisite, course 41 or 51. Labor policies and procedures of business enterprises. MR. HOLM.
- 255 Business Law B (3) f, w.**  
Prerequisite, course 254. Cases and problems dealing with the law of agency, partnerships, corporations, and negotiable instruments. MR. PATTERSON AND MEMBERS OF THE STAFF.
- 263 Savings and Loan Institutions (3) f.**  
Prerequisite, junior standing. A survey and comparison of the organization, operation and functions of savings and loan associations, savings banks, credit unions, and other thrift institutions; and their relation to the economic structure. MR. STUBBS.
- 312 Marketing Management (4) f, w.**  
Prerequisite, course 204. A study of the problems of marketing from the point of view of the executives of a business enterprise. MR. WENNBORG.

- 314 Retailing (4) f, w.**  
Prerequisite, Accounting 36 and course 204, or junior standing. A study of the principles underlying operation of retail stores. MR. BAYLESS; MR. SHAWVER.
- 318 Property and Casualty Insurance (3) w.**  
Prerequisite, course 218. Problems in property and casualty underwriting on a professional level. Attention is directed to preparation for C. P. C. U. examinations. MR. BRAY; MR. TRACY.
- 323 Small Business Finance (3) f.**  
Prerequisite, course 203. Formation, finance and income management of small concerns. Examination of case histories and analysis of problems concerning small businesses. MR. STUBBS.
- 345 Industrial Organization and Control (3) f, w.**  
Prerequisite, course 202. A study of the principles of organization and control from the point of view of the management of an industrial enterprise. MR. MANHART.
- 347 Wage and Salary Administration (3) f, w.**  
Prerequisite, course 202, 210 or 236. Principles underlying the development and administration of wage and salary payment plans. MR. MANHART.
- 356 Business Security Devices (2) f, w.**  
Prerequisite, course 254. A discussion of the law relating to various security transactions: conditional sales, consignments, pledges, trust receipts, real and chattel mortgages, mechanics' and artisans' liens, and suretyship. MR. PATTERSON AND MEMBERS OF THE STAFF.
- 358 Purchasing (2) f, w.**  
Prerequisite, course 202 and 6 hours of marketing. A study of the organization and functions of purchasing departments, with particular emphasis on industrial purchasing. MR. BAYLESS.
- 363 Management of Financial Institutions (3) w.**  
Prerequisite, course 229. Management of banks, savings and loan associations, finance companies, insurance companies and other financial institutions, with emphasis on their investment and loan problems. MR. STUBBS.
- 370 Market Analysis (3) f, w.**  
Prerequisites, course 312 and senior standing. The use of scientific method in the solution of marketing problems. Roundtable discussions and practice in field investigations. MR. WENNBERG; MR. SHAWVER.
- 372 Sales Control (2) f, w.**  
Prerequisites, course 312 and senior standing. Marketing costs and the techniques available for controlling selling activities, increasing marketing efficiency and reducing distribution costs. MR. WENNBERG.
- 381 Traffic Management (3) w.**  
Prerequisite, course 206. Organization and functions of carrier and industrial traffic departments. Consideration of services; rate making; and I.C.C. procedure. MR. EDWARDS.

#### *Graduate Courses*

- 400 Problems (Credit to be arranged) f, w.**  
Graduate students may select topics for study and investigation from the fields suggested by the undergraduate courses listed above. MEMBERS OF THE STAFF.
- 401 Seminar in Marketing I (3) f.**  
Readings, independent investigations and reports in advanced marketing. Required of all candidates for the M.S. in B.A. degree who elect marketing as their field of concentration. MR. WENNBERG.
- 402 Seminar in Marketing II (3) w.**  
Continuation of 401. MR. WENNBERG.

- 403 Seminar in Business Finance I (3) f.**  
Readings, independent investigations and reports in advanced business finance. Required of all candidates for the M. S. in B.A. degree who elect business finance as their field of concentration. MR. TRACY.
- 404 Seminar in Business Finance II (3) w.**  
Continuation of 403. MR. TRACY.
- 405 Seminar in Industrial Personnel Management I (3) f.**  
Readings, independent investigations and reports in advanced industrial and personnel management. Required of all candidates for the M.S. in B.A. degree who elect industrial and personnel management as their field of concentration. MR. BAUDER; MR. MANHART; MR. HOLM.
- 406 Seminar in Industrial and Personnel Management II (3) w.**  
Continuation of 405. MR. BAUDER; MR. MANHART; MR. HOLM.
- 411 Advanced Economic Theory I (3) f.**  
An intensive study of selected writings of modern economists in the fields of production theory and value theory. MR. WALKER.
- 412 Advanced Economic Theory II (3) w.**  
A critical examination of the economic literature dealing with resource allocation, factor pricing, and functional distribution. MR. WALKER.
- 413 Current Economic Problems (2) s.**  
An intensive study of selected current controversial issues in economic theory and policy. MEMBERS OF THE STAFF.
- 420 History of Economic Thought (3) w.**  
Prerequisite, course 351. An analysis of the development of economic theory, with emphasis on the evaluation of classical doctrines. MR. LEEMAN.
- 430 Advanced Money and Banking (4-5) f.**  
Prerequisite, course 229. Recent writings and government reports on monetary control. Special attention will be given to the problem of maintaining economic stability. MR. WOOD.
- 431 Central Banking Policies (4) w.**  
Prerequisite, course 229. Examination of central banking procedures and policies and the part they may play in maintaining economic stability. Special attention is given to the connection of the Federal Reserve System to the money and capital markets. MR. WOOD.
- 444 The Entrepreneur (3) f.**  
Prerequisite, course 351 or 412. An analysis of the concept of the entrepreneur and his return as manager, combiner of productive factors, risktaker and innovator. MR. HOLM.
- 446 Advanced Industrial Management (2) w.**  
Study of the literature in the field of industrial organization and management in order to discover and evaluate trends in the development of a theory and philosophy for performing the management function. MR. MANHART.
- 453 Advanced Financial Management (3) f.**  
Prerequisite, course 203. A study of the organization, goals and tools of financial management. Examination of the adjustment of financial policies of business to changing conditions. MR. TRACY.
- 479 International Finance (3) w.**  
Prerequisite, course 229 or equivalent. Balance of international payments; international lending; and the problem of international monetary equilibrium. MR. WOOD; MR. LEE-MAN.
- 485 Industrial Relations (3) w.**  
Interpretations of trade unionism and of industrial relations. Controversies concerning economic effects of collective bargaining. MR. BAUDER.

**489 Price and Price Policies (3) f.**

An intensive study of the theory and practice of price determination in our present economic system. MR. WENNBERG.

**490 Research (Credit to be arranged) f, w.**

Research in connection with the thesis offered for the degree of Master of Arts or Doctor of Philosophy. THE STAFF.

*The following courses in Public Law may be taken for graduate credit with the approval of the student's major adviser and with the permission of the instructor in the course.*

**443 Federal Income Taxation (2 or 3) w.**

MR. LESAR.

**445 Taxation (3) f.**

MR. HOWARD.

**451 Labor Law (3) w.**

MR. HOWARD.

**EDUCATION****(A) Educational Psychology****A102 Educational Psychology (3) f, w, s.**

A general elementary course designed to acquaint the student with the scientific psychological principles underlying education, prerequisite 45 hours of college work. MR. CARTER; MR. POLMANTIER.

**A140 Diagnostic Testing and Remedial Teaching (3) f, w, s.**

Prerequisites, A102, E121. Technique of using educational and mental tests in the improvement of instruction. Primarily for elementary school teachers. MR. CARTER.

**A302 Group Intelligence Testing (3) f, s.**

Prerequisites, A102 and C370 or equivalent training. A study of the principles of psychometrics and a critical examination of various group tests of ability. MR. CARTER.

**A303 Individual Intelligence Testing (3) w, s.**

Prerequisite, A302 or equivalent training. Study of the Stanford-Binet Scale and other individual tests of intelligence. Practice in administering and interpreting the tests. MR. CARTER.

**A339 The Psychology of Exceptional Children (3) f, s.**

Prerequisite, A102. A study of the special psychological and educational problems of the child who deviates from the normal. MISS FERGEN.

**A400 Problems (Credit to be arranged) f, w.**

MR. CARTER; MR. ARTLEY; MR. POLMANTIER.

**A405 The Psychology of Education (2½-3) f, s.**

An advanced course covering the entire field of educational psychology. MR. POLMANTIER.

**A407 Psychology of the Elementary School Child (3) w, s.**

Prerequisite, A405. The application of educational psychology to problems of teaching in the elementary school. MR. ARTLEY.

**A408 The Psychology of Adolescence (2-3) w, s.**

A critical psychological analysis of studies and investigations of the various aspects of adolescence. MR. POLMANTIER.

**A410 Seminar in Educational Psychology (1-3) f, w.**

MR. ARTLEY; MR. CARTER; MR. POLMANTIER.

**A490 Research in Educational Psychology (Credit to be arranged) f, w.**

MR. ARTLEY; MR. CARTER; MR. POLMANTIER.



**(B) History and Philosophy of Education**

- B125 History of American Education (3) f, w, s.**  
Prerequisite, a course in American History. A comprehensive study of the development of American education. Stresses American educational ideas, the American school system, and the social forces affecting American education. MR. DRAKE.
- B390 Comparative Education (2½-3) w.**  
A comparative study of representative systems of education in South America, Europe, and Asia in contrast with the American system. MR. DRAKE.
- B397 The Origins of Modern Education (2-3) f.**  
Prerequisite, B125. A study of education practices and theory from ancient times to the present. Emphasizes the historical setting of present-day education. MR. DRAKE.
- B400 Problems (Credit to be arranged) f, w.**  
MR. DRAKE.
- B410 Seminar in the History and Philosophy of Education (1-3) f, w.**  
MR. DRAKE.
- B471 Philosophy of Education (2½-3) f, s.**  
A study of the fundamentals of education in the light of modern science and philosophy. MR. DRAKE.
- B473 Philosophy of Higher Education in the United States (3) s.**  
A study of the main issues confronting higher education in America today. MR. DRAKE.
- B481 Evolution of Educational Thought (2½-3) w.**  
Prerequisite, B397 or B471. A study of the great historic movements and ideas which have affected modern educational practices. MR. DRAKE.
- B490 Research in the History and Philosophy of Education (Credit to be arranged) f, w.**  
MR. DRAKE.

**(C) Educational Administration**

- C370 Educational Statistics (2½-3) f, w, s.**  
Statistical methods for teachers, supervisors, superintendents, and beginning graduate students. MISS DOOLITTLE.
- C390 Introduction to Educational Administration (2-3) f.**  
A survey of the field of educational administration designed to introduce the student to a more critical study of the field. MR. CARPENTER.
- C400 Problems (Credit to be arranged) f, w.**  
MR. CAPPS; MR. CARPENTER.
- C401 Methods of Educational Research (2) f, w, s.**  
Prerequisite, course C370 or equivalent. Principles and techniques of attacking problems in education. Preparation of manuscript for theses, dissertations, and printed reports. MR. CAPPS.
- C410 Seminar in Educational Administration (1½-3) f, w, s.**  
MR. CAPPS; MR. CARPENTER.
- C411 State and National School Administration (2-3) f, s.**  
A fundamental course in the principles and practices of national, state, and county educational administration. MR. CARPENTER.
- C412 City School Administration (2-3) w, s.**  
The principles and problems growing out of the relationships between the local board of education, the employed personnel, and the community. MR. CARPENTER.
- C413 Administration of Pupil Personnel (2) f.**  
Prerequisite, E120 or D140 or equivalent. Problems of pupil-progress in the public school system. MR. CARPENTER.

- C414 School Building Problems (2-3) f, s.**  
The responsibility of the school administrator for the construction, operation, and maintenance of school buildings. MR. CARPENTER; MR. MAXWELL.
- C435 Advanced Educational Statistics (2½-3) f, w, s.**  
Prerequisites, courses C370 and E405 or D407 or their equivalent. Advanced problems in partial correlation, reliability, index numbers, and test and scale construction. MR. CAPPS.
- C440 School Finance (2-3) w, s.**  
Fundamental principles and techniques of public school finance. MR. CARPENTER; MR. MAXWELL.
- C441 Problems in School Finance (2-3) w.**  
Prerequisite, C440. Advanced problems in public school finance. MR. CARPENTER.
- C442 The School Audit (2) s.**  
A study of the principles of school audits, including methods of improving financial management. Actual experience in making audits and in preparing school budgets. MR. CARPENTER.
- C446 School Surveys (2-3) w.**  
Prerequisites, C411 and either C412 or C414. The technique of the school survey and its use as an instrument of self appraisal. MR. CAPPS.
- C451 Problems in State and National School Administration (2-3) f.**  
Prerequisite, C411. MR. CARPENTER.
- C452 Problems in Public Relations (2-3) s.**  
Prerequisite, C412. MR. CARPENTER; MR. TOWNSEND.
- C453 Advanced School Building Problems (2-3) f.**  
Prerequisite, C414. MR. CARPENTER; MR. MAXWELL.
- C454 Problems of School Law Revision (2-3) w.**  
Prerequisite, C411. MR. CARPENTER.
- C470 In-Service Course in Educational Administration (Credit to be arranged) f, w.**  
MR. CAPPS; MR. CARPENTER.
- C473 College Administration (2-3) f.**  
A consideration of problems in college organization and administration. MR. CARPENTER.
- C490 Research in Educational Administration (Credit to be arranged) f, w.**  
MEMBERS OF THE STAFF.

## (D) Secondary Education

- D110 Technique of Secondary School Teaching (3) f, w, s.**  
Prerequisite, Education A102. This course deals with the activities of teachers and pupils in the development of learning in various courses in the secondary school. MR. WATKINS.
- D111 Teaching of English (2) f, s.**  
Prerequisite, A102. The teaching of language and composition.
- D112 Teaching of English (2) w.**  
Prerequisite, A102. The teaching of reading and literature.
- D113 Teaching of Speech (2).**  
Prerequisite, A102. Aims, standards, problems, and methods in the conduct of high school courses in speech improvement, oral interpretation, dramatics, public speaking, and debating. MR. ALY.

- D115 Teaching of Art (2 or 3) f.**  
Deals with art education as related to elementary and secondary school curriculum. Art experiences are considered from the standpoint of the child's interest and development. **MISS WULFEKAMMER.**
- D118 Teaching of Modern Languages (2) f, w.**  
Prerequisite, A102. **MR. JESSE; MISS NAGEL; MR. BRENT.**
- D120 Teaching of Commercial Subjects (2) f.**  
Teaching techniques, materials of instruction, current problems, and trends in the major high school commercial courses. **MISS WILLIAMS.**
- D121 Teaching of Social Studies in the Secondary School (2) f, s.**  
Prerequisite, A102. Required of social studies majors and elective for minors. Fundamental problems of teaching social studies on the high school level are considered. **MISS HARTWIG.**
- D122 Organization of Social Studies in the Secondary School (2) w.**  
Prerequisite, A102. Elective for majors and minors in social studies. Theory and practice in organizing social studies courses into units. **MISS HARTWIG.**
- D124 The Teaching of General Science (2) w, s.**  
Prerequisite, A102. **MR. McDONALD.**
- D125 The Teaching of Latin (2) f.**  
Prerequisite, A102. Study of the content of the high school course in Latin and the methods of attaining objectives in the teaching of the language. **MR. GWATKIN.**
- D128 Teaching of Mathematics in the Secondary School (2) f.**  
Prerequisite, A102. **MISS DOOLITTLE.**
- D132 Elementary Typewriting (2) f.**  
A fundamental course in touch typewriting for the purpose of mastering the keyboard and operative parts of the machine. **MISS LANG.**
- D133 Intermediate Typewriting (2) w.**  
Instruction and practice directed toward improvement of speed and accuracy. **MISS LANG.**
- D134 Advanced Typewriting I (2) f.**  
Preparation of various personal, business, and professional papers and forms with intensive practice on the development of high standards of speed and accuracy. **MISS WILLIAMS.**
- D135 Advanced Typewriting II (2) w.**  
Typewriting problems representative of various procedures in business offices: training in use of office machines; mimeograph, carbon, duplicator, dictating and transcribing machine, adding-calculator, etc. **MISS WILLIAMS.**
- D136 Elementary Stenography (3) f.**  
An elementary study of the theory of Gregg shorthand and the development of shorthand reading and writing techniques. **MISS WILLIAMS.**
- D137 Intermediate Stenography (3) w.**  
Completion of the study of the theory of shorthand writing correlated with dictation and transcription practice. **MISS WILLIAMS.**
- D138 Advanced Stenography (2) f.**  
Review of the principles of shorthand theory; intensive practice in dictation, reading, and transcription; study of filing procedure and practices. **MISS LANG.**
- D139 Secretarial Practice (2) w.**  
Difficult reading and dictation matter and a study of the nature of secretarial work. **MISS LANG.**
- D140 Secondary School Administration for Teachers (2) f, w, s.**  
Prerequisite, A102. Problems of effective methods of school management from the standpoint of teachers in secondary schools. **MR. RUFI.**

- D141 Accounting for Teachers (3) f.**  
Introductory subject-matter course to give the teacher a basic knowledge of accounting principles as a foundation for high school courses in bookkeeping and accounting. Miss WILLIAMS.
- D150 Student Teaching in the Secondary School (Credit to be arranged) f, w, s.**  
Prerequisite, D110. Hours and credit must be arranged with instructor before registration. Application should be made in the term preceding registration. Mr. MAXWELL.
- D365 Problems of Teaching Reading in the Secondary School (2-3) w.**  
Prerequisites, A102 and E121 or D110. Study of the fundamental problems of reading in the secondary school. Mr. ARTLEY.
- D371 Problems in Visual Education (3) f, s.**  
Prerequisites, A102 and E121 or D110. For classroom teachers. Evaluation of visual education procedures and classroom instruction, including the preparation of visual education materials. Mr. BALLEW.
- D372 Selection and Utilization of Audio-Visual Materials in Teaching (3) w, s.**  
Prerequisite, E121 or D110. D371 is advisable. Mr. BALLEW.
- D373 The Administration of School Libraries (2-3) s.**  
Same as Library Science 373.
- D374 Acquisition and Preparation of Library Materials (3).**  
Same as Library Science 374.
- D375 Use of Library Materials (3).**  
Same as Library Science 375.
- D400 Problems (Credit to be arranged) f, w.**  
MEMBERS OF THE STAFF.
- D401 Extracurricular Activities (2½-3) w, s.**  
Mr. RUFI.
- D403 Problems of Teaching History in College (2) f, s.**  
(Same as History 403). Emphasis upon teaching the general courses. Some attention to work in related fields. Required for all Ph.D. candidates in history and recommended for A.M. candidates. Mr. ATHERTON AND MEMBERS OF THE STAFF.
- D404 Problems in College Composition and Grammar (2) f.**  
MEMBERS OF THE STAFF.
- D406 Secondary School Administration (2½-3) f, w, s.**  
Prerequisite, D140 or its equivalent. Deals with the problems of administration from the point of view of the high school principal. Mr. RUFI.
- D407 Tests and Measurements for Secondary Schools (3) f, w.**  
Study of educational tests and measurements for purposes of classification of students and for improvement of instruction in various subject matter fields in secondary schools. Mr. CAPPS; Miss DOOLITTLE.
- D409 Principles of Commercial Education (2½-3) s.**  
Prerequisite, D120. A study of basic principles, problems, and trends of commercial education with emphasis on the meaning, purpose, and scope of commercial education in secondary schools. Miss WILLIAMS.
- D410 Seminar in Secondary Education (1-3) f, w.**  
MEMBERS OF THE STAFF.
- D412 Problems in the Teaching of General Science (2) w.**  
For teachers and supervisors of science. Problems of organization, content, and teaching. Includes a summary of the investigations on teaching of science. Mr. WATKINS.
- D413 Methods in English Literature in Secondary Schools (2) s.**
- D414 Methods in English Composition in Secondary Schools (2) s.**

- D415 Secondary School Supervision (3) w, s.**  
Methods of improving instruction in junior and senior high school. MR. RUFL.
- D420 Problems in the Teaching of Social Studies (3) w, s.**  
A graduate course for majors and minors in social studies dealing with objectives, methods, curriculum and other problems in junior and senior high school. MR. ENGLISH.
- D421 Improvement of Instruction in Commercial Subjects (2½-3) s.**  
Prerequisite, D120. A study of the aims and content of commercial courses with emphasis on the securing, evaluating, and organizing of instructional materials. MISS WILLIAMS.
- D430 The Junior High School (2) w, s.**  
A survey of the progress of the junior high school including a study of the more important problems of organization and administration. MR. RUFL.
- D440 The Improvement of Secondary School Teaching (2) f, s.**  
For secondary school teachers, principals, and superintendents with considerable training in education and experience in teaching. Deals with recent developments in secondary school teaching. MR. WATKINS.
- D444 Selected Problems in Secondary School Administration (3) w.**  
This course will emphasize major problems encountered in the organization and management of the modern secondary school. Prerequisite D406, or equivalent. MR. RUFL.
- D445 The Secondary School Curriculum (3) f, s.**  
For secondary school principals, teachers, and superintendents. Deals with present trends in curricular change and methods of curricular investigation. MR. WATKINS.
- D446 Curriculum Construction for Secondary Schools (3) w, s.**  
Prerequisite, D445 or permission of the instructor. Designed for those engaged in curriculum revision work and in the construction of new secondary school courses. MR. WATKINS.
- D470 In-Service Course in Secondary Education (Credit to be arranged) f, w.**  
MEMBERS OF THE STAFF.
- D473 College Teaching (2) f, s.**  
Primarily for students who expect to teach in junior or senior colleges, or in teachers colleges. Important practical matters in college teaching will be considered. MR. WATKINS.
- D490 Research in Secondary Education (Credit to be arranged) f, w, s.**  
MEMBERS OF THE STAFF.
- D491 Research in College Teaching (Credit to be arranged) f, w, s.**  
MEMBERS OF THE STAFF.

## (E) Elementary Education

- E90 The Elementary School (2-3) f.**  
A beginning class in school management for students preparing for the sixty-hour certificate.
- E91 Teaching in the Elementary School (4-6) w.**  
A beginning course in techniques and methods of teaching for students preparing for the sixty-hour certificate. May include supervised student teaching.
- E96 Children's Literature (2) f, s.**
- E97 Conservation for Elementary School Teachers (2-3) s.**
- E98 Introduction to Science for Elementary School Teachers (2-3) s.**  
MR. WATKINS.
- E99 Arithmetic for Teachers (2) f, s.**  
MISS KNOWLES.

- E107 Teaching of Geography in the Elementary School (2) f.**  
Prerequisite, Geography 6 or 60 hours of college credit. A study of the methods involved and the geographic knowledge needed in the teaching of geography.
- E118 Art Activities in the Kindergarten and Primary Grades (3) f, s.**  
Consideration of art activities as related to the interests and experiences of children. Stresses integration of art activities. Provides laboratory experience with various media. MISS WULFEKAMMER.
- E119 Art Activities in the Intermediate Grades (3) w, s.**  
Consideration of art and handwork activities as a part of the regular school program. Provides laboratory experience with various media and study of art principles. MISS WULFEKAMMER.
- E120 Elementary School Organization and Management (3) f, w, s.**  
A study of the major problems of organization and management from the point of view of the teacher in the elementary school.
- E121 Technique of Teaching in Elementary Schools (2-3) f, w, s.**  
Prerequisite, A102. A study of current principles and practices relating to the instructional activities of the elementary classroom teacher. MISS KNOWLES; MISS FITZGERALD.
- E122 Child Study (3) f, s.**  
Prerequisite, A102. Presents the physical, mental, social, and emotional growth of the child from the pre-natal period to the sixth year. MISS TAYLOR.
- E123 Kindergarten Methods and Management (3) w, s.**  
A course in kindergarten theory and practice. MISS TAYLOR.
- E131 Field Work in Improvement of Teaching (2-6).**
- E141 Readiness for the Language Arts (2) f.**  
Prerequisite, A102, E121. A study of school readiness, particularly in the language arts. Designed for kindergarten and primary teachers.
- E151 Student Teaching in the Elementary School (Credit to be arranged) f, w, s.**  
Prerequisites, A102 and E121. Hours and credit must be arranged with the instructor before registration. Application should be made in term preceding registration. MR. MAXWELL.
- E325 Teaching Reading in the Elementary School (3) f, s.**  
Prerequisites, A102 and E121. A study of the materials and methods used in teaching reading in the elementary grades. MR. ARTLEY.
- E330 Problems in Teaching Mentally Retarded Children (2).**  
Prerequisite, A102. MISS FERGE.
- E335 Problems in Teaching the Orthopedically Handicapped (2) s.**  
Prerequisite, A102. MISS FERGE.
- E340 Supervision of Art Activities (2) w.**  
Consideration of the purposes and practices of art experiences in the elementary and secondary schools. Designed for teachers, supervisors, and administrators. MISS WULFEKAMMER.
- E366 Problems of Teaching the Language Arts (3) f.**  
Prerequisites, A102 and E121. A study of procedures used in teaching the integrated language arts in the elementary grades. MR. ARTLEY.
- E367 Problems of Teaching Arithmetic in the Elementary Schools (2½-3) w, s.**  
Prerequisites, A102 and E121. Presents purposes, techniques, and materials. Observation and study of arithmetic classes in the laboratory school. MISS KNOWLES.
- E368 Problems of Teaching the Social Studies in the Elementary School (2) w.**  
Prerequisites, A102 and E121. Problems in the preparation and teaching of units with suitable materials and techniques. MISS HARTWIG.
- E369 The Analysis and Correction of Reading Disabilities (2-3) s.**  
Prerequisites, A102 and D110 or E121. A study of causes of reading disabilities and of the procedures that may be used to diagnose and correct them. MR. ARTLEY.

- E370 Elementary School Curriculum (2) f.**  
Prerequisites, A102 and E121. A survey of modern educational thought with regard to objectives, content, and methods in the elementary school curriculum. MR. TOWNSEND.
- E375 Rural School Supervision (2).**  
A course intended primarily for country school superintendents. A critical examination of some of the important problems of rural school supervision will be included. MR. PHILLIPS.
- E400 Problems (Credit to be arranged) f, w, s.**  
Selected problems to meet the needs of individual students. MEMBERS OF THE STAFF.
- E404 Elementary School Supervision (3) f, s.**  
The course is organized to study such problems in the field of supervision as will meet the needs of superintendents, principals, and special supervisors. MR. PHILLIPS.
- E405 Tests and Measurements for Elementary Schools (3) w, s.**  
Study of educational tests and measurements for the elementary schools from the points of view of the teacher, the supervisor, and the administrator. MR. CAPPS; MISS DOOLITTLE.
- E406 Curriculum Construction in Elementary Schools (3) w, s.**  
Prerequisites, A102 and E121. MR. PHILLIPS.
- E408 Elementary School Administration (3) w, s.**  
A specialized course in elementary school administration for school administrators, supervisors, and teachers. MR. TOWNSEND.
- E410 Seminar in Elementary Education (1-3) f, w, s.**  
MEMBERS OF THE STAFF.
- E415 Clinical Problems in Child Study I (3).**  
Prerequisites, A303, E325 or E365, and E369. A course providing clinical experience in diagnosing educational and related psychological learning problems of school children. MR. ARTLEY.
- E416 Clinical Problems in Child Study II (3).**  
Prerequisite, A303, E365, E369, and E415. A course providing clinical experience in applying remedial procedures to children having educational and related learning problems. MR. ARTLEY.
- E470 In-Service Course in Elementary Education (Credit to be arranged) f, w.**  
MEMBERS OF THE STAFF.
- E490 Research in Elementary Education (Credit to be arranged) f, w, s.**  
MEMBERS OF THE STAFF.

## **(F) Vocational Education**

### *Agricultural Education*

- F100 Foundations of Vocational Agriculture (3) f, w.**  
An orientation course for students majoring in agricultural education. Prerequisite to other professional courses in agricultural education. MR. RODERICK.
- F105 Special Methods in Teaching Vocational Agriculture (3) f, w.**  
The methods of teaching vocational agriculture in secondary schools. MR. EKSTROM.
- F107 Programs for Out-of-School Groups in Vocational Agriculture (2) f, w.**  
A study of programs in vocational agriculture for out-of-school groups with particular emphasis on young farmer and adult farmer classes. MR. RODERICK.
- F120 Facilities and Departmental Programs in Vocational Agriculture (2) f, w.**  
A study of buildings and equipment and the planning of programs for departments of vocational agriculture. MR. EKSTROM.



- F156 Student Teaching in Vocational Agriculture** (Credit to be arranged) f, w, s.  
Supervised observations of vocational agriculture teaching and actual participation in teaching activities together with conferences as provided. MR. EKSTROM; MR. RODERICK.
- F300 Problems** (Credit to be arranged) f, w, s.  
Individual study of special phases of agricultural education. MEMBERS OF THE STAFF.
- F305 Off-Campus Instruction in Agricultural Education** (2) f, w.  
Course designed for beginning teachers. Campus meetings at beginning and at close of semester. Prerequisite F156. MR. EKSTROM; MR. RODERICK.
- F310 Vocational Agriculture in the Secondary School** (2-3) f, w.  
Problems pertaining to the high school program of vocational agriculture with emphasis upon organization of courses and application of instruction. Prerequisites, F100, F105. MR. EKSTROM; MR. RODERICK.
- F320 Adult Education Problems in Vocational Agriculture** (2-3) f, w.  
Objectives, organization, and procedures for conducting classes in vocational agriculture for out-of-school groups. Prerequisites, F100, F120. MR. EKSTROM; MR. RODERICK.
- F400 Problems** (Credit to be arranged) f, w, s.  
MEMBERS OF THE STAFF.
- F410 Seminar in Agricultural Education** (1-3) f, w, s.  
MEMBERS OF THE STAFF.
- F440 Analyzing Needs and Planning Programs of Supervised Farming** (2-4) f, w.  
Group study in current and advanced problems in the teaching and administration of agricultural education. MR. EKSTROM; MR. RODERICK.
- F451 Evaluation and Program Planning in Agricultural Education** (2-4) f, w.  
Surveying needs and establishing goals and objectives. Developing programs with suggestions as to means of accomplishment and evaluation of outcomes. Prerequisite, F310. MR. EKSTROM.
- F470 In-Service Course in Agricultural Education** (Credit to be arranged) f, w.  
MEMBERS OF THE STAFF.
- F490 Research in Agricultural Education** (Credit to be arranged) f, w, s.  
MEMBERS OF THE STAFF.

#### *Industrial Education*

- F5 Mechanical Drawing for Teachers** (3) s.  
Sketching, lettering, pictorial drawing, orthographic projection, dimensioning, developments, working drawings, and blueprint reading.
- For Engineering Drawing, see Mechanical Engineering.*
- F8 General Shop** (3) f, s.  
An introductory course in industrial arts, involving a study of the common tools, materials, processes, and products of industry. MR. DOTY.
- F10 Fundamentals of Woodwork** (3) w, s.  
Hand tool processes, machine operation, wood and wood products, assembling and fastening, simple finishing. MR. DOTY.
- F12 General Metal Work** (3) w, s.  
A study of the tools, materials, and processes involved in sheet metal, ornamental iron work, welding, forging, casting, bench work, and the machining of metals. MR. DOTY.
- F14 Applied Electricity** (3) f, s.  
Projects and related studies involving principles of electricity, electrical construction, repair, and maintenance. MR. DOTY.
- F106 Advanced Woodwork** (3) w, s.  
Design, construction, and finish of original projects in wood, involving machine operations, spray gun finishing, inlaying, and upholstering. MR. DOTY.

- F115 Tools and Materials (2) w, s.**  
Sources, manufacture, supply, and cost of shop materials and equipment; sharpening care, and repair of hand and machine tools. MR. DOTY.
- F125 Art Metal Work (2) w, s.**  
Forming, heat treating, soldering, spinning, etching, electro-plating, polishing, and finishing of projects in brass, copper, aluminum, pewter, and silver. MR. DOTY.
- F150 Industrial Art Design (3) w, s.**  
Principles of structural design, contour, and surface enrichment applied to three dimensional objects; sketches, details, and working drawings of shop projects. MR. DOTY.
- F160 Architectural Drawing and Home Design (3) f, s.**  
Problems and procedures in planning and constructing a home. The student will draw and write the specifications for a complete set of house plans. MR. DOTY.
- F301 Problems in Industrial Education (Credit to be arranged) f, w, s.**  
MEMBERS OF THE STAFF.
- F321 Vocational Guidance (2-3) f, s.**  
Problems, methods and procedures involved in assisting individuals to choose, prepare for, enter upon, and progress in their vocation. For teachers, counselors, school administrators. MR. LONDON.
- F365 Occupational Analysis (2) f, s.**  
Techniques and procedures of analyzing occupations into their basic elements. Required of trade teachers and coordinators. MR. BROWN.
- F375 Selection and Organization of Subject Matter (3) f, s.**  
Objectives, content selection and arrangements, preparation of job and informational assignments, course making. For shop teachers and coordinators. MR. LONDON; MR. BROWN.
- F390 Principles of Trade and Industrial Teaching (2-3) f, s.**  
The shop teacher's job; learning in the school shop; discipline and shop management; teaching devices and procedures; measurement of achievement; inter-school and community relations. MR. LONDON; MR. BROWN.
- F392 Problems of the Coordinator (2) s.**  
Problems and procedures in the operation of cooperative part-time and evening school programs. Restricted to those who can qualify as coordinators. MR. BROWN.
- F396 Organization and Administration of Industrial Education (2-3) w, s.**  
Problems and procedures in organizing and administering all-day, part-time and evening industrial programs. Federal laws, state plans, local practices. For teachers, supervisors, administrators. MR. LONDON; MR. BROWN.
- F401 Problems (Credit to be arranged) f, w.**  
MEMBERS OF THE STAFF.
- F404 History of Industrial Education (2) s.**  
Development of industrial education in America, with special attention to European influences, philosophical concepts, issues, motivating factors, leaders, movements, and current trends. MR. LONDON; MR. BROWN.
- F406 Problems of Adult Education (2-3) s.**  
Rise of adult education movement; learning abilities, educational interests and needs of adults; problems and procedures in organizing and operating adult education programs. MR. BROWN.
- F411 Philosophy of the Practical Arts and Vocational Education (2) f, s.**  
Nature and purpose of the practical arts and vocational education in the modern school. For teachers of agriculture, business, home economics, industrial subjects, and administrators. MR. LONDON.
- F412 Seminar in Industrial Education (1-3) f, w.**  
MEMBERS OF THE STAFF.

- F415 Occupational Surveys (3) s.**  
Problems, methods and procedures in planning and conducting community occupational surveys. For counselors, teachers, supervisors of vocational education, school administrators, and employment service personnel. MR. BROWN.
- F471 In-Service Course in Industrial Education (Credit to be arranged) f, w.**  
MEMBERS OF THE STAFF.
- F491 Research in Industrial Education (Credit to be arranged) f, w.**  
MEMBERS OF THE STAFF.
- Home Economics Education*  
Student Teaching of Vocational Home Economics. See D150.
- F175 Organization of Vocational Home Economics (3) f, w.**  
The vocational course, preparation of units and lesson plans, methods of teaching, books, illustrative material, and equipment are studied in this course. MISS MOTTER.
- F180 Methods of Teaching Vocational Home Economics and Related Subjects (4) f, w, s.**  
Prerequisite F175. Methods of teaching home economics and related subjects on the elementary, secondary, and adult level. MISS MOTTER; MRS. GARRETT.
- F402 Problems (Credit to be arranged) f, w, s.**  
MEMBERS OF THE STAFF.
- F413 Seminar in Home Economics Education (1-3) f, w, s.**  
MEMBERS OF THE STAFF.
- F430 Supervision of Student Teaching of Vocational Home Economics (Credit to be arranged) f, w, s.**  
Prerequisites, D150, F175, F180. Planned for those who are preparing to become supervisors of students teaching in vocational training centers. MISS MOTTER.
- F446 Curriculum Construction in Home Economics (Credit to be arranged) f, w, s.**  
Planned for home economics teachers who are engaged in curriculum revision work, or for those who are interested in construction of a new course. MISS MOTTER.
- F472 In-Service Course in Home Economics Education (Credit to be arranged) f, w.**  
MRS. GARRETT.
- F473 Trends in Home Economics Education (3) f, s.**  
This course furnishes opportunities for experienced teachers to study problems of teaching, supervision, critic teaching or administration of home economics and related subjects. MISS MOTTER; MRS. GARRETT.
- F492 Research in Home Economics Education (Credit to be arranged) f, w.**  
MEMBERS OF THE STAFF.

## (G) Guidance and Counseling

- G75 Introduction to Education (2 or 3) f, w.**  
A study of education as a profession. Description of training programs required to reach various educational objectives. Analysis of the individual's aptitude for teaching. MR. EUBANK.
- G395 Principles and Procedures of Student Personnel Work (2½-3) f, w, s.**  
A study of student personnel work in educational institutions—the objectives of student personnel work, and certain pertinent techniques. MR. FERGUSON, MR. POLMANTIER.
- G397 Occupational and Educational Information (2½-3) f, s.**  
Prerequisite, G395 (or F321). The nature and use of occupational and educational information. Characteristics and requirements of occupations and training opportunities. The process of vocational choice. MR. FERGUSON.
- G400 Problems (Credit to be arranged) f, w, s.**  
MEMBERS OF THE STAFF.

- G404 Individual Inventory (2½-3) f, w, s.**  
Prerequisites, G395 (or F321) and C370. Interpretation of educational and psychological test data and data in personnel records with particular emphasis on the use of the data in counseling. MR. FERGUSON; MR. CALLIS; MR. MCGOWAN.
- G406 Mental Hygiene (2½-3) w, s.**  
Prerequisite, A405 or equivalent. The psychology of mental health. Emphasis on normal personality and improved self-management. MR. POLMANTIER.
- G407 Counseling Methods (2½-3) f, w, s.**  
Prerequisites, G395 (or F321) and A405 or equivalent. Study of counseling as a professional field; the process of counseling; counseling *re* educational, occupational, social and personal adjustment. MR. CALLIS; MR. MCGOWAN.
- G408 Student Personnel Administration (2-3) f, s.**  
Prerequisites, G395 (or F321) and A405 or equivalent. The organization and the administration of student personnel services in elementary, secondary and higher educational institutions. MR. CALLIS; MR. FERGUSON.
- G410 Seminar (½-1) f, w, s.**  
MEMBERS OF THE STAFF.
- G411 Vocational Rehabilitation I (2) f.**  
Vocational handicaps and methods of rehabilitating the vocationally handicapped. State and national provisions for vocational rehabilitation services. MR. MCGOWAN.
- G412 Vocational Rehabilitation II (2) w.**  
Continuation of G411. MR. MCGOWAN.
- G415 Supervised Practice in Counseling (3-6) f, w, s.**  
Prerequisites, G397, G404, G406, G407 or equivalent and consent of the instructor. Supervised practice of counseling in an approved counseling agency. MR. MCGOWAN; MR. CALLIS; MR. FERGUSON.
- G422 Advanced Counseling Theories (2) w.**  
Prerequisite, G415 or equivalent. Study of historical and contemporary theories of counseling. Advanced study of techniques and research findings. MR. CALLIS.
- G470 In-Service Course in Counseling (Credit to be arranged) f, w, s.**  
MEMBERS OF THE STAFF.
- G490 Research (Credit to be arranged) f, w, s.**  
Independent research leading to the presentation of a thesis. MEMBERS OF THE STAFF.

## (H) Physical Education

- H65 Elements of Health Education (2) f, w, s.**  
For elementary and high school teachers. The organization of the school health program, the adaption of health materials to elementary and high school levels. MISS MCKEE; MISS CLINE.
- H119 Teaching of Physical Education (2) w.**  
Prerequisite, A102. Required of Physical Education majors and minors. Teaching methods, selection of activities, program planning for elementary, secondary, college physical education. MR. KELLER; MISS CLINE; MISS MCKEE.
- H124 Rhythmic Activities for Elementary Schools (2) w, s.**  
A study of the basic philosophy of children's rhythms, as well as practical suggestions for its application with singing games, and selected folk dances. MISS TAYLOR.
- H126 Physical Education Programs for Secondary Schools (3) s.**  
Theoretical and practical work with programs and activities suitable for use in the high school physical education program. MISS MCKEE.

- H127 Physical Education Activities for the Elementary School (2) f, w, s.**  
Objectives of physical education for the elementary school child with application of choice of activities and organization of program. Theory and practice in rhythms and games. Miss McKEE.
- H152 History and Principles of Physical Education (3) f, w.**  
Prerequisites, Anatomy and Physiology. An historical survey of the aims and content of previous physical educational systems combined with an analysis of prevailing conditions which influence modern American programs. Mr. EDWARDS; Mr. KELLER.
- H364 Problems of Physical Education for Elementary Schools (2) s.**  
Prerequisite, H127. Miss McKEE; Mr. KELLER.
- H365 The Secondary School Curriculum in Physical Education (2) f, s.**  
Prerequisite, H152. A critical examination of physical education activities and programs leading to the construction of general and special curricula for secondary schools. Mr. HINDMAN; Mr. BUNKER.
- H366 Intramural Sports (2) w, s.**  
A consideration of the objectives and principles in the administration of intramural sports in high schools and colleges. Mr. EDWARDS; Mr. STANKOWSKI.
- H370 Tests and Measurements in Physical Education (2½-3) w.**  
Measurement of aptitude and achievement in physical education activities with particular reference to the determination of standards. Mr. HINDMAN; Mr. BUNKER.
- H380 Kinesiology (3) f, w.**  
A study of joint and muscular mechanisms of the body and the relationships of muscular activity to bodily development and efficiency. Prerequisite, anatomy. Miss KELLY.
- H390 Administration of Physical Education (3) w, s.**  
Prerequisites, H119 and sports technique courses. Problems of administrators and supervisors; finances, construction, equipment, care of physical education plant, selection of staff. Miss McKEE; Mr. EDWARDS; Mr. BUNKER.
- H391 Problems of Health Education (3) w, s.**  
Prerequisite, a course in hygiene or preventive medicine. Principles and methods of health supervision, health service, and health instruction. Miss CLINE.
- H400 Problems (1-6) f, w, s.**  
Mr. HINDMAN AND MEMBERS OF THE STAFF.
- H410 Seminar in Physical Education (1-2) f, w, s.**  
Reports on selected topics are presented by students and instructors, and criticized by the group. Mr. EDWARDS; Mr. HINDMAN; Mr. BUNKER.
- H415 Remedial Gymnastics (2) f.**  
Prerequisite, H380. Advanced study of postural problems and correction of defects. Miss KELLY.
- H420 Administration of Interscholar Athletics (3) w, s.**  
The organization and management of interscholastic and intercollegiate athletics. Mr. EDWARDS; Mr. BUNKER.
- H440 Scientific Studies in Physical Education (3) f, s.**  
A survey and critical evaluation of reports of research in the field of physical education. Does not include the carrying on of research. Mr. HINDMAN; Mr. BUNKER.
- H490 Research in Physical Education (Credit to be arranged).**  
Mr. HINDMAN.

## (J) Music Education

- J127 Song Literature for Children (1) f, s.**  
Prerequisite, Introduction to Music, or equivalent training. Surveys of song literature used in the elementary school with some attention given to the fundamentals of singing. Mr. MATHEWS.

- J129 Elementary School Music (2) f, w, s.**  
Prerequisite, Fundamentals of Music, or its equivalent, or sufficient piano instruction. Music methods and materials for teachers in the elementary school. One recitation and two laboratory periods per week. MR. MATHEWS.
- J130 Teaching of High School Music (3) w, s.**  
A course covering all types of high school music. MR. MATHEWS.
- J131 Teaching Music in the Elementary School (3) f.**  
Intended for students majoring in Music Education. MR. MATHEWS.
- J132 Teaching of Instrumental Music (2) f, s.**  
Intended for all majors in Instrumental Music Education. MR. WILSON; MR. MATHEWS.
- J380 Music Supervision (2) w, s.**  
Prerequisite, J131 or equivalent. The philosophy and practice of supervision as applied to the music program of a city or county school system. For Music Education majors. MR. MATHEWS.
- J381 Problems in School Music Teaching (2-5) s.**  
Prerequisite, teaching experience and permission of the instructor. The student is expected to submit problems which he wishes to work out in the course. MR. MATHEWS.
- J400 Problems (2-5) f.**  
Prerequisite, completion of major in music education. Covers all phases of music education and is arranged to fit the needs of each individual student. MR. MATHEWS.
- J417 Curriculum Materials in Music Education (2-5) w, s.**  
Prerequisites, J130, J131. A study of all types of instructional materials in school music, for various grade levels. MR. MATHEWS.
- J418 Problems in Instrumental Music (3) s.**  
Prerequisite, graduate standing and experience in teaching instrumental music. Problems in organization and class teaching with demonstrations by the instructor and members of the class. MR. MATHEWS.
- J419 Problems in High School Vocal Music (3) s.**  
Designed for graduate students with teaching experience. Deals with fundamentals of voice development, materials and problems met in the vocal ensembles of the high school. MR. MATHEWS.
- J470 In-Service Course in Music Education (Credit to be arranged) f, w.**

## ELECTRICAL ENGINEERING

- 119 Fundamentals of Electrical Circuits Lecture (2) f, w, s.**  
Prerequisites, Physics 24 and accompanied by EE 120. Direct and alternating current circuits. MR. CALABRESE.
- 120 Fundamentals of Electrical Circuits Laboratory (1) f, w, s.**  
Prerequisite, must be accompanied by EE 119.
- 121 Fundamentals of Electrical Machinery Lecture (2) f, w, s.**  
Prerequisites, EE 119 and accompanied by EE 122. Characteristics of direct and alternating machines; fundamentals of electronics and electron tubes. MR. CALABRESE.
- 122 Fundamentals of Electrical Machinery Laboratory (1) f, w, s.**  
Prerequisite, must be accompanied by EE 121.
- Note: Courses EE 119, EE 120, EE 121, EE 122 are not open to students enrolled in Electrical Engineering.
- 150 Elements of Electrical Engineering (5) f, w, s.**  
Prerequisites, Physics 23 and accompanied by Mathematics 201. Direct-current circuits; fundamentals of electrostatics and electromagnets. (Lect. and Lab.) MR. TUDOR.

- 210 Alternating Current Circuits (4) f, w.**  
Prerequisites, EE 150 and Mathematics 201. Fundamental relationships in single and polyphase networks with sinusoidal and non sinusoidal voltages and currents. (Lect. and Lab.) MR. TUDOR; MR. VREDENBURGH.
- 240 Electrical Machinery I (4) f, w.**  
Prerequisites, EE 150 and accompanied by EE 210. Direct-current machinery including generators and motors. (Lect. and Lab.) MR. HOGAN; MR. TUDOR.
- 249 Electrical Machinery II (5) f, w.**  
Prerequisites, EE 210 and EE 240. Power frequency transformers, polyphase transformer connections. Introductory study polyphase induction motors and synchronous machines. (Lect. and Lab.) MR. LAMB.
- 275 Transmission Lines and Circuits (3) f, w.**  
Prerequisite, EE 210. Electric transmission lines at low and high frequencies; network theorems; four-terminal network filters. (Lect. and Lab.) MR. LAGO.
- 280 Electronics and Electron Tubes (3) f, w.**  
Prerequisite, EE 210. Electron ballistics; thermionic and photoelectric emission; semi conductors; gaseous conduction; characteristics of high vacuum and gas filled tubes. (Lect. and Lab.) MR. VREDENBURGH.
- 300 Problems (2-4) f, w.**  
Prerequisite, consent of instructor. Analytical or experimental problems pertaining to electrical circuits, machines, or electronics. MEMBERS OF THE STAFF.
- 305 Illumination (3) f.**  
Prerequisite, EE 280. Laws of radiation; characteristics of point and surface sources of light; illumination calculations; lighting design. (Lect. and Lab.) MR. HOGAN.
- 315 Transients in Electric Circuits (3) f, w.**  
Prerequisite, EE 210. Transient and steady-state behavior of circuits with constant, sinusoidal, and pulse voltages. (Lect. and Lab.) MR. LAGO.
- 320 Vacuum Tube Circuits (4) f, w.**  
Prerequisite, EE 280. Rectifier circuits and power supplies; small signal amplifiers; oscillators; power amplifiers. (Lect. and Lab.) MR. WALLIS; MR. VREDENBURGH.
- 325 Fundamentals of Acoustical Engineering (3) w.**  
Prerequisite, EE 275. A study of fundamental concepts of sound, sound production, electroacoustic devices, and sound control. (Lect. and Lab.). MR. WADELICH.
- 330 Radio Circuit Analysis (3) w.**  
Prerequisite, EE 320. Types of modulation systems; theory of detection; triggering and wave shaping circuits; transistor circuit analysis. (Lect. and Lab.) MR. WALLIS.
- 335 Television Engineering (3) w.**  
Prerequisite, EE 320. Electronic and radio engineering fundamentals as applied to the special problems of television. (Lecture)
- 340 Ultra High Frequency Techniques (3) f.**  
Prerequisites, EE 275 and accompanied by 320. Ultra high frequency generation and propagation; wave guides and resonant chambers. (Lect. and Lab.) MR. WADELICH.
- 355 Electrical Machinery III (3) f.**  
Prerequisite, EE 249. Additional topics on transformers and the steady-state performance of synchronous machines not covered in EE 249. Parallel operation of generators; double reaction theory as applied to salient pole synchronous machines. (Lect. and Lab.) MR. LAMB.
- 356 Induction Machinery (3) w.**  
Prerequisite, EE 249. Polyphase induction motor performance computations; starting and speed control; single-phase motor theory and performance computations. (Lect. and Lab.) MR. HOGAN.



- 360 Control Systems (3) w.**  
Prerequisites, EE 315 and accompanied by EE 249 and EE 320. Introduction to the theory of servomechanisms including transient analysis and design methods based on transfer functions. MR. LAGO.
- 370 Power Transmission and Distribution (3) w.**  
Prerequisites, EE 275 and EE 249. Transmission power systems and analysis of their operation. MR. TUDOR.
- 380 Circuit Analysis of Power Systems (3) w.**  
Prerequisites, EE 249, and EE 275. Symmetrical component theory, short circuit calculations, unsymmetrical faults on balanced three phase systems, transmission lines with distributed constants, unsymmetrical components. (Lect.) MR. HOGAN.
- 400 Problems (2-4) f, w, s.**  
Prerequisite, graduate standing. Original investigation of problems pertaining to electric circuits, machinery, electronics, or communication. MEMBERS OF THE STAFF.
- 410 Seminar (1) f, w.**  
Prerequisite, graduate standing. Reviews of recent investigations and projects of major importance. MEMBERS OF THE STAFF.
- 411 Advanced Electrical Machinery Theory (3) f.**  
Prerequisite, equivalent of EE 355. Study of electrical machinery fundamentals necessary for understanding the advanced literature. Applications of symmetrical components to machinery analysis. MR. LAMB.
- 415 Tensor Analysis of Electric Circuits and Machines (3) w.**  
Theory of the application of matrices and tensors to the analysis of electric circuits. Introduction to the analysis of electrical machines. MR. HOGAN.
- 430 Power System Stability (3) w.**  
Performance of synchronous machines under transient conditions; power system stability; system fault computations using symmetrical components. MR. HOGAN.
- 435 Power-System Relaying (3) w.**  
Prerequisite, EE 380 or equivalent. Theory of relaying systems for power-system protection and improvement of power-system stability. Relay coordination. Performance of relays during transient swings and out-of-step conditions. MR. TUDOR.
- 440 High Vacuum Electron Tubes (3) f.**  
Study of the fundamental relationships governing the design of conventional types of high vacuum tubes and electron beam focusing systems. MR. WALLIS.
- 441 High Frequency Tubes (3) w.**  
Prerequisite, EE 440. Study of high frequency effects in electron tubes. Theory and operation of ultra-high-frequency tubes including klystrons and magnetrons. MR. WALLIS.
- 445 Electrical Conduction in Gases and Semiconductors (3) f.**  
Study of the basic concepts and theories pertaining to electrical conduction in gases and solid-state semiconductors with special attention to gas discharge tubes, semiconductor rectifiers and transistors. MR. WALLIS.
- 450 Research (Credit to be arranged) f, w, s.**  
Independent investigation and report on some problem in the field of electrical engineering. Maximum credit for courses 400 and 450 limited to 7 hours. MEMBERS OF THE STAFF.
- 455 Analog and Digital Computer Theory (3) f.**  
Discussion of circuit theory and operating techniques of digital and electronic analog computers. MR. VREDENBURGH.
- 458 Static Electromagnetic Fields (3) f.**  
A study of the properties of static electric and magnetic fields with application to problems encountered in electrical engineering. Includes mathematical and graphical methods for mapping such fields. MR. LAMB.

- 460 Advanced Electric Circuit Analysis (3) f.**  
Specialized study of mathematical analysis as applied to the solution of circuit networks with fixed and variable parameters. MR. LAGO.
- 461 Network Synthesis (3) w.**  
Prerequisite, EE 460. Study of two terminal and two-terminal-pair network synthesis including realizability conditions and synthesis procedures such as: Foster's, Cauer's, Darlington's and Dasher's. MR. LAGO.
- 465 Feedback Theory and Applications (3) w.**  
Study of such topics as stability criterions, complex-plane plots, attenuation-phase diagrams, root-locus methods, synthesis through pole-zero configurations. MR. LAGO.
- 470 Operational Circuit Analysis (3) f.**  
Application of the operational calculus to the solution of linear electrical circuits with lumped or distributed parameters and under steady-state and transient conditions. MR. WAIDELICH.
- 471 Frequency Analysis and Circuit Noise (3) w.**  
Frequency spectra of waves; types of noise voltages; effect of noise in linear and non-linear electric circuits. MR. WAIDELICH.
- 480 High Frequency Transmission and Radiation (3) f.**  
Study of skin effect; theory of transmission lines, wave guides and antennas. MR. WAIDELICH.
- 481 Antennas (3) w.**  
Point and aperture sources; simple antennas; antenna arrays; slot, horn, and lens antennas. MR. WAIDELICH.
- 490 Research (Credit to be arranged) f, w, s.**  
Independent investigation of some problem or design in the field of electrical engineering, to be presented in the form of a thesis. MEMBERS OF THE STAFF.

## ENGLISH

### Composition and Creative Writing

- 1 Composition and Rhetoric (3) f, w, s.**  
Detailed study and practice in construction and the kinds of composition. MEMBERS OF THE STAFF.
- 2 Composition and Rhetoric (3) f, w, s.**  
A continuation of course 1. MEMBERS OF THE STAFF.
- 3 Composition (3) f.**  
For freshmen showing unusual ability in placement tests. If passed with E or S grade, fulfills freshmen English requirement. MEMBERS OF THE STAFF.
- 50 Narration (3) f, w.**  
Prerequisite, six hours of Composition and Rhetoric or the equivalent and one semester of any course in literature. MR. PEDEN AND MEMBERS OF THE STAFF.
- 60 Exposition (3) f, w, s.**  
Prerequisite, six hours of Composition and Rhetoric or the equivalent. Study and practice of expository writing, including original essays. MR. JOHNSON AND MEMBERS OF THE STAFF.
- 61 Technical Writing (3) f, w.**  
Prerequisite, second semester sophomore standing or above. For students in such professional fields as engineering, forestry, and geology. Emphasis on technical papers, reports, and correspondence. MR. BOBBITT; MR. BENNETT.
- 302-303 The Writing of Fiction (3) f, w; (3) w.**  
An advanced course in fiction writing, with group discussions and individual conferences. Admission determined by consent of instructor. MR. PEDEN; MR. DRUMMOND.

- 304 The Critical Essay (3) w.**  
(Same as Library Science 304). A workshop course for advanced students in writing. Discussion, in essay form, of ideas and literary values. Admission determined by consent of instructor. MR. NEIHARDT.
- 305 Book Reviewing (2) f, w, s.**  
(Same as Library Science 305). Prerequisite for journalism students, Journalism 105. Analysis of professional book reviewing with frequent written reviews. Student reviews published in the *Columbia Missourian* and other papers. MR. PEDEN.
- 313-314 The Writing of Poetry (3) f; (3) w.**  
Poetry regarded as a mode of understanding. Poetic values related to our whole scale of values. Practical consideration of verse techniques. MR. NEIHARDT; MR. DRUMMOND.

## Literature and Languages

- 5-6 Masterpieces (2°) f; (2°) w.**  
The great writings of modern English and American authors read and examined with a view to increasing the student's appreciation of literature. (\*1½ for upperclassmen.) MR. HUDSON.
- 30-40 English Life and Literature (3) f, w, s; (3°) f, w, s.**  
A general survey course in English Literature. Not open to freshmen. These courses or their equivalent are required for all upperclass English courses except General Literature, World Literature, The English Language (Part I), the English Novel, and The American Novel. (\*2 hours for upperclassmen, except for those who have had no upperclass course in English.) MR. CLARK AND MEMBERS OF THE STAFF.
- 102-103 General Literature (2) f; (2) w.**  
General reading in English and American literature. Designed primarily for students not specializing in literature. No credit for students who have taken or are taking English 362 or English 377. MR. JOHNSON.
- 317-318 Introduction to Criticism (3) f; (3) w.**  
First semester: the principles of literary criticism and a study of their history from Plato to Croce. Second semester: twentieth century criticism in its relation to modern poetry and prose. MR. CLARK.
- 319 The English Language, Part One (3) f.**  
A study of Modern English as a language: sounds, structure, meaning. MR. PACE.
- 320 The English Language, Part Two (3) w.**  
An historical study of the English language, focusing on three periods in its development: Old, Middle, and Early Modern English. MR. PACE.
- 321-322 World Literature (3) f; (3) w, s.**  
(Same as Library Science 321-322.) Prerequisite, junior standing. A study of selected masterpieces of world literature. MR. WEATHERLY; MR. GWATKIN.
- 325 Chaucer and His Time (3) f, s.**  
A study of the Canterbury Tales and certain other parts of Chaucer's work; social background of Chaucer's England; introduction to Middle English. MR. MOFFETT.
- 326 Middle English Literature (3) w.**  
Representative works in the original, largely from the literature of the Fourteenth Century exclusive of Chaucer. Includes the whole of *Sir Gawain and the Green Knight*. Alternates with English 417. MR. PACE.
- 331 Elizabethan Literature (3) w.**  
A survey of non-dramatic poetry and prose of the sixteenth century from Sir Thomas More to John Donne. MR. CRAIG.
- 332 Renaissance Literature in Translation (3) w.**  
Chief continental writers from Petrarch to Cervantes. Knowledge of Latin or a romance language is desirable but not essential. MR. HOSLEY.

- 333 **Elizabethan Drama (3) f.**  
Chief plays from *Gorboduc* to the closing of the theaters. MR. HOSLEY.
- 335-336 **Shakespeare (3) f, s; (3) w.**  
A chronological study of the plays. The first course extends through the comedies and histories of the late 1590's; the second course deals with the tragedies and comedies of the later period. MR. CRAIG.
- 345 **Milton (3) w.**  
A study of the poet's life and work. MR. CLARK.
- 355 **The Age of Reason (3) f.**  
English literature from 1660 to 1740, with major emphasis on Dryden, the Restoration dramatists, Swift, Pope, and the early eighteenth-century essayists. MR. CLARK.
- 356 **Johnson and His Time (3) w.**  
English literature from 1740 to 1790, with major emphasis on the works of Dr. Johnson and his circle. MR. WEATHERLY.
- 361-362 **The English Novel (2) f, s; (2) w.**  
Prerequisite, junior standing. The novel from Defoe to the twentieth century. MR. PEDEN; MR. WEATHERLY.
- 364 **English Drama (3) w.**  
A rapid survey and extensive reading of English drama from its beginning to the twentieth century. MR. CLARK.
- 365 **The Romantic Period (3) f.**  
A study of literary tendencies and representative authors. MR. HUDSON.
- 366 **The Victorian Period (3) w, s.**  
A study of literary tendencies and representative authors. MR. MOFFETT; MR. HUDSON.
- 371 **Nineteenth Century Prose (3) f.**  
A selective study of British prose writers (non-fiction) in the nineteenth century. MR. HUDSON.
- 375-376 **American Literature (3) f; (3) w, s.**  
Colonial and Revolutionary Periods and beginnings of Romanticism; Romantic Period and beginnings of realism. MR. MOFFETT; MR. DICKINSON.
- 377 **The American Novel (3) w.**  
A study of representative American novels of the nineteenth and twentieth centuries. MR. DICKINSON.
- 378 **The Rise of Realism (3) f, s.**  
American literature from the Civil War to 1900, with emphasis on major figures. MR. DICKINSON.
- 379 **Epic America (3) f.**  
A study of the epic period of American life beginning in 1822, ending in 1890. Based on Neihardt's *A Cycle of the West*. MR. NEIHARDT.
- 391-392 **Twentieth Century Literature, Parts I and II (3) f; (3) w.**  
A period course in modern British and American poetry, fiction, and drama. Part I considers literature from 1890 to 1920 and Part II from 1920 to the present. MR. DRUMMOND.
- 396-397 **Distinction (3) f; (3) w.**  
A two-year study of the development of English literature, open to students who are approved for Honor studies. MEMBERS OF THE STAFF.
- 398-399 **Distinction (3) f; (3) w.**  
Second year of course described above. MEMBERS OF THE STAFF.
- 400 **Problems (Credit to be arranged) f, w, s.**  
Individual work which does not lead to a dissertation. Students registering in this course must obtain departmental approval. MEMBERS OF THE STAFF.

- 404 Problems in College Composition and Grammar (2-3) f.**  
Prerequisite, consent of instructor. Two periods weekly, one devoted to problems of instruction and the other to study of current usage and grammar. MR. JOHNSON; MR. PACE.
- 413 Methods in English Literature in Secondary Schools (2) s.**  
(Same as Education D413) MR. DRUMMOND.
- 414 Methods in English Composition in Secondary Schools (2) s.**  
(Same as Education D414) MR. DRUMMOND.
- 417 Old English Literature (3) w.**  
Representative works in the original, limited to poetry. Includes an abridgement of *Beowulf*. Alternates with English 326. MR. PACE.
- 419 Problems in Modern English (3) f.**  
Concentrated study of a selected problem. Offered on sufficient demand. MR. PACE.
- 423 The Medieval Metrical Romance (3) f.**  
The reading of selected Middle English romances, with the establishment of origins and inter-connections. MR. CRAIG.
- 424 Rise of the Drama (3) w.**  
The beginnings of English drama in the medieval church and its development in the mystery plays, the moralities, and the interludes. MR. CRAIG.
- 425 Chaucer's Troilus and Minor Poems (3) w.**  
Intensive study of Chaucer's greatest narrative poem and a number of his shorter works; training in the major areas of Chaucer scholarship, especially interpretation, sources, and editing. MR. PACE.
- 430 Spenser (3) w.**  
*The Faerie Queene* and selected minor works. MR. HOSLEY.
- 433 Studies in Elizabethan Drama (3) f.**  
A selection of some thirty or more plays, exclusive of those read in English 333. MR. HOSLEY.
- 435 Shakespeare, Part I (3) f.**  
Problems of modern scholarship and criticism: the early plays. MR. CRAIG; MR. HOSLEY.
- 436 Shakespeare, Part II (3) w.**  
Continuation of Part I: the remainder of the plays. It is advisable to take Part I before Part II. MR. CRAIG; MR. HOSLEY.
- 451 Seventeenth Century Literature (3) w.**  
A study of English literature from 1600-1660: the metaphysical and Cavalier poets, Bacon, Burton, Browne, and the prose writer of the Puritan Commonwealth. MR. CLARK.
- 455 Swift (3) f.**  
An examination of Swift's work and career in the light of the religious, political, and literary ideas of his time. MR. WEATHERLY.
- 456 Age of Johnson (3) f.**  
An examination of Johnson's work and career in the light of the religious, political, and literary ideas of his time. MR. WEATHERLY.
- 460 Introduction to Research in English (3) f.**  
A course in the methods of research and the discovery, limitations, and mode of attack on graduate problems, illustrated by recent articles and studies. MR. PACE.
- 464 The Earlier Romantics (3) f.**  
Selected problems in Wordsworth and Coleridge. MR. HUDSON.
- 465 The Later Romantics (3) w.**  
Selected problems in Byron, Shelly, Keats. MR. HUDSON.
- 473 Colonial American Literature (3) f.**  
American literature to 1800, with emphasis on religious and political thought and expression. MR. DICKINSON.

- 474 **Poe and Hawthorne (3) f.**  
A study of the major writings of Poe and Hawthorne. MR. PEDEN.
- 476 **New England Transcendentalists and Abolitionists (3) w.**  
Problems for special investigation. MR. MOFFETT.
- 477 **Melville and Whitman (3) w.**  
A study of the major writings of Melville and Whitman. MR. DICKINSON.
- 478 **Browning (3) w.**  
The poet as artist; as thinker; as a Victorian. MR. HUDSON; MR. WEATHERLY.
- 479 **Mark Twain (3) w.**  
A study of Mark Twain's artistry, ideas, and reputation. MR. DICKINSON.
- 490 **Research (Credit to be arranged) f, w, s.**  
This course leads to the preparation of a dissertation. MEMBERS OF THE STAFF.
- 491 **Studies in Modern Poetry (3) f.**  
A comparative study of a few significant contemporary poets. MR. DRUMMOND.
- 492 **Studies in Modern Criticism (3) w.**  
A comparative study of a few significant contemporary critics. MR. CLARK.
- 493 **Studies in Modern Fiction (3) f.**  
A comparative study of a few significant contemporary novelists. MR. DICKINSON; MR. PEDEN.
- 495 **Studies in Modern Drama (3) w.**  
A comparative study of a few significant contemporary dramatists. MR. CLARK.

## ENTOMOLOGY

- 1 **Applied Entomology (3) f, w, s.**  
Fundamental principles of insect life with special references to its economic importance. A prerequisite of all courses except 5, 109 and 210. MEMBERS OF THE STAFF.
- 5 **Insects and Nature Study (2) f.**  
An illustrated lecture course for students with or without previous biological training who desire a general knowledge of the myriads of interesting insects and other creatures. Cannot be used by students in agriculture as a substitute for Course 1. MR. JENKINS.
- 109 **Beekeeping (2) w.**  
A study of the honeybee and the science of beekeeping, supplemented with practical work in the apiary. MR. HASEMAN AND MEMBERS OF THE STAFF.
- 210 **Forest Entomology (3) w.**  
Primarily for forestry students but open to others by arrangement. The life history, habits, injuries, and methods of controlling the more important insect pests of forests and forest products. MR. STONE.
- 215 **Veterinary Entomology (3) f.**  
Prerequisite, Entomology 1 or the equivalent. A study of the insect and related arthropod pests of livestock, poultry and pets. For first year students in the School of Veterinary Medicine. MR. WINGO.
- 300 **Problems (Credit to be arranged) f, w, s.**  
Prerequisite, a minimum of 10 hours of course work in Entomology and Zoology. By arrangement students may take special problems in the different fields of entomology as preparation for research. MEMBERS OF THE STAFF.
- 304 **Insect Taxonomy (3) f.**  
Prerequisites, Zoology 1 and Entomology 1 or the equivalent. A study of the orders and important families of insects. Literature and technique of systematic entomology. MR. BROWN.

- 305 Taxonomy of Immature Insects (3) f, s.**  
Prerequisites, Entomology 1 and Zoology 1 or the equivalent. A study of the specific characters and the literature used in determining families, genera, and species of immature stages of insects. MR. ENNS.
- 306 Aquatic Entomology (3) w.**  
Prerequisites, Entomology 1, Zoology 1, Entomology 304 or equivalent. The identification, life histories, and ecology of aquatic arthropods with emphasis on fresh water insects. Designed particularly for students of wildlife, fisheries management, aquatic biology, and advanced entomology. MR. SPANGLER; MR. ENNS.
- 310 Insect Pests of the Household (2) f.**  
Prerequisites, Entomology 1 and Zoology 1 or the equivalent. For men and women who desire information about the common household pests and for those who plan to take up commercial pest control work. Recognition of the insects and allied pests in and about the home, their habits and control will be stressed. Offered in alternate years. Not offered in 1956-57. MR. STONE.
- 311 Field Crop Insects (2) w.**  
Prerequisites, Entomology 1 and Field Crops 1 or the equivalent. A study of the life histories, injuries, and control of insect pests of field crops. Offered in alternate years. Not offered in 1956-57. MR. BROWN.
- 312 Orchard, Garden and Greenhouse Insects (3) w.**  
Prerequisites, Entomology 1 and Horticulture 1. A study of the major insect pests of horticultural crops and the injuries they cause and methods of controlling them. MR. JENKINS.
- 315 Medical and Veterinary Entomology (3) f.**  
Prerequisites, Entomology 1 and 304 or the equivalent in Medicine or Sanitary Engineering. A study of the insects and related pests of man and animals with special attention paid of those transmitting diseases. Primarily for advanced students in entomology, medicine and sanitary engineering. Offered in 1956-57 and alternate years. MR. STONE.
- 316 Insect Morphology (3) f.**  
Prerequisites, Entomology 1 and Zoology 1 or the equivalent. The external and internal anatomy of insects. Offered in alternate years. Not offered in 1956-57. MR. STONE.
- 317 Physiology of Insects (3) f.**  
Prerequisites, Entomology 1 and 316 or the equivalent. A study of the general physiology of insects. Offered in 1956-57 and alternate years. MR. BROWN.
- 318 Acarology—Mites and Ticks (3) w.**  
Prerequisites, Entomology 1 and Zoology 1 or the equivalent. The taxonomy, biology collecting, rearing and slide preparation of mites and ticks. MR. ENNS; MR. STONE.
- 319 Insect Ecology (3) w.**  
Prerequisites, Entomology 1 and Zoology 1 or the equivalent. A study of the general field of insect ecology and biological control. Open only to students who have had adequate training. Offered in alternate years. Not offered in 1956-57. MR. STONE.
- 321 Entomological Literature and History of Entomology (2) f.**  
Prerequisites, Entomology 1 and Zoology 1. A survey of entomological literature from early to modern times. History of development of the science with special emphasis on prominent entomologists and their contributions. Primarily for advanced students in Entomology. Offered in alternate years. Not offered in 1956-57. MR. WINGO.
- 410 Seminar (1) f, w.**  
Prerequisites, a minimum of 10 hours of course work in Entomology and Zoology. Reviews of current literature and reports on original investigations. MEMBERS OF THE STAFF.
- 414 Research Techniques in Entomology (3) w.**  
Prerequisite, a minimum of 10 hours in Entomology. An advanced course for students intending to enter the field of economic entomology. Practical problems in greenhouse, field, and laboratory. Offered in 1956-57 and alternate years. MR. BROWN.



**420 Insect Toxicology (3) w.**

Prerequisites, Entomology 1 and 317 or the equivalent. The nature, action and evaluation of insect poisons. Recent advances in insecticides, attractants and repellents. Primarily for advanced students in Entomology. MR. WINGO.

**490 Research (Credit to be arranged) f, w, s.**

Prerequisite, a minimum of 20 hours in Entomology and Zoology or the equivalent. Original research in economic entomology, insect taxonomy, insect toxicology, morphology, physiology, ecology, acarology, and beekeeping. A reading knowledge of French and German is desirable. MEMBERS OF THE STAFF.

**FIELD CROPS****1 Field Crops (3) f, w.**

Required of freshmen. Introductory course dealing with fundamentals in the production and management of crops. MR. OFFUTT; MR. HAYWARD; MR. SECHLER.

**100 Field Crops Management (2) f, w.**

Prerequisites, Field Crops 1 and Soils 100. Enrollment restricted to juniors and seniors. Crop rotations and the management of crops for Missouri. MR. FLETCHALL.

**101 Seed Analysis (2) s.**

Prerequisites, Field Crops I and General Botany. Study of structure and behavior of Agriculture and vegetable seeds. Procedures in analyzing seeds as to purity and germination according to legal standards. MISS STANWAY.

**102 Grading and Examination of Grain and Seeds (2) w.**

Prerequisite, Field Crops 1. Method and practice in the grading of commercial grains; identification of crop seeds and study of their qualities. MR. CAVANAH.

**300 Problems (Credit to be arranged) f, w, s.**

For graduates or specially prepared seniors. Problems assigned. Not accepted as a substitute for any regularly scheduled course. MEMBERS OF THE STAFF.

**301 Field Crops Improvement (3) f.**

Prerequisites, Field Crops 1 and Botany 1. Summary of the principles underlying the economic breeding of crop plants. Studies in methods of plant improvement. MR. POEHLMAN.

**302 Cotton Farming (3) w.**

Prerequisite, Field Crops 1. Studies of cotton farming in Missouri. MR. NORMAN BROWN.

**303 Forage Crops Production (3) f, w.**

Prerequisite, Field Crops 1. Advanced study of the principal forage crops. Special attention to the production and maintenance of pastures. MR. BALDRIDGE; MR. FLETCHALL.

**304 Grain Crops Production (3) f, w.**

Prerequisite, Field Crops 1. Advanced study of the production of corn and other important grains, based upon the results of research. MR. CAVANAH.

**400 Problems (Credit to be arranged) f, w, s.**

Advanced studies not expected to terminate in a thesis. MEMBERS OF THE STAFF.

**402 Advanced Field Crops Improvement (3) w.**

Advanced study of the theories and practices underlying the economic breeding of crop plants. For graduate students and specially prepared seniors. Offered in alternate years. Not offered in 1956-57. MR. POEHLMAN.

**410 Seminar (1) f, w.**

Discussion of research problems in field crops. Abstracts of literature on special topics. Required of graduate students majoring in field crops. Seniors may receive credit. MEMBERS OF THE STAFF.

**452 Advanced Genetics (3) f, w.**

(Same as Zoology 452.) Prerequisite, Zoology 340 or the equivalent. Readings and discussion of the nature of the gene and its relation to development.

- 490 **Research (Credit to be arranged) f, w, s.**  
Original research in problems in the production, management, improvement, and genetics of field crops. MEMBERS OF THE STAFF.

## FORESTRY

- 50 **General Forestry (3) f, w.**  
An introduction to the entire field of forestry.
- 55 **Forest Cartography (2) w.**  
Lettering, use of drafting instruments, preparation and interpretation of forest and topographic maps.
- 57 **Dendrology (2) f.**  
A systematic approach to the classification, nomenclature, and identification of North American Gymnosperms with emphasis on the more important tree forms.
- 58 **Dendrology (2) w.**  
A continuation of Forestry 57, but dealing with Angiosperm tree forms.
- 59 **Foundations of Silviculture (2) w.**  
The influence of site factors on the reproduction, growth, development, and characteristics of forest vegetation; the effect of forest cover on the site. The classification of forest vegetation.
- 155 **Forest Nursery Management (3) w.**  
Principles of seed collection and treatment, seeding, and nursey practice.
- 156 **Forest Mensuration (3) f.**  
Prerequisite, Forestry 70. Methods and principles of measuring contents of trees, stands of timber, and rough wood products. Application of yield tables and growth studies.
- 157 **Forest Protection (3) w.**  
A study of the agencies which damage forests, with emphasis on fire. Methods of fire prevention; fire control tactics; administrative organization and policy. Field trip required.
- 158 **Forestry Policy (2) w.**  
History of United States forestry and forest land legislation. Forestry programs of federal, state, and local governments. Trends in forestry legislation and policy. Professional ethics for foresters.
- 160 **Wood Technology (3) w.**  
Prerequisites, Forestry 57 and 58. Anatomy and variations in properties of wood. Microscopic examination and identification of wood specimens. Wood properties in relation to use.
- 161 **Forest Economics (3) w.**  
The forest resource; its relation to social and industrial development. Problems in forest regulation, taxation, and insurance. Economics of forest land use and production.
- 163 **Logging and Milling (3) f.**  
Prerequisite, Forestry 75. Methods and costs of harvesting and transporting primary wood products. Lumber manufacture by portable and permanent sawmills.
- 164 **Timber Seasoning and Preservation (2) w.**  
Prerequisite, Forestry 160. Air seasoning, kiln drying, and chemical conditioning of lumber. Pressure and non-pressure methods of wood preservation.
- 165 **Wood Deterioration (2) w.**  
Agencies of wood deterioration in lumber yards and in buildings; types of damage; controls. Not open to students in Curriculum E.
- 190 **Forest Recreation (2) f.**  
Analysis of forest recreational possibilities and needs; relation to other forest uses; forest recreation plans.

- 191 Forest Products (3) w.**  
Prerequisite, Forestry 75. Construction materials, chemically derived products, wood containers, mechanically produced products, fuel and miscellaneous products from the forest, and the industries producing these products.
- 300 Problems (Credit to be arranged) f, w.**  
Topics in silviculture, forest management, forest economics, and wood utilization.
- 301 Practice of Silviculture (3) f.**  
Prerequisites, Forestry 70 and 74. The principles and application of intermediate and reproduction methods of cutting. Planting as a phase of forest regeneration. Silvicultural plans.
- 303 Range Management (2) w.**  
Prerequisite, Forestry 301. Ecological considerations and range management practices in the United States by grazing regions, vegetative types, and class of grazing animal. Basic principles and their application in the sustained management of a forage resource. Benefits and damage from grazing in forests.
- 304 Applied Silviculture (3) w.**  
Prerequisite, Forestry 301. The ecological and economic factors affecting the application of silviculture in each of the eighteen forest regions in the United States.
- 305 Forest Pathology (3) f.**  
A study of diseases of forest trees and decay of forest products, with special emphasis on their nature, cause, identification and control.
- 311 Forest Photogrammetry (2) f.**  
Prerequisite, Forestry 156. The use of aerial photographs in forest mapping, inventory, and administration.
- 312 Forest Products Marketing (2) f.**  
Prerequisite, Forestry 161. Economics of the timber industry; wholesaling and retailing of forest products; exports and imports; lumberman's associations.
- 315 Forest Management (3) f.**  
Prerequisite, Forestry 156 and 301. Organizing forest properties for systematic management, regulation of annual cut, rotation, and cutting cycles to achieve sustained yield.
- 316 Forest Management Plans (3) w.**  
Prerequisite, Forestry 315. Application of principles of forest regulation in preparation of a management plan for a forest in southern Missouri including plans for orderly cutting, utilization and administration of the area.
- 317 Management-Utilization Field Trip (2) w.**  
Prerequisites, Forestry 163 and 315. Two weeks field trip to study utilization and management practices of large operations.
- 350 Special Readings (Credit to be arranged) f, w.**  
A critical review of current literature and research in forestry and methods of presenting research results.
- 351 Forest Conservation (3) f.**  
The forest resources of the United States; forest economics; methods of conserving forest resources. Not open to students in curriculum E and E-1.
- 352 Farm Forestry (3) f.**  
The place of farm forests in agriculture. The application of forestry principles to the problems of the farm woodland, especially as they relate to Missouri conditions. Not open to students in curriculum E or E-1.
- 401 Research Methods in Silviculture (3) f.**  
History of forest research. Methods of studying silvical and silvicultural interrelationships between forest vegetation and site factors. Techniques of experimental procedure, experimental design, analysis and presentation of data.

**402 Forest Valuation (3) f.**

Prerequisites, Forestry 156, 161, 315. Appraisal of forest land and standing timber. Determination of profits in forest enterprises. Appraisal of damages to forest property; financial aspects of sustained yield management compared with terminating operations.

**403 Nutrition of Forest Trees (3) w.**

Prerequisites, Forestry 301, Soils 100. Nutrient requirements of forest trees in nurseries and in forests; soils, physiographic, and climatic conditions which influence forest growth and yield.

**410 Seminar (1) f, w.**

Discussions of current developments in forestry and critical study of research programs.

**413 Forest Influences (2) f.**

Prerequisites, Forestry 301, Soils 100. The influence of forests on local climate, soil productivity, soil erosion, soil moisture, streamflow, and floods, emphasizing water as a product of wildland areas.

**414 Advanced Forest Mensuration (3) f.**

Prerequisite, Forestry 156. Principles of sampling; estimation by method of least squares; anamorphosis; techniques of volume table and yield table construction; methods of growth prediction.

**415 Cost Control (2) w.**

Prerequisites, Forestry 156 and 163. Principles of determining most economical costs of forest administration and woods operation; time and cost studies; operating methods and equipment for harvesting timber; analysis of factors governing the relation of tree size to net stumpage value.

**490 Research (Credit to be arranged) f, w.****Forestry Summer Camp**

Forestry 70, 71, 72, 74, 75, and 76 are offered at the 12-weeks field camp near Poplar Bluff and are required of students in Curriculum E.

Forestry 77 is offered during the last four weeks of the field camp. Forestry 75 and 77 are required of students in Curriculum E-1.

*Prerequisite—first two years of forestry curriculum.*

**70 Forest Measurements (4) s.**

Field studies in methods of measuring content and growth of trees and forest stands. Practice in timber estimating, log scaling, and collection of basic data.

**71 Silvics (2) s.**

Field studies of forest soils, sites, and types. Forest type mapping and ecological studies.

**72 Field Dendrology (1) s.**

Field training in the identification of woody vegetation.

**74 Silviculture (2) s.**

Practice in the application of intermediate and regeneration cutting methods to various types of stands.

**75 Forest Utilization (2) s.**

A field study of logging equipment and methods and of wood-using industries.

**76 Forest Improvements (1) s.**

Forest engineering, layout and construction of roads, trails, lookout towers, communication lines, water storage facilities, administrative buildings, recreational developments.

**77 Wood in Light Construction (2) s.**

Materials of light construction; proper species and grades for specific purposes; approved methods of wood construction.

**FRENCH (See ROMANCE LANGUAGES)**

## GENETICS

For courses in Genetics and Applied Genetics, see Animal Husbandry 203, 403; Botany 452, 453, 456, 457, 458, 460, 461; Dairy Husbandry 380; Field Crops 402, 452; Horticulture 315, 404; Zoology 340, 451, 452, 453, 454, 456.

## GEOGRAPHY

### Regional Geography

- 6 Regions and Nations of the World (5) f, w, s.**  
An introductory geographic survey of the characteristics and problems of the countries of the world, considered singly and by broad regional groups. MR. WHEELER.
- 52 Africa (3) w.**  
A broad geographical survey of the African continent—its countries, regions, peoples, resources, economies, landscapes, and problems. Designed for general education, this course provides background for an understanding of Africa as an area of increasing importance in world affairs. MR. WHEELER.
- 210 United States and Canada (3) f, w.**  
Prerequisite, 60 hours of college credit, including course 6, 10 or equivalent training. Regional geography of Anglo-America. MR. COLLIER.
- 212 Europe (3) f.**  
Prerequisite, course 6, 10 or equivalent training. An analysis of the physical and cultural elements of the geography of Europe. Geographic regions and their interrelationships. MR. HIRT.
- 272 The Far East and South Asia (3) w.**  
Prerequisite, 60 hours of college credit, including course 6, 10 or equivalent training. A geographic approach to the problems of the peoples and countries of the rimland of Asia from India to China and Japan. MR. HIRT.
- 296 The Soviet Union (2) f.**  
Prerequisite, 60 hours of college credit, including course 6, 10, or equivalent training. A geographic survey of the Soviet Union, treating it as a world unit rather than as separate parts of two continents. MR. HIRT.
- 354 Readings in the Geography of Australia and the Pacific Islands (2) w.**  
Prerequisite, 60 hours of college credit, including course 10 or equivalent training. Selected readings in the Geography of Australia and the Pacific area. MR. COLLIER.
- 536 Readings in the Geography of the Middle East (2) f.**  
Prerequisite, 60 hours of college credit, including course 10 or equivalent training. Selected readings in the Geography of the Middle East. MISS FLETCHER.
- 360 South America (3) f.**  
Prerequisite, 60 hours of college credit, including course 10 or equivalent training. An analysis of population characteristics, natural resources, and inter-American relations and problems of South American countries. MISS FLETCHER.
- 364 Middle America (2) w.**  
Prerequisite, 60 hours of college credit, including course 10 or equivalent training. Study of the present and potential economic development and over-seas relations of Central America, Mexico and the West Indies in terms of natural resources and population. MISS FLETCHER.
- 412 Studies in the Geography of Europe (2) w.**  
Prerequisite, course 212 or equivalent. Study of selected problems and areas of Europe.
- 460 Studies in the Geography of Latin America (2) w.**  
Prerequisite, course 360, 364, or equivalent. Study and analysis of geographically valuable literature. Compiling of bibliographies, selection of source material. MR. GROTEWOLD.
- 472 Studies in the Geography of Asia (2) w.**  
Prerequisite, course 272 or equivalent. Intensive investigation of selected aspects of the geography of Asia, or of individual Asian countries or regions. MR. HIRT.

## Systematic Geography

### 10 Introduction to Systematic Geography (3) f, w, s.

A systematic study of the nature of the major physical and cultural elements of general geography. Special attention is given to their distribution and interrelationships as they relate to man. MISS FLETCHER.

### *Meteorology and Climatology*

### 46 Weather and Climate (2) s.

Elementary meteorology and climatology, primarily for general science and elementary school teachers. MR. DECKER.

### 142 Introductory Meteorology (3 or 5) f.

A study of the physical processes of the atmosphere in relation to day to day changes of weather; weather instruments and the interpretation of daily weather maps. Three hours lecture, or three hours lecture and two hours laboratory credit. MR. DECKER.

### 265 Climates of the World (3) w.

Prerequisite, course 142 or equivalent. Study of the climatic elements, climatic classifications, and climatic regions of the world. Special attention is given to the ecological and pedological aspects of climate. Offered in 1956-57 and alternate years. MR. DECKER.

### 365 Agricultural Climatology (3) w.

Prerequisite, course 142 or equivalent. A description of the weather factors influencing crop production. A study of the methods of analysis of climatological data, and the use of micro-climatic data. Offered in alternate years; not offered in 1956-57. MR. DECKER.

### 391 Climatological Problems (2) w, s.

Prerequisite, course 265 or 365, or equivalent. Practical applications of weather investigations relating to the effects of weather on selected activities. MR. DECKER.

### *Economic Geography and Resource Conservation*

### 25 Economic Geography (3) f, w, s.

Prerequisite, course 6 or 10, or 45 hours of college credit. World patterns of production and trade, especially as related to natural conditions and resources of the principal producing and consuming areas.

### 133 Trade Centers (2) f.

Prerequisite, course 25 or equivalent. A study of trade centers, their hinterlands, connecting routes and economic functions. MR. HIRT.

### 319 Conservation of Natural Resources (3) w.

Prerequisite, 60 hours of college credit. Major problems of conservation in the United States and efforts being directed toward their solution. MR. COLLIER.

### 325 World Resources and Industries (3) w.

Prerequisite, course 25 or equivalent. A geographic appraisal of the distribution and utilization of the agricultural and industrial resources of the world. MR. GROTEWOLD.

### *Geography of Settlement*

### 395 Urban Geography (2) w.

Prerequisite, 60 hours of college credit. A study of cities: their growth, distribution, form, and social and economic importance in the Ancient, Medieval, and Modern Worlds. MR. HIRT.

### *Political Geography*

### 380 Political Geography (3) f.

Prerequisite, 60 hours of college credit. Course 6 is desirable but not essential. A study of the political world from a geographical point of view. MR. WHEELER.

### 480 Studies in Political Geography (2) w.

Prerequisite, course 380 or equivalent. A bibliographical survey of the available writings in political geography and an analysis of the methods and results of research in this field. MR. WHEELER.

## Geographic Philosophy, Techniques and Research

- 15 Maps and Man (1) f.**  
A nontechnical course in the understanding and appreciation of maps, particularly with regard to the role which they play in human affairs. The student becomes acquainted with a wide variety of maps, ranging from simple newspaper illustrations to elaborate maps in color. MR. WHEELER.
- 135 Cartography (2) f.**  
(Same as Library Science 135). Prerequisite, 45 hours of college credit. An introduction to the types, properties, uses and construction of maps. MR. COLLIER.
- 335 Advanced Cartography (2) w.**  
Prerequisite, course 135 or equivalent. Principles and practices in map construction; evaluation of source materials; techniques of map compilation; mapping from statistical data and from aerial photographs. Methods of map reproduction. MR. COLLIER.
- 336 Cartographic Design (2) f, w.**  
Prerequisite, course 335 or equivalent. Problems in cartographic representation and design for specific purposes. MR. COLLIER.
- 390 Geographic Problems (1-3) f, w, s.**  
Individual problems for students prepared to do semi-independent work in systematic or regional geography. MEMBERS OF THE STAFF.
- 401 Research Methods (3) f.**  
Prerequisite, 20 hours in geography. Primarily for graduate students. Source materials and field and library research techniques and practices. Analysis of selected research papers and problems. MR. COLLIER.
- 410 Seminar (1-3) f.**
- 415 Contemporary Geographic Thought (1-3) f.**  
Prerequisite, graduate standing. Concepts of modern geography as expressed in the literature of the field. MEMBERS OF THE STAFF.
- 450 Research (1-8) f, w, s.**  
Independent research not leading to the preparation of a thesis.
- 490 Research (1-8) f, w, s.**  
Independent research leading to the preparation of a thesis.

## GEOLOGY

Students enrolling in any advanced course in geology are required to have shown proficiency in the course or courses specifically listed as prerequisites. *Normally this is interpreted to mean attainment of a grade of M or higher.*

- 1 Principles of Geology (5) f, w, s.**  
A study of earth materials, geologic processes, and earth history. MEMBERS OF THE STAFF.
- 2 Physical Geology (3) f, w.**  
Similar to course 1, but omits earth history. MR. KELLER.
- 25 Advanced General Geology (4) f, w.**  
Prerequisite, course 1 or 2. A further study of geologic principles and processes. MR. PECK.
- 30 Common Rocks and Minerals (3) f, w.**  
Prerequisites, course 1 or 2, and elementary chemistry. The identification of common minerals by their physical properties, and the study and classification of rocks in hand specimens. MR. BRADLEY.
- 50 Life of the Geologic Past (2) f, w.**  
Prerequisite, course 1. A non-technical study of selected events in the development of life on the earth. MR. MEHL.



- 100 Geology and Man (3) w.**  
Prerequisite, course 1 or equivalent. A non-professional course stressing earth resources, aspects of conservation and recreation and the influence of geology in other fields of thought. MR. HOLMES.
- 118 Field Methods (2) w.**  
Prerequisite, course 25. Practice with the instruments commonly used in making geologic observations with emphasis on the telescopic alidade. MR. MEHL.
- 205 Field Course (1-8) s.**  
Offered at Camp Branson, Lander, Wyoming.  
Prerequisite, course 1 or 2, or equivalent. MEMBERS OF THE STAFF.
- 300 Problems (1-2) f, w, s.**  
Prerequisites, courses 25 and 30. MEMBERS OF THE STAFF.
- 302 Structural Geology (3) f.**  
Prerequisite, course 320 or systematic field work. Study and interpretation of rock structures caused by earth movements. MR. BRADLEY.
- 307 Mineralogy (5) f.**  
Prerequisite, course 30 and Qualitative Analysis. An introduction to crystallography and a systematic study of mineral groups, including the identification of minerals based on their physical and chemical properties. MR. JOHNSON.
- 320 Historical Geology (3) w.**  
Prerequisite, course 25. Methods and principles of historical geology and the interpretation of the physical history of North America. MR. UNKLESBAY.
- 321 Introduction to Paleontology (3) f.**  
Prerequisites, geology 1, elementary biology or zoology, and upperclass standing. An introduction to the principles of paleontology, and to the most important invertebrate fossil groups. MR. HOARE.
- 325 Geology of Ground Water (3) w.**  
Prerequisites, course 320 and either 205 or 302. An analysis of the geologic factors related to the occurrence, distribution, recovery, and use of ground water. MR. UNKLESBAY.
- 329 Methods in Subsurface Geology (3) w.**  
Prerequisites, courses 302 and 307. MR. UPSHAW.
- 332 Introduction to Micropaleontology (3) f, w.**  
Prerequisite, course 321. Introductory work on all types of micro-fossils. MR. MEHL.
- 336 Field Course (1-8) s.**  
Offered at Camp Branson, Lander, Wyoming.  
Prerequisites, courses 30 and 302, or equivalent. MEMBERS OF THE STAFF.
- 345 Economic Geology (3) w.**  
Prerequisite, course 307. A study of the factors related to the origin, occurrence, recovery and use of mineral resources. MR. JOHNSON.
- 403 Glacial Geology (3) w.**  
Prerequisite, graduate status in geology. A critical examination of accepted interpretations and current thought regarding glacial processes and Pleistocene glacial history. MR. HOLMES.
- 405 History of Geology (2) w.**  
Prerequisite, completion of undergraduate major in geology. Review of the development of geologic thought from the Early Greeks to about 1900. Offered in 1956-57 and alternate years. MR. UNKLESBAY.
- 407 Advanced Physiography (3) f.**  
Prerequisite, course 320. Physiographic processes in relation to the broader aspects of geology. MR. HOLMES.
- 408 Principles of Ore Deposits (2-5) f.**  
Prerequisite, course 345.

- 410 Seminar (1-2) f, w.**
- 411 Problems (1-8) f, w, s.**  
Prerequisites, courses 205 or 336 and other courses, depending on the problem selected.  
MEMBERS OF THE STAFF.
- 412 Advanced Structural Geology.**  
Prerequisite, course 302. Dynamics of the crust of the earth and postulated origins of mountain building forces, formation of geosynclines, and principles and sequence of tectonism. MR. BRADLEY.
- 417 Optical Mineralogy (3-5) f.**  
Prerequisite, course 307. Graduate students from other departments, who have not taken course 307, may be admitted under special arrangements. The identification of non-opaque solids by determination of their optical constants, and the principles underlying the determinative methods. MR. KELLER.
- 418 Petrography (3) f.**  
Prerequisite, course 417. The description of igneous and metamorphic rocks and a consideration of the physical and chemical conditions under which they form. MR. JOHNSON.
- 419 Determination of Minerals by Means of the X-ray Diffractometer (1) w.**  
Prerequisite, course 417. Graduate students from other departments who have not had course 417 may be admitted with the permission of the instructor. MR. KELLER.
- 420 Sedimentology (3-5) w.**  
Prerequisite, course 417. The petrography of sedimentary rocks, and consideration of the effects of various chemical, physical, and tectonic environments on the origin, mineralogy, and texture of sedimentary rocks. MR. KELLER.
- 421 Vulcanism and Metamorphism (2-5) w.**  
Prerequisite, course 418. A study of the origin, history, and alteration of the igneous and metamorphic rocks. MR. JOHNSON.
- 424 Paleozoic Stratigraphy (5) f.**  
Prerequisites, courses 320 and 321. Principles and methods of stratigraphy, and regional studies of the sediments and stratigraphic problems of the Paleozoic era. MR. UNKLESBAY.
- 425 Mesozoic and Cenozoic Stratigraphy (3-5) w.**  
Prerequisite, course 424. A regional study of the sediments and stratigraphic problems of the Mesozoic and Cenozoic eras. MR. PECK.
- 433 The Geologic History of the Vertebrates (2-5) w.**  
Prerequisites, courses 320 and 321. Offered on demand. MR. MEHL.
- 434 Invertebrate Paleontology I (2-5) f.**  
Prerequisites, courses 320 and 321. Systematic work with Gastropoda, Pelecypoda, Bryozoa, and Echinodermata. Offered in alternate years. Not offered in 1956-57. MR. PECK.
- 435 Invertebrate Paleontology II (2-5) w.**  
Prerequisites, courses 320 and 321. Systematic work with Porifera, Coelenterata, Brachipoda, Cephalopoda, and Arthropoda. Offered in 1956-57 and alternate years. MR. UNKLESBAY.
- 441 Micropaleontology I (2-4) f.**  
Prerequisite, course 332. Advanced work on Paleozoic microfossils with emphasis on conodonts and ostracods. MR. MEHL.
- 442 Micropaleontology II (2-4) f.**  
Prerequisite, course 332. Advanced work on Mesozoic and Cenozoic microfossils with emphasis on foraminifera, ostracods, and charophytes. Offered in 1956-57 and alternate years. MR. PECK.
- 445 Clay Mineralogy (3) w.**  
Prerequisite, course 417. The mineralogy, including identification, of clays. MR. KELLER.

- 450 **Research (1-8) f, w, s.**  
Does not lead to a dissertation.
- 490 **Research (1-8) f, w, s.**  
Leads to preparation of a dissertation.

## GERMANIC AND SLAVIC LANGUAGES

### German

- 1 **Beginning German (5) f, w, s.**
- 2 **Intermediate German (5) f, w, s.**  
Prerequisite, course 1 or equivalent high school German.
- 103 **Advanced Reading (3) f, w, s.**  
Prerequisite, courses 1 and 2 or equivalent high school German. Recommended to be taken concurrently with course 106.
- 106 **Intermediate German Composition and Conversation (2) f, w.**  
Prerequisite, courses 1 and 2 or equivalent. May be taken concurrently with course 103.
- 150 **Intermediate Special Readings (1-2) f, w, s.**  
Prerequisite, courses 1 and 2 or equivalent. Designed for students who wish to broaden their reading knowledge in some particular field of science or study.
- 154 **Masterpieces in German Literature (3) f, w, s.**  
Study of selected modern German dramas, lyrical poems, and novels. MR. BARNSTORFF.
- 199 **Distinction (6) f, w, s.**
- 206 **Advanced German Composition and Conversation (2) f, w.**  
Discussion of grammar and theme writing in German. MISS NAGEL.
- 307 **Lessing (3)**  
Lectures on Lessing's life and works. Study of Lessing's dramas and critical writings. MR. BARNSTORFF.
- 308-309 **Schiller (3) f; (3) w.**  
Lectures on Schiller's life and works. Study of Schiller's dramas and poetry. MR. BARNSTORFF; MISS NAGEL.
- 310-311 **Goethe (3) f; (3) w.**  
Study of Goethe's life, poetry, and dramas. MR. BARNSTORFF.
- 312 **German Dramatists of the Nineteenth Century (3)**  
MR. BARNSTORFF.
- 313 **German Novelle (3)**  
Study of the types of shorter fiction from the age of Goethe to the present time. MR. BARNSTORFF.
- 314 **Outline of German Literature (3)**  
Study of the periods, movements, and most important works in German literary life. MR. BARNSTORFF.
- 315 **Outline of German Language (3)**  
Study of the history of the German language. MR. BARNSTORFF.
- 350 **Special Readings (1-2) f, w, s.**  
In this course advanced students will do special work for specific subjects under supervision of a staff member. Admission only upon conference with the chairman.
- 351 **Romanticism (3)**  
MR. BARNSTORFF.

- 360 Recent Movements in German Literature (3)**  
Study of naturalism, neo-romanticism, expressionism, and the post-expressionistic period.  
MR. BARNSTORFF.
- 375 Middle High German (3)**  
Introductory course. MR. BARNSTORFF.
- 376 Walter Von Der Vogelweide (3)**  
Continuation of course 375. MR. BARNSTORFF.
- 400 Problems (1-3) f, w, s.**  
Graduate students will be given an opportunity to do special investigation. Admission only upon conference with the chairman.
- 401 Beginning German for Graduates (no credit) s.**  
Aim: To prepare graduate students for the Ph.D. reading test.
- 403-404 Periods and Personalities in German Literature (2)**  
Work in these courses varies from semester to semester. Lectures, reports, and themes on specific epochs and individuals selected by the instructor.
- 406 Old High German (3)**  
MR. BARNSTORFF.
- 407-408 Gothic (3), (3)**  
MR. BARNSTORFF.
- 410 Seminar (1-2)**  
MR. BARNSTORFF.
- 411-412 Sanskrit (2), (2)**
- 490 Research (1-8) f, w, s.**  
The integral part of this course is work on thesis. Admission only upon conference with the chairman.

*For teaching of German, see Education D118*

Other courses in Germanic Languages and German Literature will be arranged if the needs of the students so require.

## Russian

- 1 Beginning Russian (5) f, w.**  
MR. ALSSEN.
- 2 Intermediate Russian (5) f, w.**  
Prerequisite, course 1 or its equivalent. MR. ALSSEN.
- 150 Intermediate Special Readings (1-2) f, w.**  
Prerequisites, courses 1 and 2 or equivalent. Designed for students who wish to broaden their reading knowledge in some particular field of science or study.
- 153 Advanced Reading (1-2)**  
Prerequisites, courses 1 and 2 or equivalent. MR. ALSSEN.
- 304 Masterpieces in Russian Literature (1-2) w.**  
MR. ALSSEN.
- 323 Russian Literature in English Translation (3) f.**  
The course is given in English. Study of the outstanding writers of the 19th century (Pushkin, Turgenev, Dostoevsky, and others). A course in World Literature and in the History of Russia is desirable.

## HISTORY

**1 Western Civilization I: Man and Society from Earliest to Modern Times (5) f.****2 Western Civilization II: Man and Society in the Modern World (5) w.**

A survey of the evolution of Western civilization emphasizing the continuity of history, the important elements in the Western political and cultural tradition, and the relationship of ideas and institutions to their historical background. It provides a foundation for further study of history, the social sciences, and the humanities. Either course may be taken separately. MR. SPITZ AND MR. PINKNEY.

**20 American History (5) f, w.**

A survey of American history and institutions with attention to state and national constitutional development. Additional work may be required of juniors and seniors. MR. BUGG AND MEMBERS OF THE STAFF.

**112 Latin American History (3) f, w.**

A survey from the earliest times to the present day. MR. SCHOLLES.

**198 Distinction (6) f, w.**

Special work for candidates for graduation with distinction in history. MEMBERS OF THE STAFF.

**201 History of Missouri (3) f.**

A general course in the history of the state from the beginning of settlement to the present. MR. PRIMM.

**202 The Hellenistic Age (2) w.**

The history of the Greek world from Alexander to the death of Cleopatra. MR. BRADY.

**231 Contemporary Europe (3) f, w.**

A survey of European nations since the late nineteenth century. MR. MCGREW.

**251 Recent United States History (3) f, w.**

A study of the United States since 1898. MR. WYLLIE.

**301 Greek History (3) f.**

A study of the political and social institutions and the intellectual life of the Greek city-states to the time of Alexander. MR. BRADY.

**303 The Far East (3) w.**

Recent history of the Far East with special reference to its diplomatic relations with Europe and the United States. MR. MCGREW.

**304 The Near East (3) f.**

The history and relationships of the Eastern Mediterranean countries in modern times.

**306 Roman History (3) w.**

The origin and development of Roman institutions and of Rome's expansion and culture, through the reign of Marcus Aurelius. MR. BRADY.

**308 The United States and World Affairs (2) s.**

Lectures, readings, and preparation of units for high school history courses. MEMBERS OF THE STAFF.

**312 American Constitutional History (4) w.**

The development of the American political and constitutional system from the Revolution to the present, with special emphasis on federal and state constitutional theories and interpretations as they relate to American ideals, institutions, interests and politics. MR. BUGG.

**314 The Beginnings of Capitalism (3) w.**

A study of the rise of the capitalistic system from the thirteenth to the seventeenth centuries.

**315 Europe in the Middle Ages (3) f.**

A survey of European History during the Medieval Period. MR. SPITZ.

- 316 **Medieval Social and Economic History (3) f.**  
A study of social and economic institutions from the fifth to the sixteenth century. MR. SPITZ.
- 317 **Church and State in the Middle Ages (3) f.**  
A study of the development of medieval ecclesiastical and political institutions and their dynamic interaction. MR. SPITZ.
- 318 **Medieval Intellectual History (3) w.**  
A survey of the development of medieval thought and learning. MR. SPITZ.
- 321 **Tudor and Stuart England (3) f.**  
A treatment of the period, covering social, political, religious, and imperial developments. MR. MULLETT.
- 322 **Modern England (3) w.**  
A survey of English evolution in the eighteenth and nineteenth centuries, emphasizing political and economic developments. MR. MULLETT.
- 323 **English Legal and Constitutional History (4) f.**  
The development of English institutions, chief emphasis being placed on their relation to the general social and economic background. MR. MULLETT.
- 324 **Age of Jefferson and Jackson (3) f.**  
A comprehensive survey of the economic, cultural, political and constitutional development of the United States during the formative period of the Republic with special attention to the ideals and philosophy of its leaders. MR. BUGG.
- 327 **The Age of the Renaissance (3) f.**  
The significant changes in European thought and institutions in early modern times emphasizing the age of discovery, capitalism, national monarchies, city-state culture, and the world of humanism. MR. SPITZ.
- 328 **The Age of the Reformation (3) w.**  
The significant changes in European thought and institutions in early modern times emphasizing the condition of Christendom, the rise of Protestantism, the Catholic Reformation, and the development of the modern state system. MR. SPITZ.
- 329 **Europe from Reformation to Revolution (3) w.**  
The interplay of intellectual, political, and economic forces in Europe from 1543 to 1789. MR. MULLETT.
- 331 **The French Revolution and Napoleon (3) w.**  
A study of the French Revolution and its impact on the European world. MR. PINKNEY.
- 335 **France since 1815 (3) f.**  
Political and social history of France in the nineteenth and twentieth centuries. MR. PINKNEY.
- 336 **Modern Germany (3) w.**  
Political and social history of Germany from the Reformation to the present, centered on the rise of Brandenburg-Prussia. MR. PINKNEY.
- 338 **Modern Russia (3) f.**  
From the fifteenth century to the present, with emphasis on internal political and economic problems and foreign relations. MR. MCGREW.
- 350 **Special Readings (Credit to be arranged) f, w.**  
Individual work with conferences adjusted to the needs of the student. Students registering in this course must obtain departmental approval. MEMBERS OF THE STAFF.
- 351 **Social Forces in American History (3) f.**  
The development of the principal social institutions and their intellectual framework in America from the founding of the colonies to the Civil War. MR. WYLLIE.
- 352 **Social Forces in American History (3) w.**  
A continuation of course 351, from the Civil War to the present day. MR. WYLLIE.

- 354 Foundations of Twentieth Century America (3) f, w.**  
The economic, cultural, and political development of the United States from the end of the Civil War to the opening of the twentieth century. MR. WYLLIE.
- 355 Economic History of the United States (3) w.**  
A survey of the structure and tendencies of American economic life from the colonial period to the present. MR. PRIMM.
- 361 The History of the West (4) w.**  
A study of the frontier and west and their influence on national development. MR. ATHERTON.
- 362 History of the South (5) f.**  
A survey of the economic, intellectual, political, and social development of the South from the colonial period to the present. MR. ATHERTON.
- 363 American Colonial History (3) f.**  
A study of the origins and development of American political, economic and cultural institutions in the Colonial and Revolutionary Periods.
- 364 Civil War and Reconstruction (2) w.**  
A study of the nature and significance of American Civil War and the Reconstruction period. MR. ATHERTON.
- 365 Mexican History (3) f.**  
A survey of Mexico's political, social, and economic development. MR. SCHOLES.
- 367 The History of Argentina, Brazil and Chile (3) w.**  
A survey of the political, social and economic development of the three nations. MR. SCHOLES.
- 369 History of Spain (3) w.**  
A survey of Spain's political, social and economic development. MR. SCHOLES.
- 370 American Diplomatic History (3) f.**  
A survey of the nineteenth century diplomatic relations of the United States. MR. SCHOLES.
- 371 American Diplomatic History (3) w.**  
A survey of the twentieth century diplomatic relations of the United States. MR. SCHOLES.
- 372 European Diplomatic History (3) w.**  
A survey of European diplomatic relations since 1871. MR. MCGREW.
- 374 Modern Military History (3) f.**  
A study of the First and Second World Wars.
- 380 Economic History of Modern Europe (3) w.**  
A study of major developments in industry, agriculture, transportation, and governmental economic policies since 1700. MR. PINKNEY.
- 391 Modern Intellectual History (3) w.**  
A survey of the predominant ideas of the intellectual classes since the seventeenth century. MR. MULLETT.
- 400 Problems (Credit to be arranged) f, w.**  
Individual work which does not lead to a dissertation. Students registering in this course must obtain departmental approval. MEMBERS OF THE STAFF.
- 401 Introduction to Historical Research (2) f.**  
Introduction to historical methods, source problems, bibliographical aids, source criticism, and use of related techniques. Required of graduate students in history. MR. PINKNEY.
- 402 Historiography (2) w.**  
An analysis of the art of history and historical writings as revealed by the leading historians and the major schools of historical interpretation. MR. MULLETT.



- 403 Problems of Teaching History in College (2) f.**  
(Same as Education D403). Emphasis upon teaching the general courses. Some attention to work in related fields. Required of all Ph.D. candidates in history and recommended for A.M. candidates. MR. ATHERTON AND MEMBERS OF THE STAFF.
- 404 Studies in Missouri History (2) w.**  
Use and analysis of source material in the history of the state. MR. ENGLISH.
- 405 Readings in Russian History (2) w.**  
Readings in Russian historical materials which will be directed toward evaluating basic problems in the development of Imperial and Soviet Russia. MR. MCGREW.
- 406 Greek and Roman Political Institutions (2) f.**  
Lectures and reports on problems in Greek and Roman constitutional history MR. BRADY.
- 407 Greek and Roman Political Institutions (2) w.**  
Continuation of Course 406. MR. BRADY.
- 411 Readings in Medieval History (2) w.**  
Reading in recent research material with critical discussion of reports on special topics.
- 421 Studies in British History (2) f.**  
Group investigations of the social and intellectual problems of modern England. MR. MULLETT.
- 422 Church and State in England (3) w.**  
With particular reference to religious minorities, public law, social reform and the development of toleration. MR. MULLETT.
- 427 Studies in the Renaissance and Reformation (2) w.**  
The course will be concerned with analysis of problems of the period from 1300-1600, with emphasis on intellectual history. MR. SPITZ.
- 431 Readings in Modern European History (2) f.**  
Reading in recent research material with class periods given over to the critical discussion of reports on special topics. MR. PINKNEY.
- 432 Studies in Modern European History (2) w.**  
Group investigation of problems of modern Europe. A reading knowledge of either French or German required. MR. PINKNEY.
- 435 Readings in French History (2) w.**  
Readings on selected problems in the history of France since 1789. MR. PINKNEY.
- 440 Readings in the Age of Jefferson and Jackson, 1789-1865 (2) f.**  
Readings in American History from the Constitution to the Civil War, with class meetings devoted to critical evaluations of reports. MR. BUGG.
- 450 Research (Credit to be arranged) f, w.**  
Work equal to research done for a dissertation but not leading to preparation of a thesis. MEMBERS OF THE STAFF.
- 452 Readings in Social Forces (2) w.**  
Reading in American social and intellectual history with meetings devoted to critical evaluation of writings in the field. MR. WYLLIE.
- 455 Studies in Western History (2) w.**  
Analysis and appraisal of source problems and the interpretation accorded these by historians. MR. ATHERTON.
- 456 Readings in Recent United States History (2) f.**  
A course devoted to critical evaluation of writings in American history for the period 1865 to the present. MR. WYLLIE; MR. ELLIS.
- 457 Readings in American Economic History (2) f.**  
A course of reading in the evolution of American capitalism with class periods given over to critical discussion of reports. MR. PRIMM.

- 460 **Readings in the History of the South (2) f.**  
Group reading and appraisal of controversial interpretations in southern history. MR. ATHERTON.
- 466 **Studies in the History of American Politics (2) w.**  
Prerequisite, History 456, Political Science 405, or equivalent training. Directed research in American political history from 1875 to 1925. MR. ELLIS.
- 470 **Readings in Latin American History (2) w.**  
Reading in recent research material with class periods given over to critical discussion of reports on special topics. MR. SCHOLES.
- 481 **Studies in Recent American Diplomatic Problems (2) f.**  
Directed research in problems of twentieth century American diplomacy. MR. SCHOLES.
- 490 **Research (Credit to be arranged) f, w.**  
This course leads to the preparation of a dissertation. MEMBERS OF THE STAFF.

## HOME ECONOMICS

Professors Mangel, *Chairman*; Frazier, Ginter, Hensley; Associate Professors Allen, Amick, Maharg; Assistant Professors Cooper, Delaney, Koehler, Martinson, McKelvy, Rogers, Saxon; Instructors, Glidden, Gordon, Holik, Holt, Mitchell, Wright, Yost; Assistants, Adams, Blase, Cleaver, Fisher, Harper, Holman, Kebert, Ragsdale, Regan, Spencer, Swall.

### 10 Introduction to Home Economics (2) f.

Open to freshmen only. Adjustment to college living including introduction to college study and vocational opportunities in Home Economics.

## Child Development and Family Life

- 60 **Home Nursing and Health (2) f, w.**  
A study of the home care of the sick and of family health including prenatal, natal and postnatal care of the mother and baby.
- 160 **Early Childhood (3) f, w.**  
Study of the development and guidance of the child under six. Observation in the child development laboratory is an integral part of this course.
- 161 **Child Development Laboratory—2-3½ Years (3) f, w.**  
Prerequisite, Home Economics 160 or equivalent. Experience of working with children, in accordance with general guidance principles.
- 162 **Child Development Laboratory—3½-5 Years (3) f, w.**  
Prerequisite, Home Economics 160 or equivalent. Experience of working with children in accordance with general guidance principles.
- 163 **Family Relations (3) f, w, s.**  
Prerequisite, Psychology or Sociology and sophomore standing, or consent of instructor. A study of present day family life, with emphasis on activities in the home as they relate to the development of the family and its individual members.
- 200 **Problems (Credit to be arranged) f, w, s.**  
Prerequisite, 100 level course in the area of the problem and approval of instructor. Supervised independent work on special problems in child development.
- 263 **The Child from Six Through Adolescence (3) f, w.**  
Prerequisite, Home Economics 160 or equivalent. Study of the development and guidance of the child from six through adolescence.
- 300 **Problems (Credit to be arranged) f, w, s.**  
Prerequisites, Home Economics 160, 263, and approval of instructor. Work independently on special problems in child development.
- 360 **Community Participation in Youth Programs (3) w.**  
Prerequisite, Home Economics 263. Study of group dynamics together with experience in community youth programs.

**361 Parent Education (2) w.**

Prerequisites, Home Economics 161 or 162, and 260. Understanding of parents' needs. Discussion of conference and group meeting techniques.

**362 Physical Growth (3) w, s.**

Prerequisite, Physiology. Study of physical growth from birth to maturity. Discussion of current methods of measurement will be included.

**400 Problems (Credit to be arranged) f, w, s.**

Prerequisites, 300 level course in field of the problem and consent of instructor.

**410 Seminar in Child Development and Family Life (2) f, w.**

Reports and discussion of recent work in the fields of child development and family life.

**460 Nursery School Administration (3) w, s.**

Prerequisite, approval of instructor is required. Study of current nursery school practices with emphasis on programing, record keeping, staff and equipment.

**490 Research (Credit to be arranged) f, w, s.****Food and Nutrition****31 Basic Concepts of Food and Nutrition (3) f, w.**

An introductory course designed to relate foods and nutrition to other factors affecting man's development.

**32 Foods (3) f, w.**

A laboratory course emphasizing the principles of selection, preparation and combination of foods.

**110 Apprentice Training in Home Economics (Credit to be arranged) s.**

Food and Nutrition prerequisites, Home Economics 136 and 232; Home Economics 330 recommended. Supervised training in food service center with conference, examination and written summary.

**130 Food in Relation to Health (3) f, w.**

A study of food as it functions to meet body needs, with emphasis on utilization, food sources, and selection of adequate diets. Meets requirements for nurses. (Not open to Freshmen.)

**131 Selection and Preparation of Foods (5) f, w.**

Prerequisite, Inorganic Chemistry. (Lecture and Laboratory). Principles underlying the selection and preparation of food.

**132 Food Buying and Meal Service (3) f, w.**

Prerequisite, Home Economics 131. (Lecture and Laboratory). Study of economic aspects of food, including production, distribution, and buying for consumption. Application of principles of food buying and food preparation to menu planning, meal preparation and service.

**133 Nutrition of the Family (3) f, w.**

Prerequisites, Organic Chemistry, Physiology, and Home Economics 131. Principles of nutrition with emphasis on problems involved in maintaining optimum health for family members. Nine week course—blocked for Home Economics Education students.

**134 Meal Planning (3) f, w.**

Prerequisites, Home Economics 130 and 32. Lecture-discussion course in planning of family meals; nutritional needs; time, energy, and money management; principles of food combination.

**135 Food Demonstrations (2) f, w.**

Prerequisites, Home Economics 131, 132, and speech 175. Fundamental principles of demonstration: discussions, professional and student demonstrations.

**136 Large Quantity Cookery (3) f, w.**

Prerequisite, Home Economics 132. Standard methods of quantity food production; operation of power equipment, costs, menus, and service.

- 200 Problems (Credit to be arranged) f, w, s.**  
Prerequisites, 100 level course in the area of the problem and approval of instructor.  
Supervised independent work on problems in food or nutrition.
- 224 Meat Selection and Identification (3) f, w.**  
(Same as Animal Husbandry 224) Prerequisite, Home Economics 31. A study of meat with reference to selection, identification, utilization, wholesale and retail buying. Includes field trip to major processing plant.
- 231 Chemistry of Foods (3) f, w.**  
Prerequisites, Organic Chemistry and Home Economics 131. (Lecture and Laboratory). Chemical properties of food components including carbohydrates, fats, proteins, minerals, vitamins, pigments, and flavor compounds.
- 232 Principles of Human Nutrition (4) f, w.**  
Prerequisites, Physiology and Home Economics 231. (Lecture and Laboratory). Food requirements throughout life; evaluation of nutritional status; selection of adequate diets with varying food patterns and economic conditions at individual, family, and community levels.
- 300 Problems (Credit to be arranged) f, w, s.**  
Prerequisites, 200 level course in the field of the problem, senior standing and approval of instructor. Library or laboratory problems selected for study by the student with the guidance of staff member. Report required.
- 330 Institution Organization and Administration (3) w.**  
Prerequisite or concurrent, Home Economics 136. The problem of the management of food service units in institutions with emphasis on personnel management; fundamentals in the selection, arrangement, and care of the different types of equipment.
- 331 Modern Methods of Food Preservation (3) f, w, s.**  
Prerequisites, Home Economics 131, Bacteriology and Organic Chemistry. (Lecture and Laboratory). Survey of literature and laboratory work on improvements in traditional method and new methods of home food preservation.
- 332 Child Nutrition (3) f, w.**  
Prerequisites, Home Economics 160 and 232 or equivalent. (Lecture and Laboratory). Application of nutrition principles to the feeding of children from infancy through adolescence.
- 336 Experimental Foods (3) f, w.**  
Prerequisites, Home Economics 131 and 231. (Lecture and Laboratory). Introduction to the controlled experiment with food. Group and individual experience in standardization and developmental research.
- 337 Advanced Experimental Foods (3) f, w.**  
Prerequisite, Home Economics 336. Further development of the concepts and experience in planning, conducting, interpreting and reporting food preparation research.
- 338 Advanced Nutrition and Diet Therapy (3) f.**  
Prerequisite, Home Economics 232. Biochemistry recommended. Lecture-discussion of current literature and theory in nutrition. Principles of adaptation of the diet to meet the requirements of abnormal conditions.
- 400 Problems (Credit to be arranged) f, w, s.**  
Prerequisites, 300 level course in field of the problem and consent of instructor.
- 410 Seminar (2) f, w.**  
Reports and discussion of recent work in the fields of food and nutrition.
- 431 Nutritional Perspectives (3) s.**  
Prerequisites, senior standing and Home Economics 130 or 133 or 232 or equivalent. A survey of various factors related to man's present day food habits and nutritional status.
- 432 Metabolism (3) f.**  
Prerequisites, Home Economics 232 and Analytical Chemistry, proceeding or concurrent. Various phases of metabolism through calorimetry and human feeding experiments.

- 433 Methods of Nutrition Research (3) f, w.**  
Prerequisites, Analytical Chemistry, Biochemistry and Home Economics 232. (Reading, discussion and laboratory). Work in various methods and techniques used in nutrition research.
- 435 Readings in Foods (Credit to be arranged) f, w, s.**  
Prerequisite, graduate standing with 20 hours of Food and Nutrition. Critical reading in one or more phases of food research. Report required.
- 437 Food Testing and Analysis (3) w.**  
Prerequisites, Home Economics 336, Bacteriology and Analytical Chemistry. Biochemistry and Physics recommended. Study and application of physical and chemical techniques available for experimental work with foods.
- 438 Readings in Nutrition (Credit to be arranged) f, w, s.**  
Prerequisite, graduate standing with 20 hours of Food and Nutrition. Critical reading in one or more phases of nutrition research.
- 490 Research (Credit to be arranged) f, w, s.**

## Home Management

- 71 Elementary Household Equipment (3) f, w.**  
Selection, care, and use of household equipment.
- 170 Work Simplification in Home Processes (2) f, w.**  
Problems in simplifying work to conserve time and energy in home processes.
- 171 Advanced Household Equipment (3) f, w.**  
Prerequisite, Home Economics 71. Construction, operation, testing and minor repairs of household equipment.
- 200 Problems (Credit to be arranged) f, w, s.**  
Prerequisites, 100 level course in the area of the problem and approval of instructor. Supervised independent work on problems in management.
- 271 Home Management (4) f, w, s.**  
Prerequisites, Home Economics 32 or 131 and 71. Management problems in the home. Senior standing. Residence in the Home Management House.
- 300 Problems (Credit to be arranged) f, w, s.**  
Prerequisites, a 100 or 200 course in the field of the problem, senior standing, and approval of instructor. Supervised reading or laboratory problems.
- 370 Housing the Family (3) f, w, s.**  
Prerequisite, General Economics. A study of home location, planning of space to accommodate the functional needs of the family, costs, financing and construction problems.
- 373 Economic Problems of the Family (3) f, w.**  
Prerequisites General Economics or Agricultural Economics. Family economic problems and their relationship to national economic situations; source and use of income; savings and security; credit and home ownership.
- 375 The Consumer and the Market (3) f, w.**  
Prerequisite General Economics or Agricultural Economics. A study of the present day market from the standpoint of the consumer-buyer.
- 400 Problems (Credit to be arranged) f, w, s.**  
Prerequisites, 300 level course in field of the problem and consent of instructor.
- 410 Seminar (2) f, w.**  
Reports and discussion of recent work in the fields of home management and economic problems of the family.
- 490 Research (Credit to be arranged) f, w, s.**

## Interior Design

- 40 Design Fundamentals (3) f, w.**  
Elements and principles of 2-dimensional space design as they relate to everyday living.
- 41 Three-Dimensional Design (2) f, w.**  
Prerequisite, Home Economics 40 or its equivalent. Three-dimensional space design. Construction in paper, light metals, clay, wire, as they relate to everyday living.
- 110 Apprentice Training in Home Economics (Credit to be arranged) s.**  
Prerequisite, Home Economics 141, senior standing, and approval of instructor. Field experience in interior design under professional and educational supervision.
- 140 Interior Design (3) f, w.**  
Prerequisites, Home Economics 40, 41 or its equivalent. Organization and planning of interior space; new techniques and materials; new concepts in architecture, furnishings, and equipment. Floor plans and elevations.
- 141 Interior Decoration (3) w, s.**  
Prerequisite, Home Economics 140. Continuation of Home Economics 140 with emphasis on furniture, fabrics, decorative accessories. Floor plans, elevations, color renderings, and scale models.
- 142 Practical Problems in Home Furnishings (2) w.**  
Prerequisite, Home Economics 41 or equivalent. Slip covers, upholstery, drapery making, wood finishing, etc.
- 200 Problems (Credit to be arranged) f, w, s.**  
Prerequisites, 100 level course in the area of the problem and approval of instructor. Supervised independent work on problems in furnishings and design.
- 241 Sketching for Interior Designers (3) f.**  
Prerequisites, Home Economics 140 and Industrial Education F5 or Engineering Drawing I. Color drawing of existing interiors.
- 243 Decorator's Mediums (1-2) w.**  
Prerequisite, Home Economics 140. Survey of the characteristics of plastics, glass, artificial light, floor covering, etc., and their uses in contemporary design.
- 300 Problems (Credit to be arranged) f, w, s.**  
Prerequisites, 200 level course in the field of the problem, senior standing, and approval of instructor. Supervised independent work.
- 340 History of the House and Its Furnishings (2) f, w.**  
Prerequisites, Home Economics 40 and 41 or its equivalent. A study of the history of home architecture and interior design (furniture and accessories).
- 344 Display Design (2) f, w.**  
Prerequisite, Home Economics 41 or its equivalent and permission of instructor. Principles, problems and techniques underlying store counter and window display.
- 347 Fabric Design (3) f, w.**  
Prerequisites, Home Economics 41 or its equivalent, and 82. A laboratory course in fabric and paper design (Hand processes).
- 400 Problems (Credit to be arranged) f, w, s.**  
Prerequisites, 300 level course in field of the problem and consent of instructor.
- 410 Seminar (2) f, w.**  
Reports and discussion of recent work in the field of design and interior design.
- 441 Advanced Interior Design (4) w, s.**  
Prerequisites, Home Economics 141 and 340. Design of modern functional interiors; modern adaptations of historic material; design for professional establishments.
- 445 Historic Textiles (2) w.**  
Prerequisites, Home Economics 40 and 82. Development of textiles from ancient times. Comparison with modern commercial products.

**446 History of Accessories in Interior Design (3) f.**

Prerequisite, Home Economics 140 or its equivalent. Historic study of decorative arts (pottery, china, glass, metalwork, etc.)

**490 Research (Credit to be arranged) f, w, s.****Textiles and Clothing****80 Elementary Clothing Selection and Construction (3) f, w.**

Laboratory practice in the selection and construction of garments; checking and altering patterns; the use and care of sewing machines. For students with no experience.

**81 Clothing Selection and Construction (3) f, w.**

Laboratory practice in the selection and construction of garments; pattern alteration; the use and care of sewing machines. For students with some experience.

**82 Textiles (3) f, w.**

Not open to first semester freshmen. A study of textile fibers and their properties as related to fabrics.

**110 Apprentice Training in Home Economics (Credit to be arranged) s.**

Prerequisites, Home Economics 80 or 81, 82, 181, 185, Economics and Business 314, senior standing, and approval of instructor. Experience in textiles and clothing merchandising under supervision.

**180 Intermediate Clothing (3) f, w.**

Prerequisites, Home Economics 80 or 81 and 82. Continuation of Clothing 80 or 81.

**181 Costume Design (2) f, w.**

Prerequisites, Home Economics 41 or its equivalent. Line, form, color, and texture as applied to dress.

**183 Fashion Illustration (2) f.**

Prerequisites, Home Economics 40, 80 or 81, 82, and Art 5. Sketching from the figure and the costumed figure.

**185 Buying of Clothing and Textiles (2) f, w, s.**

Prerequisite, Home Economics 82. Problems of buying clothing and textiles including household textiles. Desirable characteristics, methods of identification, uses, availability in various markets, and prices.

**200 Problems (Credit to be arranged) f, w, s.**

Prerequisites, 100 level course in the area of the problem and approval of instructor. Supervised independent work on problems in textiles and clothing.

**280 Tailoring (3) f, s.**

Prerequisites, Home Economics 81 and 82. Selection and tailoring of a wool suit or coat; comparison and emphasis of fundamental tailoring techniques.

**281 Flat Pattern Design (3) w, s.**

Prerequisites, Home Economics 81, 82 and 181. Principles of designing by flat pattern methods and the construction of an original design.

**300 Problems (Credit to be arranged) f, w, s.**

Prerequisites, (a) Clothing—Home Economics 180 and 382. (b) Textiles—Home Economics 82 and 185. Approval of instructor is required.

**381 History of Costume (3) f.**

Senior standing. The history of costume as a source of inspiration for modern costume design.

**382 Applied Costume Design (3) w.**

Prerequisites, Home Economics 280 and 281. Draping and modeling costumes of original design.



- 383 Advanced Fashion Illustration (3) f, w.**  
Prerequisites, Home Economics 181, 183, and Art 168. The costumed figure expressed in various mediums for commercial and other purposes.
- 385 Textiles, Fibers and Fabrics (3) f, s.**  
Prerequisites, Home Economics 82, Home Economics 185 and Chemistry 15. An advanced study of textile fibers and fabrics with emphasis upon their structure, composition, physical and chemical properties.
- 386 Experimental Textiles (3) f, w.**  
Prerequisites, Home Economics 80 or 81, 82, and junior standing. Laboratory problems involved in the care and handling of textile fabrics.
- 400 Problems (Credit to be arranged) f, w, s.**  
Prerequisites, 300 level course in field of the problem and consent of instructor.
- 410 Seminar (2) f, w.**  
Reports and discussion of recent work in the field of textiles and clothing.
- 480 Advanced Textiles (3) w.**  
Prerequisites, course 385 and Chemistry 25 or equivalent. The physical and chemical characteristics of the textile fibers. Methods in textile research.
- 485 Readings in Textiles (Credit to be arranged) f, w, s.**  
Prerequisite, graduate standing with 15 hours of Textiles and Clothing. Readings in recent research material.
- 490 Research (Credit to be arranged) f, w, s.**

## HORTICULTURE

- 1 General Horticulture (3) f, w.**  
Fruits, vegetables and ornamentals—a survey of the horticultural industry. Special emphasis on home enterprises. MR. SCHROEDER.
- 9 Flower Show Judging I (1) f.**  
Preparing and judging flowers and potted plants for exhibitions. MR. SMITH.
- 10 Flower Show Judging II (1) w.**  
Continuation of course 9 with emphasis upon flower arrangements and flower show practices. MR. SMITH.
- 101 Plant Propagation (2) f.**  
Prerequisites, Horticulture I and Botany I. The principles and practices of propagation for horticultural crops. A study of seedage, cuttage, layerage, separation, division, budding and grafting. MR. GOODMAN.
- 109 General Floriculture (3) w.**  
The production of flowers for home culture and use; seeds and seeding, plant propagation, varieties, planting, soils and fertilizers, pests. MR. SMITH.
- 110 Landscape Gardening (3) f, w.**  
Designs for living for future home owners, including planning the home grounds for the farm or town. MR. MOSHER.
- 112 History of Landscape Architecture (2) f.**  
A study of gardens; Mythological, Ancient, Medieval, Renaissance and Modern. Offered in 1956-57 and in alternate years. MR. MOSHER.
- 114 Ornamental Trees (3) f.**  
Shade trees and ornamental trees used in landscape architecture; their identification, character, habits, adaptation and care. Offered in alternate years. Not offered in 1956-57. MR. MOSHER.
- 116 Ornamental Shrubs and Vines (3) w.**  
The ornamental (native and cultivated) shrubs and vines used in landscape architecture; identification, character, habits, adaptation and care. Offered in alternate years. Not offered in 1956-57. MR. MOSHER.

- 118 Landscape Drafting (3) f.**  
Prerequisite, course 110. Theory, principles and practice of landscape drafting, freehand drawing and landscape art. MR. MOSHER.
- 125 Landscape Sketching (2) w.**  
Theory, techniques and practice of free-hand sketching in various media as used in landscape art. Offered in alternate years. Not offered in 1956-57. MR. MOSHER.
- 130 Plant Forcing Structures (2) f.**  
History of plant forcing structures; location and arrangement; structural parts and erection; heating and ventilating; repair and maintenance. Hotbeds, cold-frames, mushroom houses, etc. Offered in 1956-57 and in alternate years. MR. SMITH.
- 144 Vegetable Gardening (3) w.**  
Prerequisite, Horticulture I or equivalent. The fundamentals in growing, harvesting and storing of vegetable crops. Vegetables for the family. MR. LAMBETH.
- 150 Commercial Horticultural Products (3) f.**  
Introduction to the principles and techniques of commercial freezing, canning, dehydrating, preserving and fermenting of fruits and vegetables. Prerequisite, 5 hours of Chemistry. MR. JOHNSTON.
- 210 Greenhouse Management Principles and Practices (3) w.**  
Prerequisites, Horticulture 109 and Horticulture 130. Greenhouse soils, soilless culture; moisture and temperature, diagnosing plant ills; cost accounting and other management problems. Offered in 1956-57 and in alternate years. MR. SMITH.
- 211 Fruit Growing (3) f.**  
Prerequisite, Horticulture I or equivalent. The principles of modern orchard practices followed in the fruit growing industries. MR. HIBBARD.
- 220 Commercial Floriculture: Cut-Flower Crops (3) f.**  
Prerequisite, course 210. Greenhouse cut-flower crops as grown by florists for commercial purposes. Propagation, methods of culture, timing the crop, cost of production. Not offered in 1956-57. MR. SMITH.
- 221 Commercial Floriculture: Pot-Plant Crops (3) w.**  
A continuation of Course 220, with special emphasis on commercial potted and bedding plants. Not offered in 1956-57. MR. SMITH.
- 230 Flower Store Management and Floral Design (3) f.**  
A study of the principles and practices of marketing flowers and plants. Emphasis is on flower preparation and selling practices of the retail florist. Prerequisites Horticulture 220 and 221. Offered in 1956-57 and in alternate years. MR. SMITH.
- 250 Horticultural Products Quality (3) w.**  
Function of Federal and State Food Regulatory agencies. Subjective and objective quality tests on commercial processed fruit and vegetable products. Prerequisite, Course 150 plus 5 hours of chemistry or its equivalent. MR. JOHNSTON.
- 252 Landscape Construction (3) w.**  
Prerequisite, Course 118. Theory and practice of landscape construction, landscape engineering and landscape surveys. Offered in 1956-57 and in alternate years. MR. MOSHER.
- 254 Landscape Design (3) w.**  
Prerequisites, courses 110 and 118. Theory and principles of landscape design for home grounds and gardens. MR. MOSHER.
- 256 Planting Design (3) f.**  
Prerequisites, courses 114 and 116. Study and use of plant materials in combination for landscape effects. Offered in 1956-57 and in alternate years. MR. MOSHER.
- 300 Problems (Credit to be arranged) f, w, s.**
- 305 Systematic Horticulture (3) f.**  
Prerequisites, Horticulture I and Botany I or equivalent. Varieties and kinds of fruit and vegetable plants. Description, identification and judging. MR. SWARTWOUT.

- 310 Advanced Greenhouse Management (3) f.**  
Prerequisite, Horticulture 210, 220 and 221. Assigned readings and problems dealing in the total planning and management of the commercial greenhouse range. Not offered in 1956-57. MR. SMITH.
- 311 Advanced Fruit Production (3) w.**  
Prerequisite, Horticulture 211. A critical evaluation of fruit growing methods with special reference to the fundamentals of plant growth. MR. HIBBARD.
- 313 Spraying (3) w.**  
Prerequisite, General Inorganic Chemistry. Spray materials, spray machinery, spraying practices and results. MR. SWARTWOUT.
- 314 Commercial Pomology (3) f.**  
The harvesting, grading, packing, storage and marketing of fruits and manufacture of major fruit products. MR. MURNEEK.
- 315 Improvement of Horticultural Plants (3) w.**  
Prerequisite, Horticulture I and Botany I. The principles and practices as applied to selection and breeding of horticultural plants. MR. MURNEEK.
- 333 Small-Fruit Culture (3) w.**  
Prerequisite, Horticulture 1. The planting, culture and harvesting of small fruits. MR. HEMPHILL.
- 344 Commercial Vegetable and Truck Crop Growing (5) f.**  
Prerequisite, Horticulture 144 or its equivalent. The principles involved and the practices recommended for the growing, harvesting and marketing of vegetables for commercial purposes. MR. LAMBETH.
- 352 Advanced Landscape Design (3) f, w.**  
Prerequisite, course 254. Landscape design of home grounds, estates and parks. MR. MOSHER.
- 354 Advanced Landscape Architecture (3) w.**  
Prerequisite, course 352. The design, drafting and rendering of complete landscape plans; including grading, construction and planting plans. Offered in 1956-57 and in alternate years. MR. MOSHER.
- 356 Civic Design (3) f.**  
Prerequisite, course 352. Study and application of principles of civic design including city planning and land development. Offered in alternate years. Not offered in 1956-57. MR. MOSHER.
- 401 Chemistry and Physics of Spraying (Credit to be arranged) w.**  
Prerequisite, course 313 or its equivalent. The composition, toxicity, compatibility, deterioration, spreading and adhesion of spray materials. MR. SWARTWOUT.
- 402 Vegetable and Truck Crop Forcing Problems (3) f.**  
Prerequisite, Horticulture 144 or equivalent. Soil sterilization, temperature and humidity, training, pruning, pollination and fertilizers for vegetables forced in structures. Offered in alternate years. Not offered in 1956-57. MR. LAMBETH.
- 403 Pruning Problems (3) w.**  
Prerequisite, course 311 or equivalent. The fundamental principles of pruning and its physiological effects upon deciduous fruit trees. MR. HIBBARD.
- 404 Breeding of Horticultural Plants (Credit to be arranged) f, w.**  
Prerequisite, course 315 or equivalent. Study of literature and original investigations on breeding and selection of horticultural plants. MR. MURNEEK.
- 406 Phytohormones and Vitamins (3) f.**  
(Same as Agr. Chem. 406) Prerequisites, elementary botany, plant physiology and six hours of organic chemistry. The chemistry, physiology and practical applications of phytohormones and vitamins in development of plants. Offered in alternate years. Not offered in 1956-57. MR. MURNEEK.

- 408 Nutrition of Horticultural Plants (3) w.**  
Prerequisites, Horticulture 311; Soils 301; Botany 203 or equivalents. The important nutrient elements, their absorption and utilization. MR. HEMPHILL.
- 410 Seminar (1) f, w.**  
Recent investigations in horticulture and in other fields as they relate to horticulture. MEMBERS OF THE STAFF.
- 411 Experimental Pomology (3) f.**  
Prerequisite, Horticulture 311 or equivalent. A study of current investigations in the field of fruit growing. MR. HEMPHILL.
- 414 Plant Chemistry (3-5) f.**  
(Same as Agr. Chem. 404). Prerequisite, Organic Chemistry 212. The Biochemistry of plant growth. Plant constituents, their occurrence, transformation and metabolism. MR. HIBBARD.
- 415 Methods of Horticultural Research (3) w.**  
Methods of procedure in work of investigations—outlining problems, assembling and analyzing data and presenting results. MR. HIBBARD.
- 420 Root Stocks for Deciduous Fruit Trees and Vines (Credit to be arranged) f.**  
Suitable stocks for apples, pears and grapes. MR. HEMPHILL.
- 421 Morphology of Horticultural Plants (Credit to be arranged) f.**  
Prerequisites, Botany I and 305. The morphological and histological structure of horticultural plants of economic importance. Offered in 1956-57 and alternate years. MR. MURNEEK.
- 444 Advanced Olericulture (3) w.**  
Prerequisite, Horticulture 144 or equivalent. The physiological factors affecting the growth, harvesting and storage of vegetable crops. A survey of the fundamental literature is made. MR. LAMBETH.
- 490 Research (Credit to be arranged) f, w, s.**  
MEMBERS OF THE STAFF.

## HUMANITIES

### 1 Humanities (5) f.

A unified introduction to literature, philosophy, the visual arts, and religion. Selected masterpieces in these fields are studied for their intrinsic values and for their significance in the development of Western civilization.

Courses 1 and 2 fulfill the general education requirement in humanistic studies. Although it is recommended that both courses be taken, either may be taken separately and course 2 may be taken before course 1.

### 2 Humanities (5) w.

A continuation of the work begun in course 1.

## ITALIAN (See ROMANCE LANGUAGES)

## JOURNALISM

### History and Ethics

#### 100 History and Principles of Journalism I (3) f.

The history of American journalism to about 1860, with lectures supplementing textbook work. Lectures and readings on the functions of the American newspaper. MR. MOTT.

#### 101 History and Principles of Journalism II (3) w.

Continuation of the preceding course. While it is desirable to take course 100 first, students entering at midyear may begin with this course. MR. MOTT.

- 302 **The Foreign Press (2) f, w.**  
The foreign press and world-wide news services and communications. MR. MOTT.
- 304 **Communications Law (2) f, w, s.**  
Legal limitations and privileges affecting publishing, advertising, broadcasting and telecasting. Consideration of the legal philosophy bearing upon the media of communications. MR. FISHER.

## Reporting and Editing

- 105 **News (3) f, w, s.**  
Organization of a newspaper office; news and news values and forms. MR. LAMBERT.
- 106 **Reporting (3) f, w, s, ss.**  
Assignments on daily newspapers covering the entire range of community news and giving experience in getting and writing all types of local news. MR. SHARP AND MEMBERS OF THE STAFF.
- 108 **Foreign Correspondence (2) f, w.**  
The work of a foreign correspondent, with emphasis on laboratory features. MR. SHARP.
- 110 **Copyreading I (2) f, w, s.**  
Purposes and methods. MR. BICKLEY AND MEMBERS OF THE STAFF.
- 111 **Copyreading II (2-4) f, w, s, ss.**  
Laboratory work on *The Columbia Missourian*, preparing all types of news copy for publication. MR. BICKLEY; MR. SPENCER AND MEMBERS OF THE STAFF.
- 112 **Newspaper Making (1-4) f, w, s, ss.**  
Special laboratory instruction for seniors in all departments, with not over 2 hours credit in any one field. MR. ENGLISH AND MEMBERS OF THE STAFF.
- 307 **Advanced Reporting (3) f, w, s, ss.**  
Experience in the more difficult assignments and stories. MR. SHARP AND MEMBERS OF THE STAFF.

## Advertising and Production

- 120 **Advertising Principles and Practice (3) f, w, s.**  
Prerequisite to all other advertising courses. Advertising fundamentals in relation to modern business activities. MR. JONES; MR. HAVERFIELD; MEMBERS OF THE STAFF.
- 321 **Advertising Copy, Layout, and Production (3) f, w, s.**  
Application of modern merchandising methods to the preparation of copy, and layout design. MR. GROSS.
- 322 **Psychology in Advertising (2) f. (alternate fall semesters).**  
Application of psychological principles to advertising, with research techniques exemplified by means of group projects. MR. ENGLISH.
- 323 **Advertising Salesmanship (3) f, w, s, ss.**  
Prerequisite, courses 120 and 321. Practical application of the principles of copy and layout to the mechanics and psychology of space-selling on *The Columbia Missourian*. MR. BUZBEE.
- 324 **Advertising Campaigns (2) f, w, s.**  
Prerequisite, "S" grade in course 321. Planning and preparation of copy and layout for complete national advertising campaigns with emphasis on research. MR. JONES.
- 325 **Newspaper Promotion (2) f, w.**  
Prerequisite, course 120. Modern newspaper promotion procedures, emphasizing techniques, organization and operation. MR. JONES.
- 326 **Radio—Television Advertising (2) f, w, s.**  
Survey of radio and television research, station coverage, government agencies affecting radio and television, networks, representatives. Creative writing for radio and television commercial scenarios. MR. GROSS.

- 327 Retail and Direct Advertising (3) f, w.**  
Selling and store-management problems encountered in the retail advertising field. Courses 321 or 336 recommended to precede this course. MR. HAVERFIELD.
- 328 Classified Advertising (2) f, w, s, ss.**  
Prerequisites, courses 321 and 323. Fundamentals of classified advertising, rate structures, classified copywriting, and salesmanship. MR. HAVERFIELD.
- 329 Advanced Advertising Salesmanship (2) f, w, s, ss.**  
Prerequisites, courses 321 and 323. Experience in more comprehensive problems of advertising salesmanship. MR. BUZBEE.
- 330 National Advertising Markets and Media (2) f, w, s.**  
Manufacturers' advertising procedures, markets, media, and organization of the advertising function. MR. HAVERFIELD.
- 331 Advertising Problems (2) f, w.**  
Analysis and solution by the case method of a wide variety of advertising, merchandising, and distribution problems. MR. GROSS.
- 332 Public Relations (3) f, w.**  
Prerequisites, courses 100 or 101, and 120. Current methods of dissemination of public information as practiced by business, industrial, educational, and social organizations. MR. MORELOCK.
- 333 Television Commercial Copy and Promotion (2) f, w, s.**  
Prerequisite, course 326. Writing television commercials, preparation of sales promotion, station and program audience research and promotion. MR. GROSS.
- 336 Typography and Printing Processes (2) f, w, s.**  
Printing from Gutenberg to Bruce Rogers, with opportunity to practice principles governing the effective use of type, rule and illustration. MR. FISHER.

## Photo-Journalism

- 138 Principles of Photoengraving (2) f, w, s, ss.**  
Prerequisite, course 140. Engraving and printing processes, including rotogravure, photogravure, and process color printing. MR. EDM.
- 140 Press Photography (3) f, w, ss.**  
Picture taking techniques and darkroom procedures emphasizing the camera in the modern press. MR. EDM.
- 141 Advanced Press Photography (2) f, w, s.**  
Prerequisite, course 140. Work outdoors and indoors with flash equipment, studio portraiture and illustrative photography. MR. EDM.
- 142 Advertising and Free Lance Photography (2) f, w, s.**  
Free lance and advertising problems with special studio work in advertising photo techniques. MR. EDM.
- 143 Staff Photography (1-3) f, w, s, ss.**  
Assignments on *The Columbia Missourian*. MR. EDM.
- 343 Advanced Staff Photography (1-2) f, w, s, ss.**  
More difficult assignments on *The Columbia Missourian*. MR. EDM.
- 344 Picture Editing and Picture Transmission (3) f, w, s.**  
Prerequisite, 5 hours of Photo-Journalism or consent of instructor. Study of techniques, emphasizing use of single picture, sequence, and series. Student liaison between editors and photo staff. Transmission experience. MR. EDM.

## Semantics

- 345 General Semantics in Journalism (2) w.**  
Linguistic and semantic mechanisms which condition knowledge, activities, and adjustment, applied to the journalist's problems. MR. ENGLISH.

## Editorial Page

- 150 Editorial Writing and Today's Problems (3) f, w, s.**  
Emphasis upon editorial writing and thinking. Symposium specialists discuss current problems. Three editorials a week for *The Columbia Missourian*. MR. VOTAW.
- 351 Editorial Page Direction (2) f, w, s, ss.**  
Prerequisite, course 150 or equivalent experience. Experience on *The Columbia Missourian* in editorial page editing. MR. VOTAW.

## Radio-Television Journalism

- 154 Radio-Television Theory and Techniques (2) f, w, s.**  
Prerequisite to courses in Radio-Television sequence, except course 326. Basic theory and techniques in radio and television broadcasting. MR. SCOLLAY.
- 155 Radio and Television News (2) f, w, s.**  
Training in processing wire and local news for radio and television with much practice in writing sustaining material for KFRU and KOMU-TV. MR. BERK.
- 156 Radio-Television News Processing (3) f, w, s, ss.**  
Prerequisite, course 155. Practice in processing daily news and writing material; learning to plan, prepare, and edit broadcasts. Two hours work daily preparing radio or television broadcasts. MR. COTTAM.
- 157 Newscasting (3) f, w, s, ss.**  
Prerequisite, course 155. Announcing and newscasting, with drill. Problems of presenting radio news. MR. COTTAM.
- 353 Cinematography (3) f, w, s.**  
Prerequisite, course 140 or equivalent experience. Motion picture techniques as applied to television. Advanced theory of cinematography. Practice with professional equipment for use on KOMU-TV. MR. WINKLER.
- 356 Television Production (3) f, w, s.**  
Prerequisites: course 154 or equivalent experience, and permission of instructor. Theory and practice in fundamentals of producing and directing "live" television programs. MR. SCOLLAY.
- 358 Television News Laboratory (3) f, w, s, ss.**  
Prerequisites, courses 359, 141, and 307, or equivalent experience, and permission of instructor. Experience in preparing television newscasts for presentation on KOMU-TV. MR. BERK AND STAFF.
- 359 Special Events in Radio and Television (3) f, w, s.**  
Prerequisite, course 157 and permission of instructor. Appraisal of portable equipment. Experience as member of KFRU and KOMU-TV special events crews. MR. BERK.

## Newspaper Features and the Magazine Field

- 266 The Agricultural Press (3) f, w.**  
For students in the College of Agriculture who may be required to prepare material for publication in newspapers or farm journals. Not open to Special Writing majors. MR. DUNCAN.
- 305 Book Reviewing (2) f, w, s.**  
Prerequisite for journalism students, Journalism 105. Analysis of professional book reviewing with frequent written reviews. Student reviews published in *The Columbia Missourian* and other papers. MR. PEDEN.
- 360 Feature and Special Articles (3) f, w, s.**  
Prerequisite, course 105 or professional writing experience. Writing and submitting for publication, articles for newspapers, magazines and syndicates. MRS. WILLIAMS.



**361 Magazine Article Writing (2) f, w, s.**

Planning and writing articles for sale to periodicals. "Textbooks" of the course are the magazines themselves, more than 1,000 of which are available for the student's study as possible markets. MR. FISHER.

**364 Industrial and Business Periodicals (2) w.**

Class publications, especially in the field of industry and business. Emphasis on employee papers and magazines. MR. FISHER.

## The Weekly and Small Daily

**171 Weekly and Small Daily: Editorial Side (3) w.**

Problems of news presentation and the leadership function of the community newspaper. MR. BRAY.

**372 Weekly-Small Daily Publishing (3) f, w.**

Prerequisite, Journalism 120. A required course for newspaper publishing majors. Consideration is given to business operation and advertising problems with an approach to understanding newspaper economics. One hour lecture, one hour conference and four hours laboratory practice in advertising sales.

**373 The Community Newspaper (2) w.**

The role of the editor in community life. Administration and function as social agency. MR. BRAY.

## Newspaper Management

**375 Newspaper Organization and Management (2) f, w, s.**

Organization, field of service, personnel, equipment, production, community relations, labor relations, accounting. MR. RUCKER.

## High School Journalism

**380 High School Journalism (2) s.**

Selection of material, editing, production, and school public relations. Function and scope of school publications. MR. ENGLISH.

## Field Investigations

**185 Special Field Investigations (1-6) f, w, s.**

Field trips and study of newspaper plants, including the daily writing of articles for newspapers. Details of each trip available in advance. Additional fee required. MR. ENGLISH AND MEMBERS OF THE STAFF.

## Senior Assembly

**189 Senior Assembly (0) f, w, s.**

Prerequisite, senior standing. Required of all majors. Surveying areas for job opportunities, letter writing, interviewing. Lectures by specialists in various fields. MR. ENGLISH.

## Courses for Graduate Students

**400 Problems (1-5) f, w, s, ss.**

Individual work on chosen and specified problems not leading to a thesis. Project must be set up before registration. MR. ENGLISH AND MEMBERS OF THE STAFF.

- 403 **The Literature of Journalism (2) f, w, s.**  
Reading and discussion of books related to journalism. MR. MOTT.
- 413 **Contemporary Reporting Problems (2) f, w, s.**  
A study of current reporting in state and local government and other specialized fields. Study of barriers to access to news, readability, content analysis of news, with practical experience in covering state news in Jefferson City.
- 414 **Contemporary Copyreading Problems (2) f, w, s.**  
Individual investigations of techniques, studies in newspaper vocabularies; headline structures and page make-up, especially recent developments. MR. BICKLEY.
- 432 **Contemporary Problems in Newspaper Publishing (2) f, w, s.**  
Current problems important to the newspaper publishing industry. An over-all study, developing basic data. MR. JONES.
- 435 **Contemporary Advertising Problems (2) f, w, s.**  
Recently developed and emerging ideas and techniques in advertising, publicity, public relations, promotion. MR. JONES.
- 458 **Advanced Television Laboratory (3) f, w, s.**  
Prerequisite, Journalism 359 or equivalent training or experience. MR. LAMBERT AND MEMBERS OF THE STAFF.
- 459 **Station Management (3) f, s.**  
Prerequisite, course 326. Permission of instructor required. Study of radio and television management problems and procedures. Laboratory work at KFRU or KOMU-TV. MR. LAMBERT.
- 488 **Research Methods in Journalism (2) f.**  
Prerequisite, Courses 100, 101, 120. Examination of research techniques, readership studies, readability formulas, content analyses, questionnaire interviews. Historiography. MR. ENGLISH.
- 490 **Research (Credit to be arranged) f, w, s, ss.**  
Guidance for graduate students engaged in investigations looking toward the production of theses. MR. ENGLISH AND MEMBERS OF THE STAFF.

## LAW

### First Year\*

- 100 **Contracts (3) f, w.**  
Mutual assent and consideration; duty to third parties; interpretation, performance and discharge of contracts. MR. PITTMAN.
- 101 **Criminal Law and Procedure (4) w.**  
The purposes of criminal law; the nature of criminal responsibility; characteristics of particular crimes; procedure in criminal cases. MR. LESAR; MR. PROFFITT.
- 102 **Equity I (3) w.**  
History of equity; powers of courts of equity; decrees and orders; specific performance of contracts.
- 103 **Introduction to Procedure (3) f.**  
Causes of action; jurisdiction and venue; parties; joinder and splitting of causes; pleading; writs and summonses; proceedings after pleading and prior to trial; the trial; proceedings after trial. MR. WHEATON.
- 104 **Legal Bibliography (2) f.**  
Federal and state statutory material; reports, official and unofficial; annotated case system; encyclopedias and general reference books; state and national digest systems; citators; legal periodicals, topical services. MR. HOGAN.

\*All first year courses required.

**105A Personal Property (2) f.**

Property; classification of property; possession; bailment; liens; pledges; finder; adverse possession; bona fide purchaser; gifts; accession and confusion; judicial sale and satisfaction of judgment; fixtures. MR. FRATCHER.

**105B Rights in Land of Another (excluding covenants) (1) f.**

Lateral and subjacent support, water rights, nuisance. MR. FRATCHER.

**106 Real Property (3) w.**

Estates in land—possessory estates and introduction to future interests; concurrent ownership; common law conveyances. Covenants running with the land; equitable servitudes. MR. ECKHARDT.

**107 Torts (4) f, (2) w.**

Assault, battery, false imprisonment, trespass to property, negligence, liability without fault, deceit, defamation, malicious prosecution, misuse of legal process, interests of political and economic advantage. MR. MCCLEARY.

**Second Year\*****120 Administrative Law (3) w.**

General survey of field of administrative law; nature, procedure, and powers of administrative bodies; validity of administrative regulations; conclusiveness of administrative determinations and judicial review. MR. HOWARD.

**121 Business Organizations I (3) f.**

Creation and characteristics of principal-agent relationship. Agent's power to create for principal contractual rights and liabilities, and liability in torts. Undisclosed principal; ratification; termination. MR. PITTMAN.

**122 Business Organizations II (4) w.**

Forms of business organization; corporations, including formation, entity privilege, directors and management, corporate authority, rights, powers, liabilities of shareholders, capital and dividend restrictions, shareholders' actions. MR. PITTMAN.

**123 Constitutional Law (4) f.**

Nature and sources of governmental powers; regulation of interstate and foreign commerce; police power; due process of law; equal protection of the laws; freedom of speech, press, religion and assembly; the contracts clause. MR. HOWARD.

**124 Conveyances (3) f.**

Statute of frauds; deeds—execution, content and form, description of premises, covenants for title; estoppel by deed; adverse possession and user; recording system, abstracts of title. MR. ECKHARDT.

**125 Equity II (including Restitution) (3) f.**

Vendor and purchaser; injunctions against torts; bills of peace; bills *quia timet*; equitable remedies for restitution of benefits obtained or conferred by tort; misrepresentation and mistake, coercion, and other matters.

**126 Evidence (2) f, w.**

Witnesses; rules of exclusion; hearsay rule; exceptions; rule relating to writings; real evidence; opinion; remote, prejudicial evidence; character; judicial notice; presumptions; burden of proof; miscellaneous. MR. WHEATON.

**127 Federal Taxation (3) w.**

Nature of taxable income; what is taxable income; time when taxable and to whom; capital gains and losses; corporate distributions; deductions and credits; estate and gift taxes. MR. LESAR.

**128 Trusts (3) w.**

Nature and requisites of express trusts; nature of *cestui que* trust's interest; resulting and constructive trusts; transfer of trust property; administration of the trust. MR. FRATCHER.

**160 Research (1) f, w.**

Special investigations by student members of the Editorial Board of the Missouri Law Review. Three notes or the equivalent thereof.

\*All second year courses are required.

**Third Year\***

- 139 Domestic Relations (2) f.**  
Formation and dissolution of the domestic relationship. Marriage; divorce, limited and absolute, including separation agreements, alimony, and child care and custody upon separation; economic relations arising from the relationship. Adoption. MR. PROFFITT.
- 140 Conflict of Laws (3) w.**  
Jurisdiction over and enforcement of claims having extraterritorial factual contacts; recognition and application of foreign law in state and federal courts; application of federal constitution. MR. PROFFITT.
- 141 Creditors' Rights (3) w.**  
Remedies of unsecured creditors; enforcement of judgments, execution, attachment and garnishment, creditor's bills and supplementary proceedings; fraudulent conveyances; general assignments; creditor's agreements; receivership; bankruptcy. MR. McCLEARY.
- 142 Drafting of Legal Instruments (2) f, w.**  
Instruction in drafting common legal instruments with which every lawyer must be familiar. Particular attention is given to the desires and needs of the client. MR. PETERSON.
- 143 Estate Planning (2) w.**  
A study of the process of selecting particular arrangements for the devolution of wealth, including consideration of federal and state tax factors. MR. LESAR.
- 144 Federal Jurisdiction (2) f.**  
Federal courts: creation, organization, jurisdiction; removal; procedure; relation between state and federal courts. MR. WHEATON.
- 145 Future Interests (2) f.**  
Types of future interests; construction of limitations; powers of appointment; rule against perpetuities and associated rules; restraints on alienation. MR. ECKHARDT.
- 146 Insurance (2) f.**  
Creation of contract; warranties and misrepresentations; excepted risks; waiver and estoppel; insurable interest; facts maturing the policy; construction of various clauses; subrogation. MR. FRATCHER.
- 147 Labor Law (3) f.**  
Organized labor in relation to industry; collective bargaining, administration of labor agreements, arbitration; economic pressures and limitations on their use; union organization, security and responsibility; rights of workers; labor legislation; industrial disputes and the public interest. MR. HOWARD.
- 148 \*Legal Profession (2) w.**  
History of the profession in England and America; the organized bar; unauthorized practice of law; legal ethics and their enforcement; the work and problems of the lawyer; fees. MR. FRATCHER.
- 149 Negotiable Instruments (3) f.**  
Principles of negotiability; characteristics of negotiable instruments; rights and liabilities of parties thereto with special reference to the Uniform Negotiable Instruments Act. MR. PROFFITT.
- 150 \*Pleading II (3) w.**  
Parties, joinder and splitting of causes; union of law and equity; petition, answer and reply; demurrer and motion; amendment; emphasis on Missouri code and federal rules of civil procedure. MR. WHEATON.
- 151 \*Practice (4) f.**  
Jurisdiction, venue; commencement of actions; process; motions; trials of issues of facts; instructions; verdict; judgment; new trials; appeal; special actions. MR. WHEATON.

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\*Required.

**152 Problems in Labor Relations and the Law (2) w.**

Consideration of special problems in labor arbitration; the administration of the collective bargaining agreement; rights of employees within a union, rights against the union or the employer under the agreement, and rights under legislation, state and federal. MR. HOWARD.

**153 Problems in Property (1) f, w.**

Selected advanced problems in Property: examination of abstracts of title; title examination standards; curing title defects; drafting title instruments; drafting limitations of future interests; perpetuities, restraints on alienation, and related problems; and other special problems. MR. ECKHARDT.

**154 Restitution (3) w.**

Quasi-contractual and equitable remedies for restitution of benefits obtained or conferred by tort, partial performance of contract; misrepresentation and mistake, coercion, and other matters.

**155 Sales (3) f.**

Subject matter of the contract; transfer of property and title; risk of loss; rights and obligations of seller and buyer; commercial statutes.

**156 Security Transactions (3) w.**

Real and personal security; legal mortgages; equitable mortgages and liens; conditional sales; trust receipts; security holder's choice of remedies. MR. ECKHARDT.

**157 State and Local Taxation (2) f.**

Assessment and collection of taxes, taxpayers remedies; exemptions from taxation; state jurisdiction to tax; constitutional requirements of uniformity and equality of taxation; property taxes, business taxes, use and sales taxes, inheritance taxes and income taxes.

**158 Wills and Administration (3) f.**

Descent; testamentary capacity and inducement; execution, integration and revocation of wills; testamentary character and intent; operation of devises and legacies; probate and administration of estates. MR. LESAR.

**159 Research (1) f, w.**

Individual investigation of a special problem of law. Written paper required.

**160 Research (1) f, w.**

Special investigation by student members of the Editorial Board of the Missouri Law Review. Three notes or the equivalent thereof.

**LIBRARY SCIENCE****190-191 Distinction in Library Science (3) f, s; (3) w.**

Independent work under the supervision of a member of the faculty involving intensive study of some area of library science or the investigation of a problem in library work. MEMBERS OF THE STAFF.

**275 The Library as a Source of Information (3) f, w.**

Prerequisite, junior standing. An introduction to the effective use of the library and its informational sources. For non-library science students as well as library science majors. MR. FLOOD.

**300 Problems (1-4) f, w, s.**

Individual work which does not lead to a dissertation. Students registering in this course must obtain departmental approval.

**373 The Administration of School Libraries (3) w, s.**

(Same as Education D373). Prerequisite, junior standing. Purposes and objectives of the school library, its functions and activities; qualifications of library personnel; physical facilities; school library standards. MISS BENNETT.

**374 Acquisition and Preparation of Library Materials (3) f, s.**

(Same as Education D374). Prerequisite, junior standing. Methods of selection; sources of supply; procedures in purchasing; processing of materials for use; elementary cataloging and classification. MR. FLOOD.

- 375 Use of Library Materials (3) f, s.**  
(Same as Education D375). Prerequisite, junior standing. The nature of library materials and the coordination of library resources with the teaching program. Miss BENNETT.
- 376 Reference (3) w, s.**  
Prerequisite, 275 or 375. Continues 275 with emphasis on reference material in various subject fields. Some attention is directed to the administrative problems of reference work. Mr. FLOOD.
- 377 Cataloging and Classification (3) w, s.**
- 378 Book Selection (3) w, s.**  
Prerequisite, 374. The formation of book collections to fit the needs of the institution; evaluation techniques; responsibility for selection; characteristics of material in different subject areas. Mr. FLOOD.
- 379 Library Administration (3) f.**  
Prerequisite, junior standing. Emphasis on administration of small public libraries; coordination with other educational activities of the community; finance; housing; government; personnel; standards. Mr. FLOOD.
- 380 Library Practice (1-5) f, w, s.**  
Prerequisites, 9 hours of Library Science and consent of the department chairman. Supervised work in a school, public, special, or college library. MEMBERS OF THE STAFF.

### Related Courses Carrying Library Science Credit

- 96 Children's Literature (2) f, w, s.**  
Prerequisite 374. Continues 374 with more attention to cataloging according to the A.L.A. rules and L.C. rules. Further study of classification, corporate entry, government publications, subject headings. Mr. FLOOD.  
(Same as Education E96).
- 109 Bookbinding I (2) s.**  
(Same as Art 109). Includes the making of books and the binding of periodicals. Miss WULFEKAMMER.
- 135 Cartography (2) f.**  
(Same as Geography 135). Prerequisite, 50 hours of college credit or equivalent experience. A study of maps and charts, their types, history, uses and construction. Mr. COLLIER.
- 304 Critical Essay (3) w.**  
(Same as English 304). A workshop course for advanced students. Discussion in essay form of ideas and literary values. Admission determined by consent of instructor. Mr. NEIHARDT.
- 305 Book Reviewing (2) f, w, s.**  
(Same as English 305). Analysis of professional book reviewing with frequent written reviews of contemporary fiction and non-fiction. Student reviews published in the *Columbia Missourian* and other papers. Mr. PEDEN.
- 321-322 World Literature (3) f; (3) w, s.**  
(Same as English 321-322). Prerequisite, junior standing. A study of selected masterpieces of world literature. Mr. WEATHERLY; Mr. GWATKIN.
- 365 Problems of Teaching Reading in the Secondary School (2-3) w.**  
(Same as Education D365). Designed to acquaint students with the problems that are met in teaching reading in the secondary school. Emphasis on the reading interests of and suitable literature for adolescents. Mr. ARTLEY.
- 371 Problems in Visual Education (3) f, s.**  
(Same as Education D371). Evaluation of visual education procedures and classroom instruction, including the preparation of visual education materials. Mr. BALLEW.

- 372 Selection and Utilization of Audio-Visual Materials in Teaching (3) w, s.**  
(Same as Education D372). Prerequisite, Education D110 or E121. D371 is recommended. MR. BALLEW.

## MATHEMATICS

- 2 Elementary Mathematics (3) f, w.**  
For students in the College of Agriculture. Other students admitted only by request of their deans. Five days a week.
- 3 Basic Algebra (3) f, w, s.**  
For students who do not have the prerequisite for course 7. Five days a week. No credit in Engineering.
- 4 Business Mathematics (3)**  
Application of elementary arithmetic and algebra to retailing and general business. For students in the College of Education who are specializing in Commercial Education and Distributive Education. Others admitted only by request of their deans.
- 5 Plane and Solid Geometry (2)**  
Prerequisite, one unit in Algebra, or course 3 to be taken concurrently. Selected topics in plane and solid geometry for those students who have not had one unit in plane geometry. Five days per week.
- 6 Solid Geometry (2) f, w.**  
Prerequisites, one unit in algebra and one unit in geometry. No credit for a student with one-half unit in solid geometry or credit for mathematics 5. Three days a week.
- 7 Introductory College Algebra (3) f, w, s.**  
Prerequisites, one unit in algebra and one unit in geometry or two units in mathematics including one and one-half units in algebra. No credit for a student who has three units in mathematics, including one and one-half units of algebra and not including general mathematics, or who has had two units of algebra or Mathematics 3. Covers the same material as Mathematics 3. No credit in Engineering.
- 9 Trigonometry (2) f, w, s.**  
Prerequisite, any of the following: (a) one and one half units in algebra and a unit in geometry; (b) a unit in geometry or Mathematics 5, and course 3 or 7.
- 10 College Algebra (3) f, w, s.**  
Prerequisite, same as for course 9.
- 11 Analytic Geometry and Calculus I (5) f, w, s.**  
Prerequisite, a grade M in courses 9 and 10. Introduction to plane analytic geometry, differential calculus, and integral calculus. Courses 11, 175, 201 are a sequence of courses which have integrated the material normally contained in courses in plane and solid analytic geometry and differential and integral calculus.
- 155 The Mathematics of Finance (3) f, w.**  
Prerequisite, course 3 or 7. Compound interest and annuities with a variety of applications; an introduction to the mathematics of life insurance.
- 175 Analytic Geometry and Calculus II (5) f, w, s.**  
Prerequisite, course 11. Selected topics from plane analytic geometry and calculus.
- 198-199 Distinction (2) f, w.**  
Special work for seniors who are candidates for the A.B. degree with distinction.
- 201 Analytic Geometry and Calculus III (5) f, w, s.**  
Prerequisite, course 175. Solid Analytic Geometry and selected topics in calculus.
- 203 Introduction to Mathematical Thought (3) w, s.**  
Prerequisite, one unit in algebra, one unit in geometry, and junior or senior standing. Logical development of number systems; non-Euclidean geometries; infinite sets, discussion of postulation method. MR. BLUMENTHAL.



- 250 Survey of Mathematics (3) f, s.**  
Prerequisite, course 175. Critical examination of certain parts of algebra, trigonometry, geometry and calculus aimed at building confidence and mature perspective in these fields. Recommended for teachers. MRS. HAYNES; MR. UTZ.
- 301 Differential Equations (3) f, w, s.**  
Prerequisite, course 201. Common types of ordinary differential equations, including many applied problems, operational methods, and a brief introduction to partial differential equations and boundary value problems.
- 303 Advanced Calculus I (3) f, w, s.**  
Prerequisite, course 201. Continuity, derivatives, series, implicit functions, the Riemann integral and other related topics.
- 306 Functions of a Complex Variable (3) w.**  
Prerequisite, course 301 or 303. An introduction to the theory and to its application in various physical problems. MR. BETZ; MR. EWING.
- 308 Vector and Tensor Analysis (3) f.**  
Prerequisite, course 301. Vector methods used in physics, engineering, and applied mathematics generally, with an introduction to tensor analysis and its applications. MR. BETZ.
- 320 Mathematical Statistics (3) w, s.**  
Prerequisite, course 201. An introduction to the theory of Probability and Statistics using the concepts and methods of The Calculus. MR. BRUNK.
- 325 Theory of Games (3)**  
Prerequisite, course 201. An introduction to the theory of zero-sum, two-person games including the continuous case, and of other related topics.
- 330 Theory of Equations (3) s.**  
Prerequisite, course 201. Roots of equations, numerical methods, determinants and matrices, symmetric function.
- 332 Higher Algebra I (3) f.**  
Prerequisite, course 201. Matrices, vectors, determinants. Systems of linear equations and quadratic forms. Equivalence, congruence, Hermitian congruence, similarity.
- 333 Higher Algebra II (3) w.**  
Prerequisite, course 201. The natural numbers, a brief development of the integers and the rational, real and complex fields. An introduction to groups, rings and polynomials over a field.
- 335 Theory of Numbers (3)**  
Prerequisite, course 201. Factorization, the Euler phi-function, congruences, and primitive roots.
- 350 Special Readings (1-3) f, w, s.**  
Prerequisite, course 201 and special permission.
- 352 History of Mathematics (3) s.**  
Prerequisite, Mathematics 201. Critical historical treatment of selected fundamental branches of mathematics, such as calculus, number theory, etc.
- 358 Mathematical Logic (3) f.**  
Prerequisite, junior or senior standing with interest and background in mathematics or philosophy. An introduction to the study of classical and modern logics as deductive systems with applications to the foundations of mathematics. MR. BLUMENTHAL.
- 360 Synthetic Projective Geometry (3) f, s.**  
Prerequisite, course 201. An elementary treatment, without the use of coordinates, of the fundamental propositions of projective geometry. MR. BLUMENTHAL.
- 362 Higher Geometry I (3)**  
Prerequisite, course 201. An account of some of the basic ideas and methods of higher geometry built around the concept of geometry as the study of the invariants of a group. An extensive treatment of collineations in two and three-space. MR. BLUMENTHAL.

**363 Higher Geometry II (3)**

MR. BLUMENTHAL.

**366 Foundations of Geometry (3)**

Prerequisite, course 201. The development of three-dimensional Euclidean geometry from a selected set of postulates; e.g., Hilbert, Veblen, Pieri, etc. MR. BLUMENTHAL.

**367 Introduction to non-Euclidean Geometry (3)**

Prerequisite, course 201. An account of the rise and development of the non-Euclidean geometries, with an intensive study of plane hyperbolic geometry. MR. BLUMENTHAL.

**400 Problems (1-3) f, w, s.****404 Theory of Functions of Real Variables I (3) f.**

Prerequisite, Course 303 or consent of instructor. The real number system, set theory, properties of functions of one or more real variables, introduction to measure theory and integration. MR. BRUNK; MR. BURCHAM; MR. EWING.

**405 Theory of Functions of Real Variables II (3) w.**

Prerequisite, course 404. Integration theory, derivatives of absolutely continuous functions, and (or) other topics in continuation of course 404.

**406 Measure Theory (3)**

Prerequisite, course 404. Study of abstract measures and integration. MR. BRUNK.

**408 Differential Equations of Applied Mathematics (3) w.**

Prerequisite, course 301. Partial differential equations, orthogonal functions and Fourier series, theory of matrices, Laplace transforms. MR. BETZ.

**410 Seminar (Credit to be arranged) f, w.****412 Calculus of Variations I (3) f, s.**

Prerequisite, course 404. The development of necessary conditions and of sufficient conditions for non-parametric and parametric problems. Hamilton's principle and related topics. MR. EWING.

**413 Calculus of Variations II (3)**

Prerequisite, course 412 or consent of instructor. Frechet Curves and Surfaces, existence theorems, and related topics. MR. EWING.

**415 Theory of Infinite Series and Summability (3) w, s.**

Prerequisite, course 303. Properties of infinite series and a discussion of methods of summability. MR. BURCHAM.

**420 Topological Dynamics I (3) w.**

Prerequisite, course 404. Periodicity and its generalizations in dynamical systems. MR. URZ.

**428 Topological Groups (3) w.**

Elementary properties of topological groups, invariant integration in compact groups, and the existence of a complete system of representations for a compact group. MR. URZ.

**430 Topics from Algebra I (3) f, w, s.**

Prerequisite, course 333.

**431 Topics from Algebra II (3) f, w, s.****440 Theory of Probability (3)**

Prerequisite, course 404. Axiomatic development of fundamental concepts; limit theorems for sequences of independent random variables; selected topics from the theory of stochastic processes.

**452 Lattice Theory (3)**

Prerequisite, consent of instructor. Fundamental properties of general and special lattices (modular, normed, complemented, distributive) with emphasis on distance theoretic aspects. MR. BLUMENTHAL.

- 458 Differential Geometry I (3) f.**  
Prerequisite, course 201. A study of the metric properties of restricted portions of curves and surfaces in three-dimensional Euclidean space. MR. BLUMENTHAL.
- 459 Differential Geometry II (3) w.**  
A continuation of 458, devoted to surface theory. MR. BLUMENTHAL.
- 460 Riemannian Geometry and the Mathematical Basis of Relativity Theory (3) w.**  
Prerequisite, courses 458 and 459. Introduction to intrinsic geometry of the general Riemannian metric. Applications to restricted and general relativity are emphasized. MR. BLUMENTHAL.
- 462 Distance Geometry I (3) f, s.**  
A study of metric properties of metric spaces. Existence of segments and lines. Universal metric spaces. MR. BLUMENTHAL.
- 463 Distance Geometry II (3) w, s.**  
The metric characterization of the classical spaces, and related problems. Isometric imbedding. MR. BLUMENTHAL.
- 464 Distance Geometry III (3)**  
An application of metric methods to Differential Geometry, Calculus of Variations, determinant theory, and the theory of linear inequalities. MR. BLUMENTHAL.
- 466 Dimension Theory (3)**  
An introduction to the Menger-Urysohn theory of dimension in separable metric spaces. A critical examination of the concept of curve. MR. BLUMENTHAL.
- 468 General Topology I (3)**  
An introduction to set topology in abstract spaces. MR. BLUMENTHAL.
- 469 General Topology II (3)**  
Concerned mostly with properties of finitely compact metric spaces. MR. BLUMENTHAL.
- 470 Introduction to Combinatorial Topology (3)**  
The combinatorial properties of plane sets. MR. BLUMENTHAL.
- 490 Research (Credit to be arranged) f, w, s.**

## MECHANICAL ENGINEERING

- 1 Engineering Drawing (3) f, w, s.**  
Lettering, sketches of machine parts and construction details, use of instruments, orthographic projection. Detail and assembly drawings, dimensioning, drafting conventions, tracings. MR. BEACH; MEMBERS OF THE STAFF.
- 10 Descriptive Geometry (3) f, w, s.**  
Prerequisites, course 1 and preceded or accompanied by Mathematics 9 and 10. Space relations of points, lines, surfaces, intersections, and developed surfaces. MR. BEACH; MEMBERS OF THE STAFF.
- 80 Machine Tool Lecture (1) f, w.**  
Prerequisite course 10. A survey of modern machine tool operations with introduction to metal cutting phenomena. MR. HENRIKSEN; MEMBERS OF THE STAFF.
- 81 Machine Tool Laboratory (2) f, w.**  
Prerequisite, must be accompanied by M. E. 80. Laboratory exercises in the machine tool operations used to manufacture component parts required by machine design. MR. HENRIKSEN; MEMBERS OF THE STAFF.
- 90 Analytical Mechanics (4) f, w, s.**  
Prerequisites, Physics 23 and preceded or accompanied by Mathematics 201. A study of statics and kinetics. MR. SMITH; MEMBERS OF THE STAFF.
- 99 Heat Engines (3) f, w, s.**  
Prerequisites, Physics 23, and Mathematics 175. Elementary thermodynamics with application to perfect gases, air compressors, ideal cycles, fuels and combustion, steam power. MR. SCORAH; MEMBERS OF THE STAFF.

- 205 Kinematics of Machines (3) f.**  
Prerequisites, courses 10 and 90. Cams, toothed gearing, gear trains, link mechanisms, instant centers, velocity and acceleration diagrams. Recitations and drawing. MR. SMITH; MEMBERS OF THE STAFF.
- 210 Dynamics of Machines (2) w.**  
Prerequisite, course 205. Kinetic analysis for machinery; masses, dynamic forces, balancing. MR. SMITH; MEMBERS OF THE STAFF.
- 220 Machine Design (3) f.**  
Prerequisites, courses 205, 210, C. E. 101, C. E. 102, and preceded or accompanied by 310. The design analysis of machine parts. MR. PRINGLE; MEMBERS OF THE STAFF.
- 221 Mechanical Engineering Design (3) w.**  
Prerequisites, courses 81 and 220. The design of complete machines. MR. PRINGLE.
- 230 Engineering Thermodynamics (3) f, w.**  
Prerequisites, Mathematics 201, M. E. 99 and Physics 24. Properties of working substances, mixture, combustion, cyclic and steady-flow processes, power and refrigeration cycles. MR. SCORAH; MEMBERS OF THE STAFF.
- 241 Mechanical Laboratory (2) f, w.**  
Prerequisite, course 99. Calibration and use of instruments and experimental apparatus; simple tests of machine units and power equipment. MR. SNEED; MEMBERS OF THE STAFF.
- 242 Mechanical Laboratory (2) w.**  
Prerequisites, courses 230 and 241. Determination of heating value of fuels; coal analysis, psychrometry, gas analysis, tests of machine units. MR. SNEED; MEMBERS OF THE STAFF.
- 243 Mechanical Laboratory (2) f.**  
Prerequisites, courses 330 and 242. Studies in heat transfer of compressible fluids; tests of blower, superheater, steam turbine plant, and condenser. MR. SNEED; MEMBERS OF THE STAFF.
- 244 Mechanical Laboratory (2) w.**  
Prerequisites, courses 351 and 243. Tests and performance analysis of spark ignition and Diesel engines, heat exchanger, complete steam power plant, refrigeration systems. MR. SNEED; MEMBERS OF THE STAFF.
- 300 Problems (Credit to be arranged) f, w, s.**  
Prerequisites, senior standing in mechanical engineering. Special design, experimental and analytical problems in the field of mechanical engineering. MEMBERS OF THE STAFF.
- 305 Industrial Engineering (3) f.**  
Prerequisites, courses 80, 81, 90, 99 and C. E. 82. Analysis of unit processes in mechanical engineering, process sequence and synthesis, technical process control. MR. EASTMAN.
- 306 Industrial Engineering Laboratory (3) w.**  
Prerequisite, course 305. Laboratory tests of unit mechanical processes, time analyses and controls, predicted and measured performances. Reports. MR. EASTMAN.
- 310 Metal Processing (3) f, w, s.**  
Prerequisites, courses 81 and C. E. 82. Metal processing by heat treatment, forming, casting, and welding; including metallographic heat treating and physical testing laboratory. MR. PRINGLE; MEMBERS OF THE STAFF.
- 319 Advanced Machine Design (3) w.**  
Prerequisite, course 220. Detailed analysis and testing of machine elements; selected design problems. MR. PRINGLE.
- 320 Advanced Mechanical Design (3) w.**  
Prerequisite, course 220. Selected problems in theoretical and experimental stress analysis, creep, fatigue, lubrication. MR. SMITH.
- 325 Engineering Kinetics (3) f or w.**  
Prerequisite, course 90. Introductory mathematical treatment of complex forces and motions. Ballistics, vibrations, and balancing. MR. BURTON.

- 330 Engineering Thermodynamics (3) w, s.**  
Prerequisite, course 230. Dimensional analysis, heat transfer, flow of compressible fluids; application to piping, nozzles, orifices, heat transfer apparatus. MR. SCORAH; MEMBERS OF THE STAFF.
- 339 Evaluation of Engineering Data (3) f.**  
Prerequisite, Mathematics course 201. Analysis of engineering data using graphical methods, frequency distribution, confidence intervals, significance tests and probability theory; statistical quality control applications in engineering. MR. EASTMAN.
- 340 Heating and Air Conditioning (3) w.**  
Prerequisite, course 330. General principles; conditioning the air of buildings for comfort, ventilation and industrial purposes; steam, water, and hot air heating systems. MR. BOLSTAD.
- 345 Mechanical Instrumentation (3) f or w.**  
Prerequisites, courses 90 and 330. Applications of dynamical systems, optics, thermodynamics, and other energizing groups. Theory of errors, and precision of design. MR. BURTON.
- 347 Nuclear Engineering (3) w.**  
Prerequisite, Chemistry 2, Physics 24, Mathematics 201. Open to qualified senior students upon consultation with the instructor. Atomic structure, nuclear reactions, reaction control, effect of radiation on matter, protection, nuclear power reactors. MR. SNEED.
- 351 Steam Power Plants (3) f, s.**  
Prerequisite, course 330. A study of combustion and steam generating equipment, steam prime movers and auxiliary apparatus, power plant cycles, complete plants. MR. SCORAH.
- 355 Steam and Gas Turbines (3) w.**  
Prerequisite, course 351. An analytical study of the construction, operating characteristics, and thermodynamics of steam and gas turbines. MR. BURTON.
- 358 Economic Studies in Mechanical Engineering (3) w.**  
Prerequisites, course 351 and Economics 41 or 51. Economic problems in the design, selection, and life of equipment; cost of steam and power. MR. EASTMAN.
- 360 Internal Combustion Engines (3) f, s.**  
Prerequisite, course 330. A study of gas and oil engines. Thermodynamics of ideal and actual cycles, fuels and combustion carburetor and injection systems, performances, construction. MR. SNEED.
- 363 Aircraft Power Plants (3) w.**  
Prerequisite, course 360 or equivalent. A study of reciprocating, gas turbine, and compound aircraft engines. Thermodynamics, balancing, propulsion, and performance. MR. SNEED.
- 365 Automotive Engineering (3) f or w.**  
Prerequisite, preceded or accompanied by course 220. Principles of design, construction, and operating characteristics of automotive vehicles. Selected design problems and review of current developments. MR. PRINGLE.
- 368 Machinery for Compressible Fluids (3)**  
Prerequisite, course 330. Theory, design, and application of machinery used with compressible fluids; turbines, compressors, and jet engines. Also a study of ejectors and jet pumps. MR. BURTON.
- 370 Refrigeration Systems (3) f.**  
Prerequisite, course 330. A study of compression, absorption, and steam-jet refrigeration systems. Properties of refrigerants. MR. BOLSTAD.
- 380 Factory Production (3) f.**  
Prerequisite, course 310. A study of factory production and equipment. Methods, scheduling, routing, inspection and assembly. MR. HENRIKSEN.
- 381 Factory Design (3) w.**  
Prerequisite, course 380. The design of a factory and management system to produce a selected product. MR. EASTMAN.

- 385 Tool Design (3) w.**  
Prerequisite, courses 220 and 380, or the equivalent. Design of production tools and equipment, punches, dies, cutting tools, jigs and fixtures, gages, special machines. MR. HENRIKSEN.
- 390 Aeromechanics (3) f.**  
Prerequisite, course 210. Introductory theoretical aerodynamics, including stability, performance and control; in subsonic and near-sonic ranges. MR. SMITH.
- 395 Engineering Personnel Practice (2) f, w.**  
Prerequisite, senior standing. The structure of engineering personnel; professional ideals, ethics, licensing, consulting, employment procedures; individual professional development. MR. EASTMAN.
- 410 Seminar (1) f, w.**  
Prerequisite, graduate standing. Reviews of recent investigations and projects of major importance in the field of Mechanical Engineering. MEMBERS OF THE STAFF.
- 415 Aerodynamic Theory (3) f or w.**  
Prerequisite, Math. 301 or C. E. 442, or equivalent. Mathematical development for helicopters, rockets, airfoils, and model testing; both subsonic and supersonic. MR. SMITH.
- 420 Mechanical Vibrations (3) w.**  
Prerequisites, graduate standing and the equivalent of courses 90 and 205. The theory of mechanical vibrations with application to machinery, stabilizers, dampers and absorbers. MR. SMITH.
- 425 Dynamical Theory (3) f or w.**  
Engineering principles and application in the mathematical expression of energy, force, and inertia systems. MR. SMITH.
- 430 Flow of Compressible Fluids (4) f or w.**  
Prerequisite, graduate standing and equivalent of courses 99 and 230. Flow of compressible fluids, considering heat transmission and change of phase. MR. SCORAH.
- 432 Thermodynamics (4) f or w.**  
Prerequisites, graduate standing and equivalent of courses 99 and 230. General theory, properties of working substances, thermodynamic equilibrium, engineering applications. MR. SCORAH.
- 440 Psychrometry (3) f or w.**  
Prerequisite, course 230. Psychrometric theory, the physical and thermal properties of air-vapor mixtures, the construction and use of tables and charts. MR. BOLSTAD.
- 441 Industrial Air Conditioning (3) f or w.**  
Prerequisite, course 340. Studies of air conditioning in a variety of industries, their specialized requirements and problems. MR. BOLSTAD.
- 445 Instrumentation Theory (3) f or w.**  
Prerequisite, course 210 and 330. Applied theory of dynamical and energizing systems for analyzing, computing, and control devices. MR. SMITH.
- 450 Research (Credit to be arranged) f, w, s.**  
Prerequisite, graduate standing in mechanical engineering. Independent design, experimental, or analytical problems to be presented in the form of a report. MEMBERS OF THE STAFF.
- 460 Combustion (4) f or w.**  
Prerequisites, graduate standing and equivalent of courses 99 and 230. A study of engineering combustion problems; selected topics. MR. SCORAH.
- 462 Heat Exchangers (4) f or w.**  
Prerequisites, courses 230, 330, and 351. A study of heat exchangers with particular reference to those used in steam power plants. MR. SCORAH.
- 470 Refrigeration (3) f.**  
Prerequisites, graduate standing and equivalent of course 370. General theory, low temperature refrigeration, liquefaction of gases, dry ice manufacture, selected studies. MR. BOLSTAD.

**471 Refrigeration Plants (3) w.**

Prerequisite, course 470 or permission of instructor. Designs, specifications and estimates for selected studies, such as: ice manufacture, frozen foods and cold storage, low temperature testing. MR. BOLSTAD.

**480 Machine Tool Processes (4) f or w.**

Prerequisites, graduate standing and the equivalent of courses 80 and 310. Metallic surface generating methods, surface quality, tolerances and fits, dimensional control and gaging. MR. HENRIKSEN.

**490 Research (Credit to be arranged) f, w, s.**

Prerequisite, graduate standing in mechanical engineering. Independent investigation in the field of mechanical engineering to be presented in the form of a thesis. MEMBERS OF THE STAFF.

**MEDICINE****101 Introduction to Psychiatry (1) f.**

The development of the personality from infancy through senescence is presented, with implications for the understanding of normal behavior of motivations, anxiety, and the adaptive reactions being stressed. DR. GUHLEMAN.

**121 Physical Diagnosis (2)**

Lectures, demonstrations and ward exercises covering history taking and physical examinations. DR. SODEMAN AND STAFF.

**122 Physical Diagnosis (2)**

This is a continuation of course 121 in which the student carries out more extensive activity on the wards of the hospital. Practical exercises are carried out in the field of history taking and physical examination. DR. SODEMAN AND STAFF.

**124 Psychiatry (1) f.**

After an introduction to the principles of psychiatric history-taking and interviewing, the various personality disorders are presented, with emphasis on types of reaction and the dynamics of symptom formation. DR. GUHLEMAN.

**202W Preventive Medicine (2)**

Prerequisites: Bacteriology 201 or its equivalent. A lecture course concerned with vital statistics; communicable disease control; epidemiology; environmental hygiene; industrial hygiene; infant and maternal hygiene; public health administration; and degenerative disease. Sophomore medical students and others. DR. SODEMAN AND STAFF.

**JUNIOR MEDICINE.**

Lectures and demonstrations, with patient presentations by students, are given once weekly throughout the junior year. One third of the class is assigned to the medical wards for 1/3 of the junior year. The students serve as clinical clerks. Conferences and discussions on individual patients are held daily with student presentation of material. The course work in the junior year also includes 11 didactic and clinical sessions in dermatology.

**MICROBIOLOGY****25 Elementary Preventive Medicine (2) f, w.**

Elements of personal, community and school hygiene; the value of preventive medicine; methods of spread and prevention of communicable disease. DR. KELLER.

**201 Medical Microbiology (6) f.**

Prerequisite: Chemistry 210. General Bacteriology recommended, but not required of medical students. Relationship of infectious agents to disease; principles of infection and immunity; the isolation and identification of pathogenic micro organisms. Sophomore medical students and others by permission. DR. ENGLEBY AND MEMBERS OF THE STAFF.

**202 Preventive Medicine (2) w.**

Prerequisites: Bacteriology 201 or its equivalent. A lecture course concerned with vital statistics; communicable disease control; epidemiology; environmental hygiene; industrial hygiene; infant and maternal hygiene; public health administration; and degenerative disease. Sophomore medical students and others. DR. SODEMAN AND MEMBERS OF THE STAFF.

**203 Sanitary Bacteriology (3) w.**

Prerequisite: General Bacteriology. The bacteriology of water and sewage; standard methods of water and sewage analysis; water purification; swimming pool sanitation; elementary principles of milk sanitation. DR. GOLDBERG.

**205 Public Health Microbiology (4) f.**

Open to students of nursing and others with the permission of the instructor. Principles of infection, immunity, and community health; the isolation and identification of pathogenic microorganisms. DR. GOLDBERG.

**301 Antibiotics (2) w.**

Prerequisite: General Bacteriology. Recommended, an advanced course in bacteriology. A discussion of antimicrobial substances isolated from microorganisms. Methods of screening; isolation; assay; a study of action on fungi, bacteria, rickettsia, and viruses. DR. GOLDBERG.

**304 Immunity (3) w.**

Prerequisite: Bacteriology 201. Theories of immunity; antigen-antibody reactions; complement fixation; hypersensitive states; vaccines; blood grouping and typing. DR. CABELLI.

**400 Special Investigations (credit to be arranged) f, w.**

Prerequisites: General Bacteriology and Organic Chemistry 212, or Bacteriology 201. Qualified students are assigned problems in microbiology for investigation. MEMBERS OF THE STAFF.

**401 Medical Mycology (4) w.**

Prerequisites: Bacteriology 201 or its equivalent. The isolation and identification of fungi pathogenic for man. DR. CABELLI.

**402 Virology (2) w.**

Prerequisite: General Bacteriology (Botany 202) and Biochemistry 301 or their equivalents. The biochemical, biophysical and genetic natures of viruses and their interrelations with host cells. DR. KELLER.

**403 Advanced Microbiology (Credit to be arranged) f, w.**

Assigned reading, lectures and laboratory work providing detailed information, training, and specialized techniques in microbiology. MEMBERS OF THE STAFF.

**410 Seminar (1) f, w.**

A presentation and critical discussion of original investigations and current literature in the fields of microbiology. MEMBERS OF THE STAFF.

**490 Research (Credit to be arranged) f, w.**

Original investigations in microbiology to be used for a graduate thesis. MEMBERS OF THE STAFF.

## MUSIC

### Music Theory

**1 Fundamentals of Music (2)**

A course presenting essentials of musicianship designed especially for elementary education majors but open to other interested students. Three class periods a week. (No credit for music majors). MRS. MULCHY.

**3 Elementary Theory (5) f.**

An intensive study of the basic materials of music developed through melodic, rhythmic and harmonic dictation, sight-singing, and keyboard and written harmony. Triads, their inversions and connections. MR. FARRIGIN; MR. RIVARD.



- 4 Elementary Theory (5) w.**  
Continuation of course 3, including seventh chords and their inversions. Non-harmonic tones. Intensive work in aural perception. MR. PARRIGIN; MR. RIVARD.
- 103 Advanced Theory (3) f.**  
Prerequisite, course 4. A study of altered chords and modulation. Composition in simple forms. Advanced work in aural perception and keyboard harmony. MR. GARLAND.
- 104 Advanced Theory (3) w.**  
Continuation of course 103. Modal harmony. Introduction to contemporary techniques. Compositions for instrumental ensembles. Emphasis on keyboard harmony. MR. GARLAND.
- 205 Form and Analysis (2) f.**  
Prerequisite, course 104. Harmonic and formal analysis of composition from the classic era. Emphasis on aural analysis of form. MR. GARLAND.
- 206 Form and Analysis (2) w.**  
Continuation of course 205. Harmonic and formal analysis of compositions from pre-classic eras. Introduction to contemporary formal principles. MR. GARLAND.
- 207 Counterpoint (2) f.**  
Prerequisite, course 4. A study of sixteenth century counterpoint in two, three and four parts. MR. MINOR.
- 208 Counterpoint (2) w.**  
Continuation of course 207. MR. MINOR.
- 304 Advanced Counterpoint (2) f.**  
Prerequisite, course 208. Invertible counterpoint, double and triple, at various intervals. Imitation of various types. The two-part invention. MR. MINOR.
- 306 Canon and Fugue (2) w.**  
Prerequisite, course 304. A study of the various forms of the canon and fugue in two, three and four parts. MR. MINOR.
- 307-308 Orchestration (2) f; (2) w.**  
Prerequisite, course 4. A study of the capacities of the orchestral instruments and scoring for various orchestral combinations including the full orchestra. MR. GARLAND.
- 309 Band Arranging (2) w, s.**  
Prerequisite, course 307. Transcription and scoring of solo and ensemble literature for band instrument combinations of varying size up to and including the concert band. MR. WILSON.
- 310 Contemporary Harmonic Techniques (2) w.**  
Prerequisite, courses 104, 206, and 308. A study of the rhythmic, harmonic, and contrapuntal devices of the twentieth century. MR. GARLAND.
- 311 Comparative Approaches to Music Theory (2) f.**  
Prerequisite, courses 104 and 208. A study of the different approaches to the interpretation of theory at the college level. Practical drill with Freshman Ear Training groups. MR. GARLAND.
- 315 Composition I (2) f.**  
Prerequisite, courses 104 and 208. A study of the techniques necessary to original composition with emphasis on rhythm, melodic line, form and style. MR. GARLAND.
- 316 Composition I (2) w.**  
Continuation of course 315 with emphasis on individual projects in the standard forms. MR. GARLAND.
- 317-318 Composition II (2) f; (2) w.**  
Intensive creative work in the larger forms. Seminar and private lessons. MR. GARLAND.
- 326-327 Advanced Orchestration (2) f; (2) w.**  
Prerequisites, courses 308, 316. Transcription for full orchestra of large works from different periods. Scoring of original works for orchestra. Private lessons and seminar. MR. GARLAND.

**401 Composition III (2) f, w.**

Creative work in the larger forms. Seminar and private lessons. This course may be repeated for credit. MR. GARLAND.

**Music History and Literature****21 Introduction to Music Literature (2) f, w.**

A survey of the materials of music and a study of selected masterpieces from all fields of music literature. No credit for music majors. Three class periods per week. MR. MINOR.

**22 Masterpieces of Music (2) w.**

Prerequisite, course 21 or equivalent. A study of significant choral, operatic and chamber works. For non-music majors. MR. MINOR.

**121 History of Music (2) f.**

A general survey of the history of music from the Greek period to the eighteenth century. MR. MINOR.

**122 History of Music (2) w.**

A continuation of course 121 covering the period from the eighteenth century to the present day. MR. MINOR.

**321 Music in the Renaissance (2) f.**

Prerequisite, course 122. A study of music of the fifteenth and sixteenth centuries and its relationship to the other arts of the period. MR. MINOR.

**322 The Baroque Era (2) f.**

Prerequisite, course 122. A study of the Baroque Era with emphasis on the music of Bach and Handel. MR. MINOR.

**323 The Romantic Period (2) f.**

Prerequisite, course 122. A study of nineteenth century music in its relationship to the Romantic Movement. MR. MINOR.

**324 Modern Music (2) w.**

Prerequisite, course 122. A study of music since 1900, with particular emphasis on contemporary trends. MR. MINOR.

**325 The Classic Era (2) w.**

Prerequisite, course 122. A study of the music of the last half of the eighteenth century. MR. MINOR.

**421 Seminar in Musicology (2) f.**

A study of the techniques of research and the sources of available material. MR. MINOR.

**422 American Music (2) f.**

A study of the History of Music in America from the colonial period to the present. MR. MINOR.

**423 Bach and His Time (2) w.**

Prerequisite, courses 103 and 206. An historical and critical investigation of the works of this master and their influence on subsequent music. Special topics assigned for original investigation. MR. MINOR.

**424 Haydn, Mozart and Beethoven (2) w, s.**

An historical and critical investigation of the works of these composers. Special topics assigned for original investigation. MR. MINOR.

**426 History of Performance Practices (2) w.**

A study of performance practices with special emphasis on the Renaissance and Baroque periods. MR. MINOR.

**427 Studies in the History of Opera (2) f.**

A study of the significant operatic masterpieces from 1600 to the present. MR. MINOR.

**428 Studies in the History of Choral Music (2) w, s.**

A study of the significant choral works from the Renaissance to the present day. MR. MINOR.

**SPECIAL INVESTIGATIONS AND RESEARCH****400 Problems (Credit to be arranged) f, w, s.**

This course may be repeated for credit. MEMBERS OF THE STAFF.

**490 Research (Credit to be arranged) f, w, s.**

Thesis course. This course may be repeated for credit. MEMBERS OF THE STAFF.

**Applied Music**

The Applied Music Group includes private instruction in piano, voice, the string instruments, organ, and the wind instruments. The amount of credit per semester which may be elected is variable within the limits indicated for each course and is determined by advisement. Credit in the Special Courses is available only to music education majors and Bachelor of Music candidates who elect this work as a secondary applied music subject.

All students enrolled in string or wind instrument courses must participate in the University orchestra, or band, as advised by director of these organizations; students enrolled in voice must participate in one of the University's choral organizations.

**50 Special Piano (0-2) f, w.**

May be elected without credit and without prerequisite. The amount of material studied may be varied in accordance with the student's educational purpose. MR. MACLEOD; MR. SHELDON; MRS. MULCHY; MISS BISCHOFF; MRS. QUANT.

**51 Underclass Piano (1-4) f, w.**

Prerequisite, the ability to play in a pianistic and musical manner such works as the Haydn or Mozart Sonatas; Grieg, Papillons; Chopin, Nocturne, E flat; etc. MR. MACLEOD; MR. SHELDON; MISS BISCHOFF; MRS. QUANT.

**251 Upperclass Piano (1-2) f, w.**

Prerequisite, 8 hours piano of collegiate grade, the equivalent of course 51. MR. MACLEOD; MR. SHELDON; MISS BISCHOFF; MRS. QUANT.

**351 Upperclass Piano (1-5) f, w.**

Prerequisite, 14 hours piano of collegiate grade, the equivalent of course 51. MR. MACLEOD; MR. SHELDON; MISS BISCHOFF; MRS. QUANT.

**60 Special Voice (0-2) f, w.**

May be elected without credit and without prerequisite. The amount of material studied may be varied in accordance with the student's educational purpose. MR. GOULD; MR. MILLS; MISS AVERY.

**61 Underclass Voice (1-4) f, w.**

Prerequisite, the ability to sing simple songs with musical intelligence and a knowledge of the rudiments of music. MR. GOULD; MR. MILLS; MISS AVERY.

**261 Upperclass Voice (1-2) f, w.**

Prerequisite, 8 hours voice of collegiate grade, the equivalent of course 61. MR. GOULD; MR. MILLS; MISS AVERY.

**361 Upperclass Voice (1-5) f, w.**

Prerequisite, 14 hours voice of collegiate grade, the equivalent of course 61. MR. GOULD; MR. MILLS; MISS AVERY.

**70 Special Violin (0-2) f, w.**

May be elected without credit and without prerequisite. The amount of material studied may be varied in accordance with the student's educational purpose. MR. WHITMORE; MRS. QUANT.

**71 Underclass Violin (1-4) f, w.**

Prerequisite, the ability to play the first ten of the Kayser Etudes; rudiments of music, etc. MR. WHITMORE; MRS. QUANT.

- 271 Upperclass Violin (1-2) f, w.**  
Prerequisite, 8 hours violin of collegiate grade, the equivalent of course 71. MR. WHITMORE; MRS. QUANT.
- 371 Upperclass Violin (1-5) f, w.**  
Prerequisite, 14 hours violin of collegiate grade, the equivalent of course 71. MR. WHITMORE; MRS. QUANT.
- 80 Special Cello (0-2) f, w.**  
May be elected without credit and without prerequisites. The amount of material studied may be varied in accordance with the student's educational purpose. MRS. MULCHY.
- 81 Underclass Cello (1-4) f, w.**  
Prerequisite, knowledge of the first four positions, and the ability to play with good intonation Romberg Sonata Op. 43, Mendelssohn Concerto, etc. MRS. MULCHY.
- 281 Upperclass Cello (1-2) f, w.**  
Prerequisite, 8 hours cello of collegiate grade, the equivalent of course 81. MRS. MULCHY.
- 381 Upperclass Cello (1-5) f, w.**  
Prerequisite, 14 hours cello of collegiate grade, the equivalent of course 81. MRS. MULCHY.
- 82 Special String Bass (0-2) f, w.**  
May be selected without credit and without prerequisite. The amount of material studied may be varied in accordance with the student's educational purpose. MRS. MULCHY.
- 83 Underclass String Bass (1-4) f, w.**  
Prerequisite, knowledge of the half, first, and second positions; rudiments of music. MRS. MULCHY.
- 283 Upperclass String Bass (1-2) f, w.**  
Prerequisite, 8 hours string bass of collegiate grade, the equivalent of course 83. MRS. MULCHY.
- 383 Upperclass String Bass (1-5) f, w.**  
Prerequisite, 14 hours string bass of collegiate grade, the equivalent of course 83. MRS. MULCHY.
- 85 Special Viola (0-2) f, w.**  
May be elected without credit and without prerequisite. The amount of material may be varied in accordance with the student's educational purpose. MR. WILSON.
- 86 Underclass Viola (1-4) f, w.**  
Prerequisite, same as for course 71, or the equivalent in viola literature and technique plus rudiments of music. MR. WILSON.
- 286 Upperclass Viola (1-2) f, w.**  
Prerequisite, 8 hours of viola of collegiate grade, the equivalent of course 86. MR. WILSON.
- 386 Upperclass Viola (1-5) f, w.**  
Prerequisite, 14 hours of collegiate grade, the equivalent of course 86. MR. WILSON.
- 90 Special Organ (0) f, w.**  
Prerequisite, a moderate degree of pianistic ability. The amount of material studied may be varied in accordance with the individual student's educational purpose. MR. PARRIGIN.
- 91 Underclass Organ (1-4) f, w.**  
Prerequisite, the same as for course 51. Underclass Piano. MR. PARRIGIN.
- 291 Upperclass Organ (1-2) f, w.**  
Prerequisite, 8 hours organ of collegiate grade, the equivalent of course 91. MR. PARRIGIN.
- 391 Upperclass Organ (1-5) f, w.**  
Prerequisite, 14 hours organ of collegiate grade, the equivalent of course 91. MR. PARRIGIN.

- 75 Special Woodwind Instruments (0-2) f, w.**  
May be elected without credit and without prerequisite. Material studied may be varied in accordance with the amount of credit elected and the individual student's educational purpose. MR. HILLS.
- 76 Underclass Woodwind Instruments (1-4) f, w.**  
Prerequisite, ability to play material of comparable difficulty to that found in Klose, Book I, for clarinet; Andraud, Book I, Etudes for oboe; Weisenborn, Book I, for bassoon; Wagner, Book I, for flute; Gillette, Book I, for saxophone. MR. HILLS.
- 276 Upperclass Woodwind Instruments (1-2) f, w.**  
Prerequisite, 8 hours credit in course 76 or equivalent on the same instrument elected for this course. MR. HILLS.
- 376 Upperclass Woodwind Instruments (1-5) f, w.**  
Prerequisite, 14 hours credit in course 76 or equivalent on the same instrument elected for this course. MR. HILLS.
- 77 Special Brass Instruments (0-2) f, w.**  
May be elected without credit and without prerequisite. Material studied may be varied in accordance with the amount of credit elected and the individual student's educational purpose. MR. RIVARD.
- 78 Underclass Brass Instruments (1-4) f, w.**  
Prerequisite, ability to play material of comparable difficulty to that found in the first part of Arbans for cornet, trumpet, baritone and trombone, Hauser foundation studies for French Horn; first part of Eby bass method for tuba. MR. RIVARD.
- 278 Upperclass Brass Instruments (1-2) f, w.**  
Prerequisite, 8 hours credit in course 78 or equivalent on the same instrument elected for this course. MR. RIVARD.
- 378 Upperclass Brass Instruments (1-5) f, w.**  
Prerequisite, 14 hours credit in course 78 or equivalent on the same instrument elected for this course. MR. RIVARD.
- 79 Underclass Percussion Instruments (0-1) f, w.**  
May be elected without credit and without prerequisites. The amount of material studied may be varied in accordance with the student's educational purpose. MR. WILSON.

## Ensemble Courses

- 38 Vocal Ensemble (1) f, w.**  
Open to all students possessing sufficient ability. Provides experience in vocal technique and repertoire. MR. GOULD AND STAFF.
- 39 University Singers (1) f, w.**  
A choral organization of selected voices, open to all students in the University by audition only. MR. MILLS.
- 40 University Chorus (1) f, w.**  
Preparation and public performance of great choral masterpieces. A voice of pleasing quality and ability to read a simple hymn tune are required for membership. MR. MILLS.
- 42 University Orchestra (1) f, w.**  
Open to all students in the University who play an orchestral instrument, subject to a test of playing ability by the conductor. MR. WILSON.
- 43 University Concert Band (1) f, w.**  
Open to all students in the University who play a band instrument, subject to a test of playing ability by the conductor. MR. WILSON.
- 44 Piano Ensemble (1) f, w.**  
A progressive study of orchestra literature in the form of four-hand and eight-hand arrangements. Two class periods per week. MR. MACLEOD.

**46 Chamber Music (1) f, w.**

The material studied is from the recognized masterpieces of chamber music literature with emphasis on the string quartet. Two laboratory periods per week. MR. WHITMORE; MRS. MULCHY; MRS. QUANT.

**48 Wind Instrument Ensemble (1) f, w.**

Practice in concerted playing of wind instruments. Two laboratory periods per week. MR. WILSON; MR. HILLS; MR. RIVARD.

**Instrumental and Vocal Techniques****140 Strings I (1) f.****141 Strings II (1) w.****142 Strings III (1) f.****143 Strings IV (1) w.****144 Woodwinds I (1) f.****145 Woodwinds II (1) w.****146 Brass I (1) f.****147 Brass II (1) w.****148 Percussion (1) f, w.**

Practical work in orchestral instruments. These courses are designed to give class instruction in playing the various instruments of the orchestra. Given on a laboratory basis with two recitations per week. MR. WHITMORE; MR. WILSON; MRS. MULCHY; MR. HILLS; MR. RIVARD.

**240 String Instrument Techniques (1) s.**

Prerequisite, a semester of training, or the equivalent, on the instrument elected. A laboratory course supplementing undergraduate preparation for instrumental teaching and orchestral conducting. MR. WHITMORE; MRS. MULCHY.

**244 Woodwind Instrument Techniques (1) s.**

Prerequisite, a semester of training, or the equivalent, on the instrument elected. A laboratory course supplementing undergraduate preparation for instrumental teaching and orchestral conducting. MR. HILLS.

**246 Brass Instrument Techniques (1) s.**

Prerequisite, a semester of training, or the equivalent, on the instrument elected. A laboratory course supplementing undergraduate preparation for instrumental teaching and orchestral conducting. MR. WILSON; MR. RIVARD.

**149 Conducting (2) f.**

The technique of the baton, factors in interpretation, score reading, rehearsal procedures for choral and instrumental organizations, program building, public appearances. MR. MATHEWS.

**150 Conducting (2) w.**

Continuation of course 149. MR. WILSON.

**151 Voice Class (1) f.**

A class dealing with the fundamentals of singing primarily for majors in Music Education, with no previous vocal experience. Two laboratory meetings per week. MR. GOULD AND MEMBERS OF THE STAFF.

**152 Voice Class (1) w.**

A continuation of course 151. MR. GOULD AND MEMBERS OF THE STAFF.

**431 Principles of Singing (2) s.**

MR. GOULD.

**432 Principles of Singing (2) s.**

Continuation of course 431. MR. GOULD.

**433 Advanced Choral Conducting (2) s.**

Baton technique and problems involved in the direction of choral ensembles. Prerequisites, graduate standing, courses 149 and 150 or their equivalent. (Not accepted for A.M. Degree). MR. MATHEWS.

## NAVAL SCIENCE

All Naval Science courses require three recitations and two one-hour laboratory periods per week. All students enrolling in Naval Science courses must obtain permission from the Professor of Naval Science.

**1 Naval Orientation (3) f.**

Customs and traditions of the Navy, seamanship, naval communications, Rules of the Nautical Road, principles of leadership, fundamentals of naval vessels, elementary maneuvers. MEMBERS OF THE STAFF.

**2 Naval Sea Power (3) w.**

To acquaint the student with influence of sea power on global history, the contribution of sea power to the past, present and future progress of the United States. MEMBERS OF THE STAFF.

**25 Naval Weapons (3) f.**

Modern naval guns (40 mm, 3 inch, 5 inch, major caliber), radar control of guns, ballistics, and basic principles of the control of naval guns against surface targets and against aircraft targets. MEMBERS OF THE STAFF.

**26 Naval Weapons (3) w.**

Prerequisite, Course 25. Battery alignment, spotting, shore bombardment, torpedoes, anti-submarine weapons and tactics, mines, rockets, and guided missiles. MEMBERS OF THE STAFF.

**100 Naval Machinery, Steam and Diesel Engines (3) f.**

Prerequisites, Physics 1 and 2 or 23 and 24. Naval engineering, main propulsion installations, steam plants, auxiliary machinery, diesel engines; principles of ship stability and buoyancy in the practice of damage control. MEMBERS OF THE STAFF.

**101 Navigation (3) w.**

Prerequisites, Mathematics 9 and 10. Theory and technique of surface and aerial navigation; theory of celestial navigation and navigator's day's work at sea. MEMBERS OF THE STAFF.

**102 Naval Operations (3) f.**

Basic principles of aerology; training in maneuvering board, tactical and fleet communications, tactical instructions and Rules of the Nautical Road. MEMBERS OF THE STAFF.

**103 Naval Administration (3) w.**

Principles of good personnel management, elements and administration of military law, principles and psychology of leadership and preparation of the prospective officer for his integration into a ship's organization. MEMBERS OF THE STAFF.

**104 Evolution of the Art of War (3) f.**

For students interested in a commission in the Marine Corps. The evolution of weapons, strategy, tactics, and material. Illustration of principles of war by the study of selected battles and campaigns. The development of U. S. military and foreign policy. MEMBERS OF THE STAFF.

**105 Modern Basic Strategy and Tactics (3) w.**

Prerequisite, Course 104. Modern tactical principles and techniques, especially on small unit level. Illustrated by use of contemporary historical examples and practical problems. The development of general understanding of strategy. MEMBERS OF THE STAFF.

**106 Amphibious Warfare (3) f.**

Prerequisite, Course 105. History and development of Amphibious Warfare, principles of amphibious warfare techniques, and their application in selected examples from modern history. MEMBERS OF THE STAFF.

**107 Amphibious Warfare Part II, Leadership and The Uniform Code of Military Justice (3) w.**

Prerequisite, Course 106. Amphibious Warfare continued. Leadership techniques. Procedures for, and the responsibilities of an officer in the administration of the Uniform Code of Military Justice. MEMBERS OF THE STAFF.

## NURSING

- 1 Introduction to College (0) f, w, s.**  
Weekly discussions to assist the student in adjusting to college. MEMBERS OF THE STAFF.
- 2 Orientation to Nursing (2) f.**  
Development of the nursing profession and the functions of the nurse in meeting health needs of the community. Open to any University student. MRS. MASON AND MISS WALSH.
- 10 Interpersonal Relationships in Nursing (2) w, s.**  
A course designed to help the nurse understand herself and her patients. MRS. MASON, MRS. THOMAS AND MRS. STUBER.
- 50 Growth and Development of the Individual (3) w, s.**  
General Psychology must precede or parallel this course. A study of the normal physical, social, mental and emotional growth of the human being from birth to senescence. Open to any University student. MRS. MASON, MISS WALSH AND MRS. THOMAS.
- 100 Fundamentals of Patient Care I (3) f.**  
Classes and laboratory practice in nursing care of non-acutely ill and convalescent patients. MISS CRIM.
- 101 Elementary Materia Medica (1) f.**  
A laboratory course in drug dosage and preparation of solutions. MRS. STUBER.
- 102 Fundamentals of Patient Care II (3) w.**  
Continuation of Course 100. Aims to assist the student to understand, plan and execute nursing care adapted to each patient's needs. Correlated with Course 120. MISS CRIM.
- 103 Fundamentals of Patient Care III (1) f.**  
Continuation of Courses 100 and 102, and correlated with Course 124. Nursing care and procedures. MISS CRIM.
- 119 Introduction to Medical-Surgical Nursing (2) f.**  
Designed to assist the student to understand community resources for the care of the patient and his family. Field trips and conferences. MRS. SMITH, MRS. THOMAS AND MRS. RHODES.
- 120 Medical-Surgical Nursing (5) w.**  
A study of etiology, symptoms and treatment of medical and surgical conditions. Includes pathology; diet therapy; social, health and psychological aspects of nursing and pharmacology. Respiratory, gastro-intestinal, allergies and tuberculosis. STAFF.
- 121 Medical-Surgical Nursing (3) w.**  
Continuation of Course 120; covers circulatory and musculo-skeletal disease conditions and nursing care. MEMBERS OF THE STAFF.
- 122 Medical-Surgical Nursing (1) s.**  
Continuation of Course 121. Endocrine, metabolic and skin conditions. MEMBERS OF THE STAFF.
- 123 Medical-Surgical Nursing (1) s.**  
Surgical technique and operative procedures. MEMBERS OF THE STAFF.
- 124 Medical-Surgical (4) f.**  
Urinary, reproductive, nervous systems and conditions of the eye and ear. Includes consideration of venereal diseases. MEMBER. OF THE STAFF.
- 125 Medical-Surgical Nursing (2) w.**  
Nursing in the acute communicable diseases. MEMBERS OF THE STAFF.
- 130 Obstetrics and Obstetric Nursing (4) f, w.**  
Pre-natal, natal and postpartum care of the mother and her newborn baby. MEMBERS OF THE STAFF.
- 132 Advanced Medical and Surgical Nursing (5) f.**  
MISS GILBERT.



- 140 Pediatrics and Pediatric Nursing (4) w, s.**  
Medical and nursing care of sick and well children. MEMBERS OF THE STAFF.
- 150 Public Health Nursing (3) s.**  
Principles, objectives and practices in public health nursing, and the role of the nurse in health education and conservation. MRS. SMITH.
- 160 Psychiatry and Psychiatric Nursing (5) f, w.**  
Diagnosis, care and treatment of patients with mental and emotional disorders. MEMBERS OF THE STAFF.
- 170 Contemporary Nursing I (2-3) f.**  
A study of the historical background of the nursing profession and the problems facing the young graduate nurse. MRS. HARRIMAN.
- 171 Contemporary Nursing II (3) w.**  
Continuation of Course 170. Administration and teaching in a small unit, and legal aspects of nursing. MRS. RHODES AND MISS WALSH.
- 175 Senior Nursing (3) w.**  
Recent developments in medical and other fields which influence modern nursing practice. Field trips and conferences to help the student integrate her knowledge of total patient care. MEMBERS OF THE STAFF.
- 190 Problems (1-3) f, w, s.**  
Prerequisite, senior standing and permission of the instructor. STAFF.
- 191 Team Nursing (2) f.**  
Definition, purposes, organization and functioning of the nursing team. MRS. STUBER.
- 192 Newer Aspects in General Nursing (3) f, w.**  
This course is designed to bring the graduate nurse up-to-date in all aspects of general nursing. MISS BRADFELD.
- 194 Methods and Content in Health Teaching (3) s.**  
Prerequisites, junior standing and Educational Psychology preceding or parallel. A laboratory course designed to develop skill in teaching health to lay groups. Special attention is given to content. MRS. SMITH.
- 195 The Field of Public Health Nursing (3) w.**  
Prerequisite, graduate nurse status. Nursing as a socio-economic force; team concepts in community health programs, and application of basic nursing science and art to family and community living. MRS. SMITH.
- 196 Ward Management (3) w.**  
Prerequisite, graduate nurse status. Principles, problems and procedures in organization and management of the head nurse's unit. MRS. STUBER, MISS WALSH AND MISS BRADFELD.
- 197 Clinical Teaching (3) f.**  
Prerequisite, graduate nurse status. Educational Psychology must precede or parallel this course. Philosophy, principles, methods and evaluation in clinical instructions. MRS. STUBER.
- 198 Introduction to Principles and Methods of Teaching in Nursing (3) w.**  
Prerequisites, graduate nurse status and Educational Psychology. Philosophy and objectives, principles of teaching and evaluation, and methods of guiding learning. MEMBERS OF THE STAFF.
- 199 Current Developments in Nursing (3) f.**  
An overview of the history of nursing leading to the present situation and a study of the steps being taken by the nursing profession to meet current needs. MRS. RHODES.

## PATHOLOGY

- 101 Elementary Pathology (2½) f.**  
A course of 64 lecture, recitation, demonstration, and laboratory hours intended for second year students in nursing only. DR. LEEPER.

**210 General Pathology (6) f.**

The course consists of a total of 160 lecture, recitation, demonstration, and laboratory hours for sophomore medical students. DR. FLYNN; DR. NEAL; DR. STANDLEY; DR. LEEPER; DR. ATKINS.

**211 Systemic Pathology (6) w.**

Prerequisite, General Pathology 210. A course of 160 lecture, recitation, demonstration and laboratory hours for sophomore medical students. DR. FLYNN; DR. NEAL; DR. STANDLEY; DR. LEEPER.

**212 Clinical Pathology (5) w.**

Prerequisites, Medical Bacteriology 201, Histology 203, and Physiological Chemistry 206. A course of 112 lecture, recitation, demonstration and laboratory hours for sophomore medical students. DR. FLYNN; DR. NEAL; DR. STANDLEY; DR. LEEPER.

**404 Advanced Pathology (Credit to be arranged)**

A graduate course in which the amount and character of the work will depend upon the needs, qualifications and interests of the student. DR. FLYNN; DR. NEAL; DR. STANDLEY; DR. LEEPER.

**491 Research in Pathology (Credit to be arranged)**

Open only to properly qualified graduate students. (A background of advanced chemistry and mathematics is required. A reading knowledge of German is desirable but French is not necessary or is it particularly recommended). DR. FLYNN; DR. NEAL; DR. STANDLEY; DR. LEEPER.

**PHILOSOPHY****1 Elementary Logic (3) f, w, s.**

The formal principles of deduction and induction with special attention to criticism of argument, detection of fallacies, and certain philosophic problems arising out of logic. MEMBERS OF THE STAFF.

**5 Introduction to Philosophy (3) f, w, s.**

The principal problems of philosophy and their typical solutions, with special reference to problems of knowledge, of the natural world, and of society. MEMBERS OF THE STAFF.

**50 Introduction to Ethics (3) f, w, s.**

The main problems of ethics and their chief solutions, together with illustrative material involving the application of moral theory to some of our current social problems. MEMBERS OF THE STAFF.

**102 Philosophy of Materialism (3) w.**

An analytic and genetic study of Marxian Dialectical Materialism from anticipations in early materialists to contemporary Leninism and the official philosophy of the U.S.S.R. MR. SOSENSKY.

**199 Distinction (3) f, w, s.**

Special work for candidates for graduation with distinction. MEMBERS OF THE STAFF.

**204 Early European Philosophy (3) f.**

Prerequisite, junior standing or consent of instructor. Philosophic thought from Thales to Augustine, with emphasis upon Plato and Aristotle; a critical survey in the light of present day problems. MR. OLIVER.

**205 Early Modern Philosophy (3) w, s.**

Prerequisite, junior standing or consent of instructor. A survey of the critical and speculative thinking of the modern period up to and including Kant in its relation to scientific, religious, political, and general social movements. MR. OLIVER.

**212 American Ideals (3)**

Historical and critical study of the democratic philosophy, with emphasis upon ideological backgrounds and conflicts within the American scene. MR. HODGES.

**310 American Philosophy (2) f.**

The major trends and changing context of American thought from colonial days to the middle of the nineteenth century. MR. BERNDTSON.

- 311 Recent American Philosophy (3) w, s.**  
The leading philosophers and philosophic movements in American thought since 1850, with emphasis upon Dewey, James, Pierce, and Royce. MR. OLIVER.
- 315 Philosophical Ideas in Literature (3) w.**  
Metaphysical and ethical world-views embodied in representative classics of poetry and prose. MR. BERNDTSON.
- 317 Aesthetics (3) f, s.**  
A study of the nature of art and beauty and of their relation to other modes of experience. MR. BERNDTSON.
- 320 Philosophy of Science (3) f.**  
Prerequisite, junior standing and ten hours in science. A critical analysis of science from the point of view of its method, its presuppositions, and its implications for general philosophy. MR. BENJAMIN.
- 325 Social and Political Philosophy (3) f.**  
A study of selected major political theories, from the standpoint of the nature of law, from the Greeks to the present. MR. SOSENSKY.
- 330 Intermediate Logic (3)**  
Prerequisite, junior standing and Philosophy 1. A critical discussion of the formal aspects of thinking with special reference to symbolic logic, the nature of deductive systems, and certain questions of logical theory. MR. BENJAMIN.
- 335 Philosophy and Language (3)**  
Prerequisite, junior standing. Classical and contemporary views of the effect of language on man's experience and judgment of reality, knowledge, moral values, and art.
- 340 Latin-American Philosophy (2) w.**  
Prerequisite, one course in philosophy or junior standing. An examination of philosophical and related ideas in Latin America. MR. BERNDTSON.
- 345 Nineteenth Century Philosophy (3) f.**  
Prerequisite, junior standing and either Philosophy 5 or a course in the history of philosophy. An introduction to German, British, and French philosophy from Fichte to Nietzsche and Spencer. MR. BERNDTSON.
- 346 Contemporary Philosophy (3) w.**  
Prerequisite, junior standing and either Philosophy 5 or a course in the history of philosophy. A critical survey of tendencies and systems of the current century. MR. BERNDTSON.
- 350 Special Readings (1-3) f, w, s.**  
MEMBERS OF THE STAFF.
- 405 Problems in the Teaching of Philosophy (2)**  
Discussion of the presentation of material, selection of texts, and outlining of courses, with practice teaching under supervision. MR. BENJAMIN.
- 410 Seminar (1-3) f, w, s.**  
MEMBERS OF THE STAFF.
- 415 Fundamental Problems in Metaphysics (1-3) f, w, s.**  
MR. BERNDTSON.
- 420 Fundamental Problems in the Theory of Knowledge (1-3) f, w, s.**  
MR. BENJAMIN.
- 425 Fundamental Problems in the Theory of Value (1-3) f, w, s.**  
MR. BERNDTSON.
- 430 Continental Rationalism (1-3) f.**  
MR. OLIVER.
- 435 English Empiricism (1-3) f.**  
MR. OLIVER.
- 490 Research (Credit to be arranged) f, w, s.**  
MEMBERS OF THE STAFF.

## PHYSICAL EDUCATION

All students are required to take four semesters of physical education during their freshman and sophomore years.

**1-2 Required Course—Freshman Men (1) f, w, s.**

Various games and sports may be selected including basketball, volleyball, tennis, softball, golf and many others. Two class meetings each week. MEMBERS OF THE STAFF.

**3-4 Required Course—Freshman Women (1) f, w, s.**

A wide variety of games and rhythmic activities are offered including archery, soccer, softball, tennis, basketball, swimming, and dancing. Two class meetings each week. MEMBERS OF THE STAFF.

**5-6 Required Course—Sophomore Men (1) f, w, s.**

A continuation of 1 and 2. Two periods each week. MEMBERS OF THE STAFF.

**7-8 Required Course—Sophomore Women (1) f, w, s.**

A continuation of 3 and 4. Two periods each week. MEMBERS OF THE STAFF.

**11-12 Recreational Activities for Junior Women (1) f, w, s.**

Prerequisites 3, 4, 7, 8, or equivalents. Two periods each week. MEMBERS OF THE STAFF.

**13-14 Recreational Activities for Senior Women (1) f, w, s.**

A continuation of 11 and 12. Two periods each week. MEMBERS OF THE STAFF.

**20 Introduction to Physical Education, Men (2) f, w.**

Historical background, analysis of individual aptitudes, and description of training needed for teaching of physical education. MR. BUNKER, MR. EDWARDS.

## Professional Courses

**27 Modern Dance (1) f.**

Dance from the standpoint of its use in education and physical education. The course includes materials in fundamentals of movement and rhythm. Two periods each week. MISS TAYLOR; MRS. GORDON.

**28 Modern Dance (1) w.**

A continuation of course 27, including dance composition. Two periods each week. MISS TAYLOR.

**41 Freshman Physical Education Activities, Women (1) f.**

Designed for students in the teacher training curriculum in physical education. Activities are selected to meet prerequisites for upperclass courses. MEMBERS OF THE STAFF.

**42 Freshman Physical Education Activities, Women (1) w.**

A continuation of Course 41. MEMBERS OF THE STAFF.

**43 Sophomore Physical Education Activities, Women (1) f.**

A continuation of Course 42. MEMBERS OF THE STAFF.

**44 Sophomore Physical Education Activities, Women (1) w.**

A continuation of Course 43. MEMBERS OF THE STAFF.

**45 Individual Techniques in Men's Sports (1) f.**

Designed for second year students in the physical education teacher training program. Analysis and participation in skills involved in football and basketball. A prerequisite for Course 106. MEMBERS OF THE STAFF.

**46 Individual Techniques in Men's Sports (1) w.**

A continuation of Course 45, emphasis on skills involved in baseball and track and field. A prerequisite for Course 107. MEMBERS OF THE STAFF.

- 54 **Plays and Games (2) f, s.**  
Analysis and participation in play activities suitable for playgrounds, recreation centers, elementary and secondary schools. Two periods each week. Credit may be received for this course and 56. MISS MCKEE.
- 56 **Minor Games (2) f, w.**  
Methods of organizing and teaching informal and semi-organized games suitable for boys and men. Two periods each week. Credit may not be obtained for both this course and 54. MR. BUNKER; MR. RITCHIE.
- 101 **Physical Education Activities, Men (1) f.**  
Designed for third year students in the physical education teacher training program. Participation in selected games and stunts useful for teaching in schools, camps and recreation centers. MEMBERS OF THE STAFF.
- 102 **Physical Education Activities, Men (1) w.**  
A continuation of Course 101. MEMBERS OF THE STAFF.
- 106 **Major Sports, Men (3) f, s.**  
Coaching and management of interschool football and basketball squads. Prerequisite, Course 45 or coaching experience. MR. FAUROT; MR. STALCUP.
- 107 **Major Sports, Men (3) w, s.**  
Coaching and management of interschool baseball and track squads. Prerequisite, Course 46 or coaching experience. MR. SIMMONS, MR. BOTTS.
- 115 **Sports and Gymnastics. Junior Women (3) f.**  
Theory and practice of teaching sports, gymnastics, and tumbling. Analysis of skills; team play; officiating; and conduct of intramural programs. Prerequisites, courses 41, 42, 43, 44, or equivalent. MRS. BRYANT.
- 116 **Sports and Gymnastics. Junior Women (3) w.**  
A continuation of course 115. MRS. BRYANT.
- 117 **Sports and Gymnastics. Senior Women (3) f.**  
A continuation of courses 115, 116. MRS. HOWELL; MISS SMITH.
- 118 **Sports and Gymnastics. Senior Women (3) w.**  
A continuation of course 117. MRS. HOWELL.
- 122 **Rhythmic Form and Analysis (2) f.**  
A study of the nature of rhythm and the basic rhythmic motor experiences. This course includes an elementary analysis of musical as well as dance forms. MISS TAYLOR.  
*See Education H124.—Rhythmic Activities for Elementary Schools.*
- 125 **Elementary Folk Dancing (2) w.**  
Analysis of dance patterns and dances, selected and graded rhythms, singing games and folk dances, with program planning, methods of instruction and practice. MISS TAYLOR.  
*See Education H127.—Physical Education Activities for the Elementary School.*
- 128 **Theory of the Modern Dance (2) w.**  
Prerequisite, 2 semesters of dance. Brief history of the dance; the aims and the justifications of the dance in the school curriculum; application of dance material to different age groups. MISS TAYLOR.
- 134 **Technique of Swimming (2) f, w, s.**  
Principles and methods in teaching swimming, diving and life saving. The problems of construction and management of swimming pools are considered. Open to men and women of advanced swimming ability. MISS CLINE; MRS. HOWELL.
- 140 **Camp Leadership (2) w.**  
A study of camp history, standards, trends, programs and behavior problems. Practical application of outdoor cookery, camp craft, and trips. MR. LAWNICK; MRS. HOWELL.
- 142 **Leadership of Social Recreation (2) f, w, s.**  
A study of and practice in techniques of leading social activities suitable in settings such as schools, churches, settlement, or community houses, camps, clubs, and other social organizations. MR. LAWNICK.

- 144 The Organization and Conduct of Recreation Centers (2) f, w.**  
Problems of operation and management of playgrounds and indoor recreation centers. MR. LAWNICK.
- 151 Community Recreation (3) f.**  
(Same as Library Science 151). A survey of the recreational field, its history, development and significance to the community. Special fields of development. Promotion and administration of recreational programs. Volunteer service opportunities. Open to students interested in recreational leadership. MR. KELLER; MR. LAWNICK.  
*See Education H152.—History and Principles of Physical Education.*
- 155 Officiating for Women's Sports (2) f.**  
Methods and techniques of officiating in volleyball, basketball, and field sports. Opportunity will be offered to take examinations of the Women's National Officials Rating Committee. MEMBERS OF THE STAFF.
- 156 Officiating for Women's Sports (2) w.**  
Methods and techniques of officiating in softball and tennis. Opportunity will be offered to take examinations of the Women's National Officials Rating Committee. MEMBERS OF THE STAFF.
- 157 Officiating for Men's Sports (2) f.**  
Methods and techniques of officiating in football, basketball, wrestling, and swimming and diving. Practice in officiating under supervision in the Intramural Program will be required. MR. KELLER.
- 158 Officiating for Men's Sports (2) w.**  
Methods and techniques of officiating in softball, baseball, track and field, volleyball, and tennis. Practice in officiating under supervision in the Intramural Program will be required. MR. KELLER.
- 162 Advanced Folk Dancing (2) f.**  
History of dances of different nations, a study of characteristic steps and dances and methods of presenting material to high school and college classes. MISS TAYLOR.
- 180 Theory and Practice of Remedial Gymnastics, Women (2) f, w.**  
Methods of examination for the detection of physical defects; application of corrective exercises and massage. Prerequisites, anatomy and kinesiology. MISS KELLY.
- 181 Athletic First Aid (2) f, w.**  
Theory and practice in prevention, emergency care and rehabilitation of injuries encountered in vigorous games. Prerequisite, anatomy. MR. WAPPEL AND A PHYSICIAN SUPERVISOR.

## PHYSICS

### Basic Courses

- 1 Survey of College Physics (5) f, w.**  
Prerequisite, one year of high school algebra. A terminal survey of physics for the general student. Will meet physical science requirement for the A.B. degree but not premedical requirements. Four lectures and one laboratory period per week. MEMBERS OF THE STAFF.
- 11 Elementary College Physics (5) f, w, s.**  
Prerequisites, high school algebra and plane geometry. Covers mechanics, heat, sound and a few topics in magnetism and electrostatics. Three recitations and two laboratory periods per week. MEMBERS OF THE STAFF.
- 12 Elementary College Physics (3) f, w, s.**  
Prerequisite, course 11. The latter part of the sequence begun in course 11. It includes the remainder of electricity, modern physics, and light. Two recitations and one laboratory period per week. MEMBERS OF THE STAFF.

**23 General Physics (5) f, w, s.**

Mathematics 175 must be taken prior to or concurrently with this course. Covers mechanics, heat and sound. MR. GINGRICH AND MEMBERS OF THE STAFF.

**24 General Physics (5) f, w, s.**

Prerequisite, course 23. Covers magnetism and electricity, light, and modern physics. MR. GINGRICH AND MEMBERS OF THE STAFF.

**Advanced Courses**

A year of college physics with a grade of M or better is prerequisite for all advanced courses. Mathematics 175 must precede or accompany Course 311. Mathematics 175 must precede Course 312. Mathematics 201 must precede or accompany Courses 310 and 314.

**225 Fundamentals of Physics for High School Teachers: Part I (2) s.**

A survey of mechanics, heat, and sound for the high school science teacher. Special reference to the fundamental concepts, demonstrations, use of equipment, problems.

**226 Fundamentals of Physics for High School Teachers: Part II (2) s.**

Similar to course 225 but covering magnetism and electricity, light, and certain features of modern physics. Course 226 may be taken before course 225.

**310 Electricity and Magnetism (3) w, s.**

An introduction to the theory of electricity and magnetism and to its application in typical problems.

**311 Light (3) f, s.**

Covers the fundamental principles of geometrical and physical optics.

**312 Heat (3) w, s.**

A development of the concepts of heat and temperature based on the two laws of thermodynamics. Introduction to kinetic theory of gases and statistical mechanics.

**314 Mechanics (3) f, s.**

A development of the fundamental concepts and principles of mechanics, using mathematical methods. Many problems are used.

**380 Atomic Structure (3) f, s.**

Prerequisites, course 310 and 314 or equivalents. Studies of the electron, the atomic nucleus, the quantum theory. Bohr theory, line spectra, photoelectric effect, and the magnetic properties of atoms. An introductory course. MR. GINGRICH.

**Advanced Laboratory Courses**

A year of college physics with grades of M or better is prerequisite for all advanced courses. Mathematics 175 must precede and Mathematics 201 must precede or accompany any course in the following group.

**304 Electrical Measurements (3) f, w, s.**

One class and two laboratory periods per week. Theory and practice of methods of measurements of resistance, electromotive force, capacitance, inductance, etc., using direct and alternating currents of both audio and radio frequencies. MR. SCHMIDT.

**305 Applied Electronics Circuits (3) f, w, s.**

Prerequisite, course 304 and consent of instructor. Two class periods and one laboratory period per week. Designed to acquaint the student with the construction, use, and maintenance of electronic circuits commonly used in physical research. MR. HENSLEY.

**306 Atomic Physics Laboratory (3) f.**

Prerequisite, course 310 is recommended. One class and two laboratory periods per week. Experiments in electron emission, gas discharge, determination of fundamental atomic constants and atomic energy levels. MR. HENSLEY.

**307 Nuclear Physics Laboratory (3) w.**

One class and two laboratory periods per week. Includes experiments in natural and artificial radioactivity, properties of fundamental nuclear particles. MR. DULLER.

**308 Light Laboratory (3) w, s.**

One class and two laboratory periods or two three-hour laboratory periods per week. Experiments in geometrical and physical optics. MR. HOLROYD.

**Graduate Courses**

Integral calculus and two years of college physics or its equivalent are prerequisites for all courses numbered 400 or higher.

**400 Problems (Credit to be arranged) f, w, s.**

Laboratory work involving study of the literature of special experiments in physics. An introduction to research methods.

**410 Seminar (1) f, w.**

A colloquium in which all members of the departmental staff and students of sufficient attainments participate. May be elected repeatedly. Some credit in seminar is required for all graduate degrees in physics.

**415 Physical Electronics I (3) w.**

Theoretical and experimental aspects of the electronic properties of solids: metals, semi-conductors, and insulators. MR. HENSLEY.

**416 Physical Electronics II (3) f.**

Prerequisite, course 415. Selected topics from current literature; electronic properties of thin films, photoelectric emission from composite surfaces, oxide-coated cathodes, etc. MR. HENSLEY.

**417 Physical Electronics Laboratory (3) f, w, s.**

A laboratory course designed to acquaint the student with the techniques of research in physical electronics, glass manipulation, vacuum tube construction, and vacuum technique. MR. HENSLEY.

**418 X-Rays (3) w, s.**

Prerequisite, course 380 or equivalent. A study of the theory and application of X-ray apparatus, production of X-rays, absorption, scattering, refraction, X-ray spectra, and diffraction. MR. GINGRICH.

**419 X-Ray Laboratory (2-4) f, w, s.**

Prerequisite, consent of instructor. The technique of X-ray measurements acquired through a repetition of classical experiments on the absorption, scattering, polarization and diffraction of X-rays. MR. GINGRICH.

**420 Nuclear Physics I (4) w, s.**

Prerequisite, course 380. Properties of nuclei and nuclear radiations, detection methods, high-energy phenomena, introduction to nuclear theory. MR. DULLER.

**421 Nuclear Physics II (3) f, s.**

Prerequisite, course 420. Advanced topics in nuclear physics. Study of research papers on high-energy nuclear phenomena. MR. DULLER.

**475 Theory of Spectra (3) w, s.**

Prerequisite, course 471, or consent of instructor. A study of atomic and molecular spectra with emphasis on the use of spectral data for analysis and for determination of atomic and molecular structure. MR. HOLROYD.

**MATHEMATICAL PHYSICS**

The course in differential equations should be taken prior to or concurrently with any of the courses in mathematical physics.

**461 Dynamics (4) f; (3) s.**

Brief discussion of vectors and tensors. Classical dynamics of particles and rigid bodies, elasticity and vibrations. Newtonian, Lagrangian and Hamiltonian methods.



- 462 Electromagnetic Theory (4) w; (3) s.**  
Prerequisite, course 461. Classical electrostatics and electrodynamics. Development of Maxwell's equations. Application of Maxwell's equations in electromagnetic theory and optics. Introduction to theory of relativity.
- 464 Electrodynamics (3) f, w; (2) s.**  
Prerequisite, course 462 or consent of instructor. The special theory of relativity. Radiation from moving charges. Topics in diffraction and in microwaves. The electron theory of matter. MR. GOODMAN.
- 466 Methods in Mathematical Physics (3) f, w, s.**  
Complex variables and integration; infinite series; theory of linear differential equations, partial differential equations of physics, integral equations; transcendental functions.
- 468 Thermodynamics and Statistical Mechanics (3) f, w.**  
Prerequisites, courses 380 and 461. Thermodynamics as applied in physics and chemistry, laws of distribution, statistical methods of studying matter and radiation.
- 471 Quantum Mechanics I (4) f; (3) s.**  
Prerequisite, course 461 or consent of instructor. Proceeds from wave-particle duality to non-relativistic Schrodinger theory including operator formalism. Eigenvalue problems; barrier phenomena and scattering theory. Perturbation and variational methods. MR. GOODMAN.
- 472 Quantum Mechanics II (3) w, s.**  
Prerequisite, course 471. Angular momentum and special topics in spectroscopy. Emission of radiation. Dirac electron theory. Introduction to quantum theory of fields. MR. GOODMAN.
- 473 Quantum Mechanics III (3) f, w.**  
Quantum field theory of elementary particles.
- 478 Theory of Solid State I (3) w, s.**  
Theories of the mechanical, thermal, and electrical properties of solids. Consent of instructor is prerequisite. MR. GOODMAN.
- 479 Theory of Solid State II (3) f, w.**  
Theories of phase change, lattice imperfections, and optical and magnetic properties of solids.

## Research and Reading Courses

- 450 Research in Experimental Physics (1-3) f, w, s.**  
Selected experiments in advanced physics. A report is required. This work does not lead to a dissertation.
- 451 Research in Theoretical Physics (1-3) f, w, s.**  
Selected topics in advanced reading. A report is required. This work does not lead to a dissertation.
- 490 Research in Experimental Physics (Credit to be arranged) f, w, s.**  
Work for the preparation of a dissertation for the Master's or Doctor's degree.
- 491 Research in Theoretical Physics (Credit to be arranged) f, w, s.**  
Work for the preparation of a dissertation for the Master's or Doctor's degree.

## PHYSIOLOGY AND PHARMACOLOGY

- 201 Elements of Physiology (5) f, w, s.**  
The basic physiological principles and activities with special reference to the human body, for those desiring a general knowledge of physiology. DR. MERRICK; DR. RANDALL; DR. RUSSELL.
- 204 Elements of Pharmacology (2) f.**  
Prerequisite, course 201. An introductory study of drugs commonly used in clinical medicine with particular reference to pharmacodynamics, using selected laboratory animals. DR. WESTFALL; DR. RUSSELL.

- 250 Medical Physiology I (5) w.**  
The physiology of muscle, nerve, cardio vascular system and respiratory system. Laboratory work based primarily on the reactions of mammals and man. DR. MEYER; DR. PLATNER; DR. MERRICK; DR. RANDALL.
- 251 Medical Physiology II (5) f.**  
Prerequisite, Physiology 250. Physiology of the digestive, excretory, endocrine, central nervous systems and the special senses. DR. PLATNER; DR. MEYER; DR. RANDALL; DR. MERRICK.
- 260 Pharmacology (6) w.**  
Prerequisites, courses 250 and 251. Basic pharmacology for medical practice. DR. WESTFALL; DR. RUSSELL.
- 301 Biophysics (2) f.**  
A study of the main quantitative and physical concepts in medicine, including ionizing radiations. DR. RANDALL.
- 303 Physiology of Environmental Stress (2) w.**  
Prerequisite, course 201, 5 hrs. chemistry, 5 hrs. physics, or equivalent. A study of the effects of certain environmental factors on various body functions. DR. PLATNER.
- 400 Problems (Credit to be arranged) f, w, s.**  
Individual problems in physiology and pharmacology are assigned to expand previous work or as an introduction to research. MEMBERS OF THE STAFF.
- 410 Seminar (1) f, w. Physiology and Pharmacology.**  
Review of current literature on physiological and pharmacological topics. MEMBERS OF THE STAFF.
- 416 Advanced Experimental Physiology (4) f.**  
Prerequisites, course 201 and graduate standing. Advanced studies of the physiology of the various systems and organs of the mammalian organism. DR. MEYER.
- 420 Physiological and Pharmacological Methods (3) w.**  
Prerequisite, course 416. A review of the objectives and approaches in physiological and pharmacological experimentation. MEMBERS OF THE STAFF.
- 430 Experimental Pharmacodynamics (4) w.**  
Prerequisite, course 416. Actions of selected groups of substances affecting the normal physiology of the organism. DR. RUSSELL; DR. WESTFALL.
- 450 Research (Credit to be arranged) f, w, s.**  
Opportunities for research in physiology and pharmacology, not leading to a dissertation, are offered. MEMBERS OF THE STAFF.
- 490 Research (Credit to be arranged).**  
Research in physiology and pharmacology leading to a dissertation. MEMBERS OF THE STAFF.

## POLITICAL SCIENCE

- 1 American Government (5) f, w.**  
A basic course dealing with the American system of government. Political organization, institutions, and functions at national, state, and local levels are covered. MR. KARSCH AND MEMBERS OF THE STAFF.
- 55 International Relations (3) f, w.**  
Contemporary international affairs, including the family of nations, the control of national foreign policies, and competition and cooperation in the legal, political, economic and social fields. MR. HILL; MR. SCHWADA.
- 101 State Government and Administration (3)**  
Prerequisite, at least three hours in American national government. The structure and operation of governments on the state level with particular reference to that of Missouri under the new constitution. MR. FAUST; MR. KARSCH.

- 198 **Distinction (1-3) f, w.**  
Special readings and reports in the several fields of political science. Limited to candidates for graduation with distinction in political science. MEMBERS OF THE STAFF.
- 200 **Problems (1-3) f, w.**  
MEMBERS OF THE STAFF.
- 201 **Local Rural Government (2) f, w.**  
Prerequisite, course 1. The development, organization, and functions of the county, township, school district, and other rural units of government in the United States, with special reference to Missouri. MR. SPIEGEL.
- 202 **Administration of Justice (2) f.**  
Prerequisite, course 1. The development, organization and procedure of our judicial system including the selection and tenure of judges, court organization and the prosecution of criminal offenses. MR. SPIEGEL.
- 203 **British Government (3) f, w.**  
Prerequisite, course 1. A study of the constitutional development, organization, and practical workings of the government of Great Britain and the British Commonwealth Nations. MR. KAHLE.
- 216 **Legislation (2) w.**  
Prerequisite, course 1 and junior standing. The organization, procedure, and practice of American national and state legislative bodies. MR. KARSCH.
- 260 **Introduction to Political Thought (3) f, w.**  
Prerequisites, course 1 and junior standing. A survey of political thought relating to the source and nature of authority, forms of government, and the control of power. MR. DERGE.
- 304 **Inter-American Relations (3) f, w.**  
Prerequisite, course 1 and junior standing. A survey of recent problems in the relations of the United States with Latin American powers. MR. KAHLE.
- 305 **Political Parties (3) f, w.**  
Prerequisite, course 1. The development, organization, functions and activities of major and minor political parties; pressure groups; and election administration, especially in the United States. MR. BRADSHAW.
- 306 **Municipal Government (3) f.**  
Prerequisite, course 1. A study of the growth of cities; their legal status; municipal politics and elections; forms of city government. MR. SPIEGEL.
- 307 **Municipal Administration (3) w.**  
Prerequisite, course 306. A study of the functions and administrative activities of American city governments. MR. SPIEGEL.
- 308 **Pan-American Organization (2) f.**  
Prerequisites, one course in the international field or Latin-American History, and junior standing. Institutional bases for political, economic, and military cooperation in the western hemisphere. MR. KAHLE.
- 309 **International Law (3) f.**  
Prerequisites, course 1 and junior standing. The legal system which defines the rights of states in the international community, illustrated by court decisions and state practice. MR. HILL.
- 310 **Principles of Public Administration (3) f, w.**  
Prerequisites, course 1 and junior standing. A survey of public administration, with reference to organization, financial administration, personnel management, and judicial control of the administrative process. MR. FAUST.
- 311 **Administrative Regulation of Business (3) f, w.**  
Prerequisites, course 1 and junior standing. A study of the powers and procedures of the more important government agencies concerned with the regulation of business. MR. FAUST.

- 314 **American Foreign Policies (3) w.**  
Prerequisites, Political Science 55 and History 20. The bases, formulation, and evaluation of current American foreign policies. MR. SCHWADA.
- 315 **Foreign Service Organization (3) w.**  
Prerequisites, course 1 and junior standing. A survey of the conduct of foreign affairs in the United States and in selected foreign states. MR. HILL.
- 320 **The American Constitution (3) f.**  
Prerequisites, course 1 and junior standing. A study of Supreme Court decisions dealing with the American federal system, federal and state legislative powers and limitations upon them, including important Missouri cases. MR. SCHWADA.
- 321 **Tax Administration (3) f.**
- 351 **South American Governments (3) f.**  
Prerequisite, course 1 and junior standing. The development and present status of political institutions in South America, with emphasis on current political problems. MR. KAHLE.
- 352 **Mexican and Caribbean Governments (3) w.**  
Prerequisite, course 1 and junior standing. The development and present status of political institutions in Mexico and Caribbean countries, with special emphasis on current political problems. MR. KAHLE.
- 354 **Continental European Governments (3) w.**  
Prerequisite, junior standing and course 203 or 6 hours of European History. A study of the constitutional development, organization, and practical workings of the governments of France, Italy, Germany, and Russia. MR. KAHLE.
- 356 **Soviet Political Institutions (3) w.**  
Prerequisite, course 1 and junior standing. The growth and operation of governmental and party institutions of the U.S.S.R. and their relation to Soviet theory and law.
- 385 **International Organization (3) w.**  
Prerequisites, course 1 and junior standing. The forms and functions of international organizations, with special reference to the United Nations and to the International Court of Justice. MR. HILL; MR. SCHWADA.
- 390 **Democratic Theory (3) w.**  
Prerequisites, ten hours of Political Science, and junior standing. Constitutionalism, representation, individualism, social justice, and other ideological assumptions of American democracy. MR. KARSCH.
- 400 **Problems (Credit to be arranged) f, w.**  
Opportunity is offered to graduate students who have completed the necessary prerequisite courses to choose topics in one of the fields of Political Science for individual study. MEMBERS OF THE STAFF.
- 402 **Problems in Comparative Government (3) f.**  
Prerequisite, course 203. Detailed individual studies of selected problems of English, French, German, Italian, and Russian governments. MR. KAHLE.
- 403 **Problems in Public Administration (3) w.**  
Prerequisite, course 201, 306, or 310. An intensive study of problems selected from any one of the following: budgeting, fiscal organization, personnel management, or administrative regulation. MR. FAUST.
- 404 **Problems in International Politics (3) f.**  
Prerequisite, one of the following courses: Political Science 304, 309; History 371, 372. An intensive study of the problems of foreign policy formulation and implementation, with special emphasis upon American foreign policies. MR. SCHWADA.
- 405 **Problems in Political Parties (2) w.**  
Prerequisite, course 305, or equivalent training. Specific problems in the fields of party activities, pressure politics, public opinion, popular control, and election administration. MR. BRADSHAW.

- 409 Problems in International Law (3) w.**  
Prerequisite, course 309. A detailed study of certain specific problems in international law. MR. HILL.
- 416 Problems in Legislation (3) w.**  
Prerequisite, course 216, 305, or 311. Intensive investigation of individual problems of policy determination on state and national levels. MR. KARSCH.
- 460 Early Political Thought (3) w.**  
A review of the history of political thought from Plato to Rousseau. Classic masterpieces, such as Aristotle's Politics, are read in full and discussed critically. MR. DERGE.
- 461 Modern Political Thought (3) w.**  
A review of modern political theories, with some attention to their historical settings. Selections of leading theorists and recent tendencies are critically examined. MR. KARSCH.
- 490 Research (Credit to be arranged) f, w.**  
A thesis is required of all candidates for advanced degrees majoring in Political Science. A student should confer with the instructor in whose field he wishes to do his research work. MEMBERS OF THE STAFF.
- The following courses in Public Law may be taken for graduate credit with the approval of the student's major adviser and with the permission of the instructor in the course.*
- 425 Administrative Law (3) w.**  
MR. HOWARD.
- 445 Taxation (3) f.**  
MR. HOWARD.
- 451 Labor Law (3) w.**  
MR. HOWARD.

## PORTUGUESE (See ROMANCE LANGUAGES)

## POULTRY HUSBANDRY

- 1 Poultry Production (3) f, w.**  
A general course in Poultry Husbandry including a study of breeds, breeding, culling, incubation, brooding, housing, feeding, management, marketing and the control of disease. MR. FUNK AND MEMBERS OF THE STAFF.
- 101 Poultry Farm Management Practices (2) w.**  
Students will receive instruction and practice in the operation and management of a poultry farm. Offered in 1956-57 and alternate years. MR. FUNK AND STAFF.
- 200 Problems (Credit to be arranged) f, w, s.**  
For advanced undergraduates. Students may enroll for problems in poultry breeding, incubation, management, marketing, nutrition, or turkey production. MEMBERS OF THE STAFF.
- 201 Poultry Judging (2-3) f.**  
Prerequisite, course 1. The judging and grading of poultry and poultry products including production judging, grading live and dressed poultry and eggs. Training in flock selection and blood testing. MR. KINDER.
- 202 Incubation, Brooding and Broiler Production (3) w.**  
Principles and practices used in incubation, brooding and broiler growing. Offered in 1956-57 and alternate years. MR. STEPHENSON.
- 300 Problems (Credit to be arranged) f, w, s.**  
For seniors and graduate students. Students may enroll for problems in poultry breeding, incubation, management, marketing, nutrition, physiology or turkey production. MEMBERS OF THE STAFF.

- 301 Marketing Poultry Products (3) f.**  
Prerequisite, course 1. A study of the marketing of poultry products with emphasis upon the commercial practices used in handling and processing poultry and eggs. MR. BIELLIER.
- 302 Poultry Farm Management (3) w.**  
Must be preceded or accompanied by course 1. A study of poultry farm methods and practices and factors affecting costs and returns with poultry. MR. KINDER.
- 304 Turkey Production and Management (3) w.**  
The principles and practices used in turkey raising. MR. BIELLIER.
- 305 Hatchery Operation and Management (3) w.**  
A study of the operation and management of hatcheries. Offered in alternate years. Offered in 1955-56. MR. FUNK.
- 306 Processing Poultry and Eggs (2) f.**  
Prerequisites, courses 1 and 301 or consent of instructor. A study of methods and practices used in processing poultry and eggs, including practices in grading, packing and processing. MR. FORWARD.
- 307 Poultry Breeding (3) w.**  
Prerequisites, Poultry Husbandry 1, Animal Husbandry 203, or equivalent courses. Application of the principles of heredity to improvement in poultry. Emphasis is placed on economic characters, selection techniques, and breeding methods. Offered in alternate years. Not offered in 1956-57. MR. STEPHENSON.
- 308 Poultry Feeding and Nutrition (3) w.**  
Prerequisites, Poultry Husbandry 1 and Animal Nutrition 202. Application of principles of nutrition and recent research to poultry feeding and feed formulation. MR. SAVAGE.
- 309 Avian Biology (3) f.**  
Prerequisites, Poultry 1, Zoology 1. A study of the anatomy, embryology, physiology and endocrinology of the domestic fowl. Offered in alternate years. Not offered in 1956-57. MR. BIELLIER.
- 350 Special Readings (1-2) f, w, s.**  
Scientific literature on selected subjects will be reviewed. MEMBERS OF THE STAFF.
- 400 Problems (Credit to be arranged) f, w, s.**  
Advanced study with a research problem selected by the student and the instructor. MEMBERS OF THE STAFF.
- 410 Seminar (1) f, w.**  
Scientific literature and problems in Poultry Husbandry will be reviewed and discussed by the class. MEMBERS OF THE STAFF.
- 420 Design and Analysis in Animal Experimentation (3) f.**  
Prerequisite, Agricultural Economics 460, 461, or equivalent. Principles of efficient experimental design and statistical analysis as applied to animal investigations. Offered in 1956-57 and alternate years. MR. STEPHENSON.
- 423 Genetics of Populations (4) f.**  
Prerequisites, Animal Husbandry 313, Agricultural Economics 461 or equivalent. Genetic composition of populations and conditions which influence their rate of change. Relative effectiveness of various breeding plans. Offered in alternate years. Not offered in 1956-57. MR. STEPHENSON.
- 490 Research in Poultry Husbandry (Credit to be arranged) f, w, s.**  
Graduate students may conduct research investigations and present the results as a thesis or a written report. MEMBERS OF THE STAFF.

## PSYCHOLOGY

### Basic Courses

#### 1 General Psychology (3) f, w, s.

No prerequisite. A survey of the facts, principles and methods in the study of human behavior. This course does not satisfy the biological science requirement for the A.B. degree. MEMBERS OF THE STAFF.

**2 General Experimental Psychology (5) f, w.**

No prerequisite. A survey of the facts, principles and methods in the study of human behavior. Lectures and laboratories. Satisfies the requirement in biological science (except in the College of Education). MR. DANIEL; MR. LICHTÉ; MRS. BURTON.

**Service Course**

**10 Educational and Social Efficiency (2) f, w.**

No prerequisite. A course in effective study techniques, vocational selection, and personality problems. No credit for juniors and seniors. Does not apply toward a psychology major. MR. NICKELS.

**Intermediate Courses**

**15 Psychology Methods Laboratory (3) w.**

Prerequisite, Psychology 1 or 2. Projects and experiments representative of the field of general psychology. MR. DANIEL AND MEMBERS OF THE STAFF.

**20 Psychology of Personal Adjustment (2) f, w, s.**

Prerequisite, Psychology 1 or 2. The dynamic principles of human behavior, with an emphasis on motivation, frustration, defense against anxiety, and personality organization. MR. MCKINNEY; MR. KALISH.

**30 Applied Psychology (2 or 3) w, s.**

Prerequisite, Psychology 1 or 2. The application of psychology to business with emphasis on advertising, personnel selection, and efficiency. Briefer reference to personal efficiency, law, medicine and education. MR. LICHTÉ; MR. MCKINNEY.

**150 Social Psychology (3) f, s.**

Prerequisite, Psychology 1 or 2. The social bases of behavior and the behavior of the individual in social situations. Application of the psychological principles to problems such as propaganda, juvenile delinquency, and race prejudice. MRS. BURTON.

**170 Child Psychology (3) f, s.**

Prerequisite, Psychology 1 or 2. The origins and development of human behavior, with emphasis on the principles of child guidance and personality development. MRS. EASON.

**190 Distinction (3) f, w.**

Special work for candidates for graduation with distinction in psychology. MEMBERS OF THE STAFF.

**201 Psychological Statistics (3) f, w.**

Prerequisite, Psychology 1 or 2. Statistical methods used in psychological measurement and in the analysis of psychological data: frequency distribution analysis, sampling, tests of significance, and correlation methods. MR. BAKAN.

**212 Human Learning (3) f.**

Prerequisite, Psychology 1 or 2. The factors affecting human learning and retention, and the basic principles of learning and forgetting. MR. MARX; MR. LAWSON.

**230 Individual Differences (2) w, s.**

Prerequisite, Psychology 1 or 2. A survey of individual and group differences. Contributions of various factors to variations in behavior. MR. LICHTÉ; MR. BROWN.

**Advanced Applied Laboratory Courses**

**302 Psychological Tests and Measurements (3) f.**

Prerequisites, Psychology 201 and 230. Theory and practice of testing and measurement in psychology. MR. KALISH.

**303 Industrial Psychology I (3) f.**

Prerequisite, Psychology 201. Selection and placement of personnel in business and industry. Not offered 1956-57.

**304 Industrial Psychology II (3) w.**

Prerequisite, Psychology 201. Training, efficiency and morale in business and industry. Not offered 1956-57.

**Advanced Experimental Laboratory Courses****308 Psychology of Emotions (3) w.**

Prerequisite, Psychology 314. Research and theory in the field of affection and emotion, with emphasis upon response processes. MR. DANIEL.

**310 Psychology of Learning (3) w.**

Prerequisite, Psychology 212. A survey of principles of classical and instrumental conditioning, with special reference to data from animal studies, and an introduction to learning theories. MR. MARX; MR. LAWSON.

**311 Psychology of Sensation and Perception (3) f.**

Prerequisite, 6 hours of psychology. The minor senses, vision, visual perception, audition, auditory perception. MR. LICHTÉ.

**312 Psychology of Action (3) w.**

Prerequisite, Psychology 201 and 314. Reflex and voluntary action, motor skills, mental and physical work, fatigue and efficiency. MR. DANIEL.

**Advanced Lecture Courses****314 Physiological Psychology (3) f.**

Prerequisite, 8 hours of psychology or psychology and biology. Survey of the physiological bases for behavior. MR. DANIEL; MRS. BURTON.

**315 Psychology of Personality (3) w.**

Prerequisite, Psychology 1 or 2. An introduction to the study of human personality. MR. McKINNEY.

**320 Psychology of Music (2) w.**

Prerequisite, 3 hours of psychology or 3 hours of music theory. Attributes of sound, characteristics of musical performances, aptitudes for listening and performance, the expressiveness of music, the uses of music, and learning in music. MR. LICHTÉ.

**330 Animal Behavior (3) w.**

Prerequisite, 8 hours of psychology or the biological sciences, Psychology 1 or 2 required. A comparative study of animal behavior. The relation of behavior to bodily structure and environment. MR. MARX.

**340 Advanced Social Psychology (3) w.**

Prerequisite, Psychology 150. A survey of theoretical, applied, and research aspects of social psychology.

**345 Abnormal Psychology (3) w, s.**

Prerequisite, 8 hours of psychology, including 20 or 170. A survey of the causes, forms and methods of treating behavior abnormalities, with emphasis on the neuroses and psychoses. MR. BROWN.

**350 Special Readings (3) f, w, s.**

Individual guidance on selected topics by permission of staff members. MEMBERS OF THE STAFF.

**352 Psychology for Extension Workers (2).**

Prerequisite, 6 hours of psychology or the equivalent. Not offered 1956-57.

**360 Systematic Psychology (3) f.**

Prerequisite, 9 hours in psychology and senior standing. A critical evaluation of major theoretical systems of psychology with an introduction to methodological problems of theory construction and system-making and an emphasis on the integration of recent trends. MR. MARX.



- 361 The History of Psychology (3) w.**  
Prerequisite, 9 hours in psychology and senior standing. Historical foundations of contemporary psychology. MR. BAKAN.
- 370 Psychology of Development (3) f.**  
Prerequisite, Psychology 170. Primarily for majors and graduate students in psychology and related fields. Principles, theories, and research in normal and psychopathological human development. MR. BROWN.

## Graduate Courses

- 400 Problems (1-5) f, w, s.**  
On consultation with the instructor concerned, properly qualified students may undertake original investigations of psychological problems. MEMBERS OF THE STAFF.
- 404 Introduction to Clinical Psychology (3) f.**  
Prerequisite, Psychology 302, 315, 345 or equivalents. Survey of professional and scientific aspects of clinical psychology. MR. BROWN.
- 405 Clinical Methods in Psychology (3) w.**  
Prerequisite, Psychology 404. Lecture and laboratory. Techniques, theories, and principles of intensive individual case investigation. MR. BROWN.
- 408 Behavior Disorders (3) f.**  
Prerequisite, Psychology 345 or equivalent. Problems of etiology, diagnosis, and treatment in psychopathology. Consideration of theory, research, and case histories. MR. KALISH.
- 410 Seminar (1) f, w.**  
Presentation of psychological problems and investigations by instructors and students. MEMBERS OF THE STAFF.
- 411 Studies in Professional Problems (3) f.**  
Sources for psychological literature research, techniques of scientific reporting, and problems of professionalization. MR. DANIEL.
- 412 Clinical Psychometrics I (3) w.**  
Prerequisite, Psychology 404. Techniques of administration and interpretation of tests of intelligence, deterioration, and other diagnostic devices. Lecture and laboratory. MRS. ALLEE.
- 414 Personality Appraisal I (3) f.**  
Prerequisite, Psychology 412. Techniques of administration and interpretation of projective type diagnostic devices. Lecture and laboratory. MRS. ALLEE.
- 416 Studies in Personality (2) w.**  
Prerequisite, Psychology 315 or equivalent. Contemporary research and theory in personality, including the relationship of personality to learning and perception. MR. BROWN; MR. KALISH; MR. MCKINNEY.
- 419 Advanced Psychological Statistics I (3) f.**  
Prerequisite, Psychology 100. Correlation; theory of testing statistical hypotheses; analysis of attribute data; introduction to analysis of variance and covariance. MR. BAKAN.
- 420 Advanced Psychological Statistics II (3) w.**  
Prerequisite, Psychology 419. Theory of exact testing; special tests of significance; the relationships among tests of significance; advanced problems in analysis of variance and covariance. MR. BAKAN.
- 421 Design of Experiments in Psychology (2) f.**  
Prerequisite, Psychology 420. Techniques for organizing experiments and analyzing data to achieve maximum efficiency in obtaining information from large and small scale studies. MR. BAKAN.
- 422 Studies in Learning (2) w.**  
Prerequisite, Psychology 310. Critical consideration of selected experimental work in the psychology of learning and memory. MR. MARX; MR. COLLIER.

- 423 Studies in Audition (2)**  
Prerequisite, Psychology 311. Reports and discussion of contemporary research in audition, with emphasis on the attributes of auditory experience and their physical and physiological correlates. MR. LICHTÉ.
- 424 Studies in Physiological Psychology (2) w.**  
Prerequisite, Psychology 314. Critical consideration of recent experimental and theoretical work in physiological psychology. MR. DANIEL.
- 425 Studies in Therapeutic Theory and Methods (2) w.**  
Prerequisite, Psychology 404. Contemporary theories and techniques of counseling emotional problems, including group therapy. MR. MCKINNEY; MR. KALISH.
- 426 Studies in Comparative Psychology (2) f.**  
Prerequisite, Psychology 330. Critical consideration of selected experimental work in animal behavior. MR. MARX; MR. COLLIER.
- 427 Studies in Visual Perception (2) w.**  
Prerequisite, Psychology 311. Critical evaluation of current theories and contemporary research in visual perception. MR. LICHTÉ.
- 428 Studies in Thought and Language (2) w.**  
A study of the function of symbols in explicit and implicit behavior. MR. BAKAN.
- 429 Studies in Theories of Learning (2) f.**  
Prerequisite, Psychology 310. Intensive consideration of the major contemporary theories of learning, and their extension to general theories of behavior and motivation. MR. MARX.
- 430 Studies in Contemporary Psychological Theory (2) w.**  
Prerequisite, Psychology 360. The logic of modern psychology with emphasis on major methodological trends in theory construction in recent years. MR. MARX; MR. LAWSON.
- 445 Clinical Practicum I (1-4) f, w.**  
Prerequisites, Psychology 404, 412, and consent of instructor. Supervised training in the use and interpretation of psychological techniques in co-operating clinics and institutions. MR. BROWN.
- 446 Clinical Practicum II (1-4) f, w.**  
Prerequisites, Psychology 414, 425, 445. Supervised training in counseling and psychotherapy in co-operating clinics and institutions. MR. BROWN.
- 450 Research (credit arranged) f, w, s.**  
Experimental investigations not leading to a thesis. MEMBERS OF THE STAFF.
- 460 Clinical Internship (0).**  
Prerequisite 446 and Ph. D. candidacy in clinical psychology. Supervised field work in clinical psychology in an approved agency. MEMBERS OF THE STAFF.
- 490 Research (credit arranged) f, w, s.**  
Investigations in psychology undertaken with the expectation that the work will terminate in a thesis. MEMBERS OF THE STAFF.

## RELIGION

Courses in religion offered by the Bible College of Missouri or by the Baptist Chair of Bible may be taken for credit toward degrees in the University. All courses are accredited in the College of Arts and Science. A student may elect as many as fourteen semester hours toward the degree of Bachelor of Arts. Students working toward other degrees may elect courses in Religion by consent of the deans of the respective schools.

### INTRODUCTION

- 3 Fundamental Moral and Religious Values (2) f, w.**  
The problem of right or wrong in the light of the Kingdom of God and Jesus' conception of the abundant life; the method, scope, and limitations of science in relation to religion. A philosophical approach to the problems of immortality, God, and freedom. Open to freshmen and sophomores. Juniors and seniors in the College of Arts and Science may not take this course for credit. MR. PEERY; MR. NEIGER.

## Language and Literature

### *Biblical Literature*

- 102 **The Poetry of the Bible (2) f, w.**  
Prerequisite, six hours of literature or course 110, *Life and Literature of the Old Testament*. MR. KEYFITZ.
- 110 **Life and Literature of the old Testament (2) f, w.**  
Prerequisite, sophomore standing or course 3. The social, economic, and religious phases of the periods in which particular texts were written. The literary quality and growth of ideas in the Old Testament. MR. KEYFITZ; MR. NEIGER.
- 121 **Life and Literature of the New Testament (2) f, w.**  
Prerequisite, sophomore standing or course 3. A study of the central documents of the Christian religion to determine the origin, authorship, literary structure, nature, and permanent value. MR. PEERY; MR. NEIGER.
- 122 **Life and Teachings of Jesus (3) f, w.**  
Prerequisite, sophomore standing or course 3. After a brief historical introduction, a study of the principal events in the life of Jesus. The course will include a study of Jesus' teachings with application to life today. MR. SHROUT; MR. NEIGER.
- 201 **Masterpieces of Sacred Literature (3) f, w.**  
Prerequisite, junior standing and six hours of literature. A study of selected texts in world religious literature in English. The course will include representative prose and poetry in Egyptian, Babylonian, Persian, the Old and New Testaments, the Koran, Chinese and Hindu sacred writings. Each division will be introduced with a historical background of the selections studied. MR. KEYFITZ.

### *Language*

- 100 **Introduction to the Study of New Testament Greek (3) f.**  
Prerequisites, Greek 3 and 5. The characteristics of the language, a drill on forms and syntax, the building of a New Testament vocabulary, a translation of John. MR. SHROUT.
- 101 **Introduction to the Study of New Testament Greek (2) w.**  
A continuation of course 100.
- 105 **Hebrew Language I (3) f.**  
Beginner's course: The alphabet, grammatical principles, acquisition of vocabulary, and translation of Genesis I-VIII, with some easy reading. MR. KEYFITZ.
- 106 **Hebrew Language II (3) w.**  
A continuation of course 105.
- 107 **Hebrew Language III (3) f.**  
Advanced course: A knowledge of the forms is presupposed. Introduction to syntax. Selections from the prophets and Hagiographa. MR. KEYFITZ.
- 108 **Hebrew Language IV (2) w.**  
A continuation of course 107.
- 111 **Post-Biblical Hebrew (2) f.**  
Lectures on history of post-Biblical Hebrew Literature. Representative selections read from Talmudic, Midrashic, and modern prose and poetry. Open to students who qualify in knowledge of Hebrew. MR. KEYFITZ.
- 112 **Post-Biblical Hebrew (2) w.**  
A continuation of course 111.
- 113 **Elementary Syriac (2) f.**  
A beginner's course in Syriac. Grammar and reading of easy selections from Kalilah wa-Dimnah. MR. KEYFITZ.
- 114 **Elementary Syriac (2) w.**  
A continuation of course 113.

**115 Elementary Arabic (2) f.**

An elementary course in Arabic, in Arabic grammar, exercises in the language, and reading of selected portions in the Arabian Nights. MR. KEYFITZ.

**116 Elementary Arabic (2) w.**

A continuation of course 115.

**117 Assyrian for Beginners (2) f.**

An introductory course in cuneiform. Grammar and selected readings in Assyrian annals. MR. KEYFITZ.

**118 Assyrian for Beginners (2) w.**

A continuation of 117.

**119 Introduction to Egyptian (2) f.**

The students will be introduced to hieroglyphics through selected reading from Sinhue and other Egyptian narratives. The course will be accompanied by a study of Egyptian grammar. MR. KEYFITZ.

**120 Introduction to Egyptian (2) w.**

A continuation of course 119.

## History

### *History of Religion*

**130 Comparative Religion (2) f, w.**

Prerequisite, junior standing or instructor's consent. A survey of the chief religions now prevailing in the world, including Hinduism, Buddhism, Confucianism, Shinto, Zoroastrianism, Islam, Judaism, and Christianity. MR. HEARN.

**131 The Living Religions of the World (3) f, w.**

Prerequisites, junior standing or instructor's consent. A survey of the living religions of the world, including Hinduism, Buddhism, Confucianism, Shinto, Zoroastrianism, Islam, Judaism, Christianity, and other religions. MR. HEARN.

**132 Ethics of World Religions (2) f, w.**

Prerequisite, junior standing or consent of the instructor. A study of the ethics of the above religions. Surveyed first in their formative periods; their scriptural expressions; then in their present approach to ethical problems of the modern world. MR. HEARN.

### *Oriental History*

**75 The Area of the Middle East (3) f, w.**

The survey of the geography, resources, and means of communication in the Biblical world, including Egypt, Palestine, Asia Minor, Mesopotamia, and Persia; the growth of civilization from ancient to modern times; religion, culture, and national movements will receive special attention. MR. KEYFITZ.

**140 The Ancient Orient (2) f.**

The rise of civilization in Egypt and Mesopotamia, and political history of ancient kingdoms and empires. A study of history of Assyria, the Hittites, and Syria-Palestine through the Amarna period. Special consideration to material civilization, spiritual culture, art, literature, and religion. MR. KEYFITZ.

**141 The Early History of Israel (3) f, w.**

Historical survey of Israel from settlement in Palestine to end of the Maccabean period. Chief content of the course is evaluation of government, law, religion, and prophecy. Palestine's contacts with neighbors and their influence upon Israel's ideas and institutions especially stressed. Open to freshmen. MR. KEYFITZ.

**145 Religion of the Ancient Hebrews (2) f, w.**

Comparative study of religions of Egypt and Mesopotamia, and their influence on religion of Palestine. Survey of religious development in pre-Hebrew days; early Hebrew religious beliefs; and rise of henotheism and the triumphs of monotheism. MR. KEYFITZ.

**146 Post-Exilic Religion of the Jews (2) w.**

Progress of religious thought under Ezekiel and other post-exilic prophets. Development of democracy in religious practice and later education. Importance of synagogue. Judaism's progress under Scribes, Pious, and Pharisees. MR. KEYFITZ.

*Church History***150 Origins of the Christian Church (2) f, w.**

A study of the ideals and environment out of which the early Christian Church developed. Source materials; pre-Christian life and literature of the Jewish people; customs, philosophical and religious beliefs of contemporary nations; New Testament and other first century writings. MR. HEARN.

**152 History of the Christian Church (2) f, w.**

A survey of the outstanding developments in the life of the church from the Apostolic age to the present. The history of the church will be considered in the light of political, economic, and social movements. MR. HEARN.

**154 History of Religion in America (2) f, w.**

A study of the religious background of the early colonists, the distinctive features of American religious history, the growth of denominations, movements toward unity, and other modern trends. MR. HEARN.

**Philosophy****171 Philosophy of Religion (3) f, w.**

Prerequisite, junior standing or instructor's consent. Philosophy which inquires into the origin, nature, and function of religion; examines source and validity of claims religion makes; clarifies fundamental religious concepts. MR. HEARN.

**The Rural Church****160 The Church in the Rural Community (3) f, w.**

Prerequisite, instructor's consent. A study of the Rural Church movement. The relationship of the church to its social setting, and to the programs of the agricultural and social agencies. The cooperation and use of these resources for the development of a comprehensive community program. MR. RICH.

**165 Rural Church Administration (3) f, w.**

Prerequisite, instructor's consent. Principles and problems of Rural Church Administration. Special attention will be given to the purposes, duties, organization, financing, and surveys of the church. Field visits will be made to selected churches. MR. RICH.

**170 Field Work in Rural Churches (2) f, w.**

Prerequisite, instructor's consent. Designed for students planning to be Rural Ministers. Program of guidance and field supervision, conferences with the local church, and reports of accomplishment. MR. RICH.

**ROMANCE LANGUAGES****French****1 Elementary Course (5)**

Beginning course in reading, composition, and conversation. Students with credit for one year of high school French or equivalent receive 3 credits upon successful completion of the course. Sections with laboratory emphasize conversation. MEMBERS OF THE STAFF.

**2 Intermediate Course (5)**

Continuation of course 1. Prerequisite, credit for 2 years of high school French or equivalent. Students with credit for 3 years of high school French or equivalent receive 3 credits upon successful completion of the course. Sections with laboratory emphasize conversation. MEMBERS OF THE STAFF.

**103 French Reading (3)**

Prerequisite, course 2 or equivalent. Cultivation of reading skill combined with introduction to the humanistic values of the literature. MEMBERS OF THE STAFF.

- 106 French Composition (2)**  
Prerequisite, course 2 or equivalent. A systematic review of grammar and practice in composition. MEMBERS OF THE STAFF.
- 109 French Conversation (3)**  
Prerequisite, course 2 or equivalent. Practice in conversation and in improvement of pronunciation. MEMBERS OF THE STAFF.
- 198 Distinction (3)**  
Special work for majors who desire to graduate with distinction. MEMBERS OF THE STAFF.
- 202 French Civilization (2-3)**  
Study of the different epochs of French civilization and of their impact on present-day French living. Readings, recitations, and lectures. MR. BUHRMAN AND OTHER MEMBERS OF THE STAFF.
- 203 Advanced French Reading (3)**  
Prerequisite, course 103 or equivalent. For students needing to improve accuracy and fluency in reading before going on to courses in literature. MEMBERS OF THE STAFF.
- 206 Advanced French Composition (2)**  
Prerequisite, course 106 or equivalent. Practice in free composition. MEMBERS OF THE STAFF.
- 209 Advanced French Conversation (3)**  
Prerequisite, course 109 or equivalent. Conversation on a variety of topics designed to increase fluency in the spoken language. MEMBERS OF THE STAFF.
- 301 Masterpieces of French Literature to 1700 (3)**  
It is recommended that students take this introductory course before taking others in French literature. Class readings in various types of classical French literature with emphasis on comedy and tragedy, and library readings on earlier periods. MR. JESSE.
- 302 Masterpieces of French Literature from 1700 until Today (3)**  
Reading of selected works from 1700 until 1900, classroom discussion, and outside reading in the literary background. MR. GIFFIN.
- 303 Phonetics (2-3)**  
A systematic but practical study of French pronunciation with emphasis upon listening to and imitating French recordings. Students receive individual attention. MR. JESSE.
- 305 The French in America (2)**  
French life in America and French relations with the Anglo-Saxons. At times conducted on the same general plan as French 350. Readings, recitations, and lectures.
- 308 Modern French Theater—A (3)**  
The period 1880-1914. Reading and classroom discussion of one play a week, with weekly reports on a play read outside. General background reading and discussion. MR. GIFFIN.
- 309 Modern French Theater—B (3)**  
The period 1920 to today. Reading and classroom discussion of one play a week, with weekly reports on a play read outside. General background reading and discussion. MR. GIFFIN.
- 310 Theater of the French Baroque (3)**  
The period of 1600-1750. Chiefly Corneille, Moliere, Racine, and Marivaux. Reading and classroom discussion of one play a week, with weekly reports on a play read outside. General background reading and discussion. MR. GIFFIN.
- 312 The French Novel (3)**  
MR. GIFFIN; MR. BUHRMAN.
- 313 Balzac (2)**  
Readings, recitations, and lectures.
- 314 Lyric Poetry from Chenier to Verlaine (3)**  
Study of selected poems of the major poets of the nineteenth century. Classroom discussion and written reports. Course conducted entirely in French. MR. TROMBLY.

- 315 Lyric Poetry of Today (3)**  
Study of selected poems of twentieth-century poets. Classroom discussion and written reports. Course conducted entirely in French. MR. TROMBLY.
- 316 The French Language (3)**  
MR. GIFFIN.
- 350 Special Readings (1-3)**  
Intended for upperclassmen who desire to study some aspects of French literature not covered by other courses. MR. TROMBLY AND OTHER MEMBERS OF THE STAFF.
- 351 Readings in Contemporary Literature (1-3)**  
MR. BUHRMAN.
- 353 Readings in French (1-3)**  
Subject varies each semester. Selected works of an author, a genre or a period. Reading and classroom discussion, with outside reading of a background nature. MR. GIFFIN AND OTHER MEMBERS OF THE STAFF.
- 354 Maupassant and the French Short Story (2)**  
Readings, recitations, and lectures.
- 400 Problems (1-8)**  
Investigation of, and written report on some aspect of language or literature. MEMBERS OF THE STAFF.
- 401 Old French (3)**  
This course aims to provide the student with ability to read the Old French language and with a knowledge of its linguistic structure. MR. GIFFIN; MR. BUHRMAN.
- 402 Survey of Old French Literature (3)**  
The period 1200-1500. Reading and discussion of texts in modern French, with outside background reading. MR. GIFFIN.
- 403 Old Provençal (3)**  
A survey of the language and literature (chiefly troubadour poetry), with discussion of its origin, value and influence. Background in Latin or Old French recommended. Reading of the original texts in anthology form. MR. GIFFIN.
- 404 Villon (2)**  
Complete reading and discussion of the original text of the *Lais* and the *Testament*, with background reading on the author and the period. Knowledge of Old French recommended. MR. GIFFIN.
- 405 Literary Criticism in France (3)**  
Study of the development of literary criticism from the Renaissance to the present. Conducted entirely in French. MR. TROMBLY.
- 406 Molière (3)**  
Reading of all the plays and intensive study of the more important ones. Written reports on special topics. Conducted entirely in French. MR. TROMBLY.
- 417 French Renaissance (3)**  
Readings, recitations, and lectures.
- 421 Contemporary French Prose (3)**  
A study of the works of Proust, Gide, Mauriac, Sartre, Malraux and Camus with attention to the artistic, ethical and moral concepts as related to the intellectual currents of the period. MR. BUHRMAN.
- 490 Research (Credit arranged)**  
MEMBERS OF THE STAFF.

## Italian

- 20 Elementary Course (5)**  
Study of the elements of Italian grammar; reading of simple texts; drill in pronunciation work in reading and conversation. MR. TROMBLY.

- 21 Intermediate Course (5)**  
Continuation of elementary course, with further study of grammar and more advanced work in reading and conversation. MR. TROMBLY.
- 103 Advanced Course, Reading (3)**  
Reading and translation of such writers as Farina, Fucini, Manzoni, and Deledda. Essential purpose is to develop ability to read ordinary prose at sight. MR. TROMBLY.
- 106 Advanced Course, Composition, and Oral Work (2)**  
Dictation, translation of simple English prose into Italian, and drill in conversation. MR. TROMBLY.
- 320 Readings in Italian Literature (3)**  
Study and translation of selected masterpieces of Italian prose and verse. A text like Cambridge Readings in Italian Literature may be used. MR. TROMBLY.
- 321 Dante (3)**  
Study and translation of the Vita Nuova and the Inferno. MR. TROMBLY.
- 352 Special Readings (2)**  
Intended primarily for students who have taken course 103 or course 106 or both. Rapid reading of Italian prose. MR. TROMBLY.

## Spanish

- 1 Elementary Course (5)**  
Beginning course in reading, composition, and conversation. Students with credit for one year of high school Spanish or equivalent receive 3 credits upon successful completion of the course. Sections with laboratory emphasize conversation. MEMBERS OF THE STAFF.
- 2 Intermediate Course (5)**  
Continuation of course 1. Prerequisite, credit for two years of high school Spanish or equivalent. Students with credit for 3 years of high school Spanish or equivalent receive 3 credits upon successful completion of the course. Sections with laboratory emphasize conversation. MEMBERS OF THE STAFF.
- 103 Spanish Reading (3)**  
Prerequisite, course 2 or equivalent. Cultivation of reading skill combined with introduction to the humanistic values of the literature. MEMBERS OF THE STAFF.
- 106 Spanish Composition (2)**  
Prerequisite, course 2 or equivalent. A systematic review of grammar and practice in composition. MEMBERS OF THE STAFF.
- 109 Spanish Conversation (3)**  
Prerequisite, course 2 or equivalent. Practice in conversation and in improvement of pronunciation. MEMBERS OF THE STAFF.
- 198 Distinction (3)**  
Special work for majors who desire to graduate with distinction. MEMBERS OF THE STAFF.
- 203 Advanced Spanish Reading (3)**  
Prerequisite, course 103 or equivalent. For students needing to improve accuracy and fluency in reading before going on to courses in literature. MEMBERS OF THE STAFF.
- 206 Advanced Spanish Composition (2)**  
Prerequisite, course 106 or equivalent. Practice in free composition. MEMBERS OF THE STAFF.
- 209 Advanced Spanish Conversation (3)**  
Prerequisite, course 109 or equivalent. Conversation on a variety of topics designed to increase fluency in the spoken language. MEMBERS OF THE STAFF.



**210 Hispanic Civilization (2)**

An introduction to the civilization and culture of Spain and Spanish America. No knowledge of Spanish is required. MR. BRENT.

*Except in the Latin American Area of Concentration, courses 301 and 302 are required of students who major in Spanish. Some of the courses listed below are given in alternate years. For information as to courses actually to be offered, students should consult the semester schedule or the chairman of the department.*

**Spanish Literature****301 Survey of Spanish Literature—From the Origins to 1700 (3)**

Study of the historical background and the most important authors and works from the earliest period to 1700. It is recommended that this course be taken before course 302. MR. BRENT; MISS JOHNSON.

**302 Survey of Spanish Literature—From 1700 to the Generation of 1898 (3)**

Continuation of 301. Study of the historical background, literary movements, and important authors and works from 1700 to the writers of the Generation of 1898. MR. BRENT; MISS JOHNSON.

**303 Survey of Spanish Literature—From the Generation of 1898 to 1936 (3)**

Continuation of 302. Study of the most significant writers of this period from the Generation of 1898 to the beginning of the Spanish Civil War. MR. BRENT; MISS JOHNSON.

**304 Spanish Lyric Poetry (2)**

Reading and discussion of Spanish and Spanish American poems, selected by theme. An appreciation course, not a survey. MR. BRUSHWOOD.

**305 The Spanish Short Story (2)**

Readings, lectures, and reports dealing with the representative works in this genre from the early nineteenth century to the present. MR. SCHERR.

**307 The Golden Age Drama (3)**

An introduction to the Spanish national theater as exemplified by its leading exponents: Lope de Vega, Tirso de Molina, Ruiz de Alarcón, and Calderón. MR. BRENT; MR. SCHERR.

**310 Cervantes (3)**

A study of *Don Quijote*, the *Novelas ejemplares*, and selected *entremeses*. Readings, reports, and discussions. MR. SCHERR.

**313 The Eighteenth Century (3)**

Studies in the literature of Spain from 1700 to 1806 as provided in the works of Feijóo, Cadalso, Jovellanos, García de la Huerta, Leandro Fernández de Moratín and others. MR. BRENT; MR. SCHEER.

**316 The Romantic Period (3)**

A study of the prose, poetry and theater during the literary movement from 1830 to 1850 in Spain. Lectures, readings, and reports. MR. BRUSHWOOD.

**319 The Nineteenth Century Spanish Novel (3)**

A survey of the rebirth and development of the novel with reading and analysis of representative works by Alarcón, Valera, Pereda, Galdós, Pardo Bazán, Palacio Valdés, and Blasco Ibáñez. MR. BRENT.

**322 The Transition Drama of the 19th Century (2)**

A study of the most important dramatists and dramas after the Romantic Period to the late nineteenth century. MISS JOHNSON.

**325 Modern Spanish Drama (3)**

A study of the most important dramatists and dramas from the late nineteenth century to the present time. MISS JOHNSON.

**328 The Twentieth Century Spanish Novel (3)**

A survey of the novel from the Generation of 1898 to the present. MR. BRENT.

- 401 **Studies in the Literature of the Medieval Period (3)**  
An intensive study of the *Poema del Cid*, Alfonso el Sabio, *El conde Lucanor*, and the *Libro de buen amor*. Lectures, discussions, and reports on the historical, literary, and linguistic background of the Middle Ages. MR. BRENT; MISS JOHNSON.
- 404 **Studies in the Literature of the 16th and 17th Century (1-3)**  
The *entremés*, the novel of the Golden Age, or other selected studies. MR. SCHERR.
- 407 **The Spanish Ballad (2)**  
An intensive study of the ballad genre with major emphasis on the oldest ballads, their origin and development. MISS JOHNSON.
- 413 **Pérez Galdós (3)**  
An intensive study of the life and works of Pérez Galdós, in the light of the religious, political, and literary ideas of his time. MISS JOHNSON.
- 416 **Miguel de Unamuno (3)**  
An intensive study of the life, literary works, and philosophy of Unamuno. MISS JOHNSON.

### Spanish American Literature

- 331 **Spanish American Literature—Colonial and Revolutionary Periods (3)**  
Lectures, readings, and discussions of literary expression from the Conquest to 1880, with attention to the growth of intellectual independence. MR. BRUSHWOOD; MR. STABB.
- 332 **Spanish American Literature—Modernism and Realism (3)**  
Continuation of 331. Survey of literature from 1880 to the present with special attention given to the contemporary novel. MR. BRUSHWOOD; MR. STABB.
- 335 **Mexican Literature (3)**  
Lectures, readings, discussions. General survey of the literature with emphasis on contemporary authors. MR. BRUSHWOOD.
- 338 **The "Indianista" Novel (3)**  
A study of the Indian theme in the Spanish American novel from its beginning to contemporary times. MR. BRUSHWOOD.
- 341 **Argentine Literature (3)**  
General survey with emphasis on Sarmiento and his contemporaries. Lectures, readings, discussions. MR. BRUSHWOOD.
- 435 **The Novel of the Mexican Revolution—From 1910 to the Present (3)**  
A study of aesthetic social values of ten or more representative works. Extensive background readings. Readings and discussions. MR. BRUSHWOOD.

### Spanish and Spanish American Literature

- 350 **Special Readings (1-3)**  
Directed study of work suited to the needs of the individual student. MEMBERS OF THE STAFF.
- 400 **Problems (1-4)**  
Conferences with individual students on certain aspects of the language and literature. MEMBERS OF THE STAFF.
- 410 **Seminar in Special Studies (3)**  
Study of selected research material to accommodate the requirements of an advanced graduate group. MEMBERS OF THE STAFF.
- 480 **Bibliography and Method (2-3)**  
A course designed primarily for the doctoral candidate or the master's candidate electing to write a thesis. Acquaintance with important reference works, studies and periodicals in the field of Spanish and Spanish American literature, and practice in bibliographical methods. MR. BRENT.
- 490 **Research (Credit arranged)**  
Required of students who elect to present a thesis. MEMBERS OF THE STAFF.

## Linguistics

### 360 Phonetics (2)

Prerequisite, course 205, or the instructor's consent. Intensive study of Spanish pronunciation and intonation. MR. SCHERR.

### 361 History of the Spanish Language (3)

A study of the various social and linguistic factors that have contributed to the growth and development of Spanish. Lectures, collateral readings, and reports. MR. SCHERR.

### 460 Old Spanish—Phonology (3)

Intensive study of the phonetic evolution of Spanish from the popular Latin of the Iberian Peninsula. May be taken independently of course 461. MR. SCHERR.

### 461 Old Spanish—Morphology and Syntax (3)

The course is designed to acquaint the student with the origins and development of Spanish word forms and sentence structure. May be taken independently of course 460, although the latter is recommended as a preceding study. MR. SCHERR.

For the Teaching of Spanish, see Education D118.

## Portuguese

### 1 Elementary Course (5)

A beginning course in reading, composition, and conversation. MR. SCHERR.

### 2 Intermediate Course (5)

Continuation of course 1. MR. SCHERR.

Courses 103 and 106 may be taken concurrently.

### 103 Reading (3)

The reading of selected works of Portuguese and Brazilian authors. MR. SCHERR.

### 106 Composition (2)

Additional training in speaking and writing Portuguese. MR. SCHERR.

## RURAL SOCIOLOGY

### 1 Introduction to Rural Life (3) f, w.

The organization and functioning of rural social life. Problems of living among and working with rural people. MR. LIONBERGER AND MEMBERS OF THE STAFF.

### 100 Group Organization and Leadership (5) f, w.

A course of 96 lecture, discussion, demonstration, and laboratory hours dealing with interpersonal relations, group formation, and the principles and techniques of working with rural groups and organizations. MR. HEPPLER.

### 120 Sociology of Rural Life (2) f.

A course primarily for employed workers who feel the need of a brief course in general rural sociology. MR. LIVELY.

### 210 Rural Youth (2) f.

Prerequisite, Rural Sociology 1, Sociology 1, or equivalent background and junior standing. The cultural basis of the problems of rural youth, their social characteristics, the agencies serving them, and the improvement of programs and methods designed to serve their needs. A course designed for persons planning to do volunteer or professional work with rural young people. MR. LIONBERGER.

### 300 Problems (Credit to be arranged) f, w, s.

MEMBERS OF THE STAFF.

### 310 Rural Sociology (3) w.

Prerequisite, Rural Sociology 1 or Sociology 1 and junior standing. A systematic review of the field of Rural Sociology, with applications to current problems. MR. McNAMARA.

- 320 The Farm Population (3) w.**  
Prerequisite, course 1 or equivalent background. A study of the number, distribution, and quality of the people who live on farms in relation to agricultural resources, food production, national characteristics and vitality, and the advancement of scientific technology. MR. McNAMARA.
- 330 Social Aspects of Rural Health (2) f.**  
Prerequisite, course 1 or Sociology 1, or consent of instructor. The problem of obtaining and maintaining adequate health agencies and services for rural people. MR. McNAMARA.
- 340 The Rural Community (3) w.**  
Prerequisite, course 1 or 100, or equivalent, and junior standing. A study of the nature and function of the community in rural society. Its possibilities as an organizational unit in current programs of social improvement. MR. LIONBERGER.
- 360 Farmers' Organizations (2) w.**  
Prerequisite, 5 hours of Rural Sociology or equivalent. A study of the general farm organizations and agencies, such as the Farm Bureau, Grange, and Extension Service, from the point of view of their educational and social significance. MR. LIVELY.
- 370 The Church in Rural Society (2) w.**  
Prerequisite, Rural Sociology 1, or 100, or Sociology 1 and Junior standing. A study of rural churches as sociological groups, including their ecology, life history, and professional leadership with particular attention to churches in rural Missouri. MR. HEPPLE.
- 400 Problems (Credit to be arranged) f, w, s.**  
Research for students capable of semi-independent work. MEMBERS OF THE STAFF.
- 410 Seminar (Credit to be arranged) f, w.**  
Special lecture, reviews of literature, and individual reports. MEMBERS OF THE STAFF.
- 420 Advanced Rural Sociology (3) f.**  
The historical development of Rural Sociology, including its principles and theories, in the United States. MR. LIVELY.
- 430 Techniques of Social Investigation (3) f, w.**  
Prerequisite, 12 hours of social science. Includes definition of the problem, schedules and questionnaires, field work, coding, table construction and machine tabulation. Two lectures and one laboratory per week. MR. GREGORY.
- 435 Advanced Group Organization and Leadership (2) s.**  
Advanced study of the theory and practices of group organization and leadership with particular reference to rural life. MR. HEPPLE.
- 440 Readings in Farm Population (Credit to be arranged) f, w, s.**  
MR. McNAMARA.
- 442 Readings in the Rural Community (Credit to be arranged) f, w, s.**  
MR. LIONBERGER.
- 444 Readings in Advanced Rural Sociology (Credit to be arranged) f, w, s.**  
MR. LIVELY.
- 446 Readings in Group Organization and Leadership (Credit to be arranged) f, w, s.**  
MR. HEPPLE.
- 450 Research (Credit to be arranged) f, w, s.**  
Independent research not leading to a dissertation. MR. LIVELY; MR. McNAMARA; MR. HEPPLE; MR. LIONBERGER.
- 490 Research (Credit to be arranged) f, w, s.**  
Research leading to a dissertation. MR. LIVELY; MR. McNAMARA; MR. HEPPLE; MR. LIONBERGER.

## SOCIAL WORK

- 140 The Field of Social Work (3) f, w, s.**  
Prerequisite, junior standing. An introduction to the field of social work functions; development and organization of public and private services. MR. NEBEL.

- 150 Child Welfare (2) f, w, s.**  
Prerequisite, junior standing. Child care in its public and private settings; factors affecting child welfare; community organization to meet child welfare needs. MR. MENGEL.
- 160 Introduction to Community Organization (2) f, w.**  
Prerequisite, junior standing. A study of the community, with emphasis on the social needs which arise within the community setting and the manner in which these needs are met. MEMBERS OF THE STAFF.
- 170 Introduction to Social Case Work (2) f, w, s.**  
Prerequisite, junior standing. Biological, psychological and social theories which underlie social case work are reviewed and applied through study of case material. MEMBERS OF THE STAFF.
- 180 Introduction to Group Work (2) f.**  
Prerequisite, junior standing. Group work in public and private community agencies; its relation to education and recreation; factors affecting the needs for such services.
- 190 Field Experience (1-3) f, w, s.**  
Prerequisite, senior standing; Social Work 150, or 170, or 180 or concurrently with one of these; and permission of the instructor. Work in a social service agency on the level planned volunteer service under agency supervision. Two hours work for each credit hour will be required. MEMBERS OF THE STAFF.
- 301 Principles of Social Security (3) f, w, s.**  
Prerequisite, graduate standing and either Sociology 1, Economics 51, or Social Work 140. Critical analysis of public aid programs in the United States. Problems faced in planning assistance work, and insurance programs.
- 302 Public Welfare (2) f, s.**  
Prerequisite, graduate standing and Sociology 50, or Social Work 140, or equivalent. The development and organization of local, state, federal agencies and programs for persons in need of assistance, care, and protection. MR. PLETZ.
- 305 Child Care and Protection (3) f, s.**  
Prerequisite, graduate standing and 30 hours social science or education. Safeguards for children involving parent-child relationship, child labor, delinquency, adoption, dependency, and neglect. Facilities for foster care. MR. MENGEL.
- 307 Juvenile Delinquency and Social Treatment (2) f, s.**  
Prerequisite, Social Work 140 or 150, or Sociology 1 or 50. Nature and extent of juvenile delinquency, theories of causation, juvenile courts, programs of treatment and prevention. MR. ROBINS.
- 313 Social Insurance (2) f, s.**  
Prerequisite, Sociology 1, or Economics 51, or Social Work 140. Social insurance as a device to meet the hazards of unemployment, old age, illness and death. The Federal-State Social Insurance program. MR. PIHLBLAD.
- 314 Public Assistance (2)**  
Prerequisite, Social Work 140 or 150, or Sociology 1, or Economics 51. Public assistance as a device to meet the hazards of a needy old age, illness, disability, and death. The Federal-State public assistance program.
- 315 Interviewing (2)**  
Prerequisite, Advanced Standing and Social Work 140 or 150; or 8 hours in Psychology, Sociology, Education, or Economics. The process of interviewing and the relation of human behavior to obtaining valid and reliable facts in this process. MRS. MYERS.
- 319 Social Statistics (3) f, w, s.**  
Prerequisite, graduate standing and 12 hours in social work and sociology. Descriptive and analytic statistical techniques applied to qualitative and quantitative social data. Two lectures and one laboratory per week. MR. ROBINS.
- 320 Psychiatric Approach to Personality (2) f.**  
Prerequisite, graduate standing in social work, or 20 hours in psychology or counseling. Psychiatric theory of normal personality development from infancy to old age, with attention to how equilibrium is maintained between inner and outer pressures at each stage. DR. GUHLEMAN; MR. ROBINS.

- 321 **Psychopathology (2) w.**  
Prerequisite, Social Work 320. Biological, social, and psychological dynamics of specific neuroses and psychoses. DR. GUHLEMAN; MR. ROBINS.
- 325 **Medical—Social Problems (3) w.**  
Prerequisite, graduate standing and 12 hours social work or sociology. Interrelationship of biological, psychological, and social factors in causation and treatment of common physical illnesses. DR. COOPER, MISS McGETRICK.
- 330 **Social Group Work (2) w.**  
Prerequisite, graduate standing and 30 hours social science. Theory and methods in group work practice. Group work agencies, their organization, policies, and objectives. MR. DAWDY.
- 340 **Supervision in the Public Welfare Agency (2) f.**  
Prerequisite, second year graduate standing. This course is also open to agency supervisors, and those eligible for advancement to agency supervisory positions. A study of supervisory principles and methods within the framework of the public welfare agency. MR. KEATHLEY.
- 360 **Social Case Work I (3) f, w, s.**  
Prerequisite, graduate standing in social work. Basic skills in study, diagnosis, and treatment of social problems of individuals, and application of the casework process in various agency settings. MRS. MYERS.
- 361 **Social Case Work II (3) f, w, s.**  
Prerequisite, Social Work 360. A continuation of course 360 with emphasis on the social worker's role and skills in helping the individual in need. MRS. MYERS.
- 365 **Child Welfare Case Work (2) w.**  
Prerequisite, Social Work 360 and 361 or concurrently with it. A study of case records from children's agencies including dependent, handicapped, delinquent, and other children with behavior problems. MRS. MYERS; MR. MENGEL.
- 370 **Law and Social Welfare (2) f.**  
Prerequisite, graduate standing in social work. Social problems of the client requiring legal consideration. Legal rights of the individual under public welfare programs.
- 390 **Field Work I (4) f, w, s.**  
Prerequisite, graduate standing in social work and Social Work 360 or concurrently with it. Supervised experience in an approved public or private social work agency. MRS. MYERS AND MEMBERS OF THE STAFF.
- 391 **Field Work II (4) f, w, s.**  
Prerequisite, Social Work 390 and 361 or concurrently with it. A continuation of course 390. MRS. MYERS AND MEMBERS OF THE STAFF.
- 400 **Problems (1-6) f, w, s.**  
Individual problems assigned to expand previous work or an introduction to research. MEMBERS OF THE STAFF.
- 401 **Research Methods in Social Work (2) w.**  
Prerequisite, Social Work 319 or equivalent, and 12 semester hours of graduate social work. Methods of research as applied to study of social work techniques and problems. MR. ROBINS.
- 410 **Social Case Work Seminar (2) f, w.**  
Prerequisite, Social Work 361 and 491. Discussions covering recent developments in social case work and directed toward integrating case work theory, method and practice. MRS. MYERS.
- 411 **Seminar: The Offender (3) f.**  
Prerequisite, Social Work 307, Sociology 311 and 312 or the equivalent. Study of the youthful and adult offenders; factors contributing to delinquent behavior; problems of social treatment. MR. GURMAN.

- 412 Seminar: Probation and Parole (2) f.**  
Prerequisite, Social Work 411, or concurrently with it. Case analysis of probation and parole situation; the dynamics of treating anti-social tendencies on the part of individuals on parole and probation. MR. GURMAN.
- 413 Psychiatric Social Work Seminar (2)**  
Prerequisites, Social Work 360, 361, 390, 391, and 491 or concurrent with it. The use of casework concepts and processes in giving social services to emotionally disturbed and mentally ill individuals in hospitals and clinics. MR. ROBINS.
- 420 Emotional Problems in Childhood (2) w.**  
Prerequisite, Social Work 320, 360 and 390. Study of the emotional development of young children and case work treatment of behavior difficulties, with particular attention to the troubles of the child placed in foster care. MRS. MYERS.
- 425 Organization of Medical Care (2) f, s.**  
Prerequisite, Social Work 325. Organization of medical care both public and private; function and administration of social work in medical institutions and public health programs. MISS McGETRICK.
- 430 Community Organization for Social Welfare (2) w.**  
Prerequisite, graduate standing and 30 hours social science. Social agency structure; agencies for planning and coordinating social services; organization of social welfare programs on a community-wide basis. MRS. MYERS.
- 435 Social Work Administration (2) w.**  
Prerequisite, Social Work 301 or 302. Analysis of welfare programs as administered under federal and state law and private charters; organization, policy development, administrative supervision, staff functions, and community relationships. MR. PLETZ.
- 450 Research (1-6) f, w, s.**  
Research leading to a written report but not a thesis. MEMBERS OF THE STAFF.
- 465 Readings in Case Work and Social Welfare (3) f, w.**  
Prerequisite, 30 hours graduate social work credit. Selected readings based on the student's needs and the advanced field experience. Emphasis may be placed on the student's area of interest, such as medical, psychiatric, child welfare. Reports covering the readings and relation to current experience will be required. MEMBERS OF THE STAFF.
- 490 Research (1-6) f, w, s.**  
Research leading to thesis. MEMBERS OF THE STAFF.
- 491 Field Work III (8-10) f, w.**  
Prerequisite, Social Work 391. Supervised field work on a full-time basis in an approved social work agency. The period for this field experience will run approximately from September 1st through the following January or from February 1st through the next June. MRS. MYERS AND FIELD SUPERVISORS.

## SOCIOLOGY AND ANTHROPOLOGY

- 1 General Sociology (3) f, w, s.**  
Open to freshmen and sophomores only. Nature of organization and activities of human groupings—family, community, crowd, social class, etc.; structure and function of institutions; social influences shaping personality and behavior; social change. MEMBERS OF THE STAFF.
- 50 Social Disorganization (3) f, w, s.**  
Prerequisite, course 1. Deviations from group norms to which there is a negative societal reaction: crime, prostitution, alcoholism, radicalism. MR. KYLLONEN.
- 60 General Anthropology (3) f, w.**  
A general survey course over the fields of anthropological concern—archaeology, cultural anthropology, and physical anthropology—with emphasis placed on underlying concepts and principles. Examples taken from the nonliterate peoples of the world. MR. SPIER.

**100 Fundamentals of Sociology (3) f, w, s.**

Open to juniors and seniors only. No credit for students who have taken course 1. Research methods and evidence on the nature of social interaction and its products. MR. KYLLONEN.

**110 Marriage Education (2) f, w.**

Analysis of the personal and practical problems surrounding mate selection, preparation for marriage, happiness in marriage and marital adjustment. Juniors and seniors only. MR. HABENSTEIN.

**142 Introduction to Field Research Archaeology (1-6) s.**

Prerequisite, 3 hours of anthropology or a declared major field of study in anthropology and permission of the instructor. Archaeology of the Eastern United States; laboratory methods; archaeological techniques through field-work in Missouri. MR. CHAPMAN.

**150 Introduction to Physical Anthropology (2) f.**

Prerequisite, course 1, 60, 100, or 3 hours in a biological science, or consent of instructor. Human origins and the races of man; types of prehistoric man; formation and nature of races; human genetics; elementary anthropometry. MR. SPIER.

**151 Old World Prehistory (2) w.**

Prerequisite, course 1, 60, 100, or consent of instructor. The beginnings of culture in the Old World; prehistoric cultures, primarily of Europe and Asia, to the early Iron Age. MR. SPIER.

**190 Introduction to Social Research Methods (3) f.**

Prerequisite, Course 1, 60 or 100. Methods of collecting data; procedures for presenting research materials such as tabulations, charts, graphs; problems of sampling; interviewing techniques, laboratory experience in collecting and analyzing data. MR. KYLLONEN.

**198 Distinction in Sociology (3) f, w.**

Supervised reading for seniors who are candidates for graduation with distinction. MEMBERS OF THE STAFF.

**305 Population Trends (3) f.**

Prerequisite, course 1 or 100 or senior standing. Trends in population growth; fertility and mortality; social consequences of population change; problems of population quality and population policy. MR. PIHLBLAD.

**308 Social Psychology of Group Life (3) f.**

Prerequisite, junior standing and course 1 or 100. Group structure and social interaction in relation to personality and behavior; status and role as related to the self; attitudes and motives; communication symbols and the socialization of the individual. MR. GIST.

**310 Public Opinion (2) f.**

Prerequisite, course 1 or 100, and junior standing, or 6 hours of Journalism. Public opinion; communication; methods of measurement; propaganda; censorship; pressure groups. MR. GIST.

**311 Criminology (3) f, w, s.**

Prerequisite, course 1 or 100, and junior standing. Individual and social factors conditioning criminal behavior; the institutions of criminal justice; treatment of offenders; prevention of crime. MR. PIHLBLAD.

**312 Contemporary Corrections (3) w.**

Prerequisite, course 311. Historical development of penal institutions. Contemporary correctional institutions; problems of custody, education, classification, industry and treatment programs. Probation and Parole. MR. PIHLBLAD.

**314 The Family (3) f, w, s.**

Prerequisite, course 1 or 100. The development of the family from institution to companionship; comparison of ethnic families; personality development within the family; family organization, disorganization and reorganization. MR. HABENSTEIN.

**315 Collective Behavior (3) w.**

Prerequisite, course 1 or 100, and junior standing. Social-psychological aspects of social unrest, revolutionary and reform movements, nationalistic movements, sects, crowd behavior, social epidemics, fashions and fads, leadership. MR. GIST.



- 316 Urban Sociology (3) f.**  
Prerequisite, course 1 or 100, and junior standing. Growth and decline of cities; ecological and demographic characteristics; status systems; associations and institutions; housing and city planning. MR. GIST.
- 317 Industry and Society (3) f.**  
Prerequisite, Course 1 or 100. The nature of an emergent industrial civilization. Secularism; mass nature of modern human collectivities; rationalization of behavior and rise of interest groups seen from a sociological viewpoint. MR. HABENSTEIN.
- 318 Industrial Sociology (3) w.**  
Prerequisite, course 1 or 100. Formal and informal groups within an industrial plant; stratification and mobility; factors in cooperation and conflict. MR. HABENSTEIN.
- 320 Psychiatric Approach to Personality (2) See Social Work 320.**
- 321 Psychopathology (2) See Social Work 321.**
- 323 Folk Society (2) f.**  
Prerequisite, course 1, 60, or 100. Comparative study of selected folk societies of Old and New World; folk and feudal cultures contrasted with urban cultures. MR. SPIER.
- 326 Cultural Anthropology (3) w.**  
Prerequisite, course 1, 60, or 100. The nature of culture, pertinent anthropological concepts, and comparative study of primitive economic life, social organization, government, law, and religion. MR. SPIER.
- 327 Ethnic Minority Groups in the United States (2) f.**  
Prerequisite, course 1 or 100, and junior standing. Cultural background of principal immigrant groups; culture conflicts; accommodation and assimilation; immigrant minority groups in contemporary American society. MR. PIHLBLAD.
- 328 Personality and Culture (2) f.**  
Prerequisite, Sociology 1 or 60 and Psychology 1 or 2. A critical examination of the approaches to the study of interrelations between personality and culture; techniques for gathering relevant data; contrasts between modern and selected primitive cultures. MR. SPIER.
- 329 Peoples of Asia (3) (Offered every third semester)**  
Prerequisite, course 1, 60, 100, or consent of instructor. Survey of the peoples and cultures of Asia with emphasis on the native societies of this area. MR. SPIER.
- 330 Peoples of Africa (3) (Offered every third semester)**  
Prerequisite, course 1, 60, 100, or consent of instructor. Survey of the peoples and cultures of Africa south of the Sahara (i.e., the Negroid peoples). MR. FULLER.
- 331 Peoples of Oceania (3) (Offered every third semester)**  
Prerequisite, course 1, 60, 100, or consent of instructor. Survey of the peoples and cultures of the Pacific Basin including Australia. The sources, development, and characteristics of native cultures of this area. MR. SPIER.
- 335 American Indian I: North America (2) f.**  
Prerequisite, course 1, 60, 100, or 326. Origin of man in North America, including Mexico; culture areas; customs of representative tribes; Indians of Missouri. MR. CHAPMAN.
- 336 American Indian II: South America (2) w.**  
Prerequisite, course 1, 60, 100, or 326. Origin of man in South America and Central America; culture areas; customs of representative tribes. MR. CHAPMAN.
- 337 Racial and Cultural Relations (3) f.**  
Prerequisite, course 1 or 100, or one course in anthropology. Inter-racial and inter-cultural relations in various societies. Attitudes, social tensions, and forms of adjustment. MR. GIST.
- 339 The American Negro (2) w.**  
Prerequisite, course 1 or 100 and junior standing. Historical background. Special attention will be directed to the changing pattern of Negro-White relations in American society. MR. PIHLBLAD.

- 340 American Archaeology I: North America (2) f.**  
Prerequisite, course 1, 60, or 100. Ancient man and the development of American Indian cultures in North America; the archaeology of Missouri. MR. CHAPMAN.
- 341 American Archaeology II: South America (2) w.**  
Prerequisite, course 1, 60, or 100. Ancient man and the development of Indian cultures in South America. MR. CHAPMAN.
- 342 Field Methods in Archaeology (1-8) s.**  
Prerequisite, course 142 or equivalent and permission of instructor. Techniques and materials of archaeological excavation; field surveying and recording; care and interpretation of material; field work in Missouri. MR. CHAPMAN.
- 350 Special Readings (Credit to be arranged) f, w, s.**  
Prerequisite, 12 hours in sociology and departmental approval. Extensive reading in a selected area or intensive reading in a special field. MEMBERS OF THE STAFF.
- 351 Special Readings in Anthropology (Credit to be arranged) f, w, s.**  
Prerequisite, two courses in anthropology and consent of instructor. Directed reading in ethnology or archaeology not leading to a thesis. MR. CHAPMAN; MR. SPIER.
- 352 Occupations and Professions (3) w.**  
Prerequisite, course 1 or 100. Analysis of occupational and professional aspects of American society. Division of labor; occupational mobility; work and the self; collegue-ship and informal organization of work. MR. HABENSTEIN.
- 360 Social Case Work I (3) See Social Work 360.**
- 381 Experimental Sociology (3) w.**  
Prerequisite, 6 hours of Sociology. Critical historical review of problems, methods and results of experimentation in interpersonal relations under controlled conditions. MR. KYLLONEN.
- 391 Social Prediction (2) w.**  
Prerequisite, 12 hours in Social Science or senior standing. Basic theory and methods of social prediction as applied to parole, probation, success in marriage. MR. KYLLONEN.
- 392 Community Planning and Housing (2) w.**  
Prerequisite, junior standing, or consent of instructor. Types of planning, including specially planned communities; planning for metropolitan areas; large-scale housing projects; social aspects of planning and housing. Housing and redevelopment legislation. MR. GIST.
- 400 Problems (Credit to be arranged) f, w, s.**  
Prerequisite, 12 hours in sociology and departmental approval. Directed research not leading to a thesis or dissertation. MEMBERS OF THE STAFF.
- 402 Social Classes (3) w.**  
Prerequisite, 12 hours of sociology or consent of instructor. Theories and character of status systems; comparative analysis of class and caste in different societies; stratification and power; personality and the social structure; social mobility. MR. GIST.
- 410 Seminar (1) f, w, s.**  
Reports of research by graduate students and staff. Required of all graduate students with or without credit. Credit limited to a total of 2 hours. MEMBERS OF THE STAFF.
- 411 Seminar in the Professions (2)**  
Prerequisite, 1 or 100. Institutionalization, structure and function of major professions in America. Special attention given to Medicine, Law, Nursing, Accounting, Journalism, Education, and the Ministry. MR. HABENSTEIN.
- 421 Seminar in Population (2) w.**  
Selected readings in population trends and problems in various parts of the world. MR. PIHLBLAD.
- 422 Methods of Social Research (2) w.**  
Prerequisite, 12 hours of sociology. An analytical study of methods applicable to sociological data. Critical examination of methods employed in recent researches. Required of all graduate majors. MR. KYLLONEN.

- 424 **Theory and Method in Anthropology (2) w.**  
Prerequisite, consent of instructor. The growth of theory and method in Anthropology leading to modern historical, sociological, and physiological interpretations. MR. SPIER.
- 426 **Readings in Social Psychology (1-3) w.**  
Prerequisite, 12 hours of sociology or consent of instructor. Selected readings based on students' needs and interests with critical class discussion. MR. GIST.
- 428 **Seminar on Race Relations (2) w.**  
MR. PIHLBLAD.
- 429 **Readings in Criminology (2) w.**  
Readings in recent research materials in criminology. Reports and class discussion. MR. PIHLBLAD.
- 438 **History of Sociology (3) f.**  
Prerequisite, 12 hours of sociology or equivalent training. Traces development of objectivity in the development of sociological theory out of political, social and moral philosophy from pre-Socratic Greeks through the 19th century. MR. HABENSTEIN.
- 440 **Seminar in Systematic Sociology (2)**  
Prerequisite 438 or 439. Evaluation of systems of current sociological theories; problems of theoretical system building, alternative approaches to the production of sociological knowledge. MR. HABENSTEIN.
- 442 **Field Problems in Archaeology (2-8) f, w, s.**  
Prerequisite, course 342. MR. CHAPMAN.
- 490 **Research (Credit to be arranged) f, w, s.**  
Advanced work leading to a thesis or dissertation. MEMBERS OF THE STAFF.

## SOILS

- 1 **Introduction to Soil Science (3) f, w.**  
Soils as influenced by geography, geology, temperature, rainfall, and other natural factors. The soil as a factor in the ecology of plants, farm crops, animals, and peoples. MR. ALBRECHT.
- 100 **Soils (5) f, w.**  
Prerequisites, Chemistry 1 and Geology 2. Soils and the principles underlying their rational management. MR. GRAHAM; MR. WOODRUFF.
- 101 **Forest Soils (3) w.**  
Prerequisites, Chemistry 1 and Geology 2. Soils under forests, their classification, organic matter, microorganisms and management. MR. SPRINGER.
- 102 **Soil Surveying and Land Appraisal (3) f.**  
Prerequisite, course 100. The principles and practices of soil surveying, soil judging and land appraisal. MR. SCRIVNER.
- 200 **Problems (1-5) f, w, s.**  
Prerequisite, ample background in soils and allied sciences. Assigned problems in soil genesis, physics, fertility, or biology. MEMBERS OF THE STAFF.
- 201 **Soil Management (3) w.**  
Prerequisite, course 100. Principles of soil management as applied to the physical improvement and the fertility maintenance of soils. MR. SMITH.
- 301 **Soil Fertility and Plant Nutrition (3) f.**  
Prerequisite, course 100. Eight hours of chemistry should precede this course. The essential principles in maintaining soil fertility. MR. ALBRECHT; MR. GRAHAM.
- 302 **Fertilizers (2) f.**  
Prerequisites, courses 100 and 201. The constituents, manufacture, and proper use of various kinds of fertilizers. MR. SMITH.
- 305 **Soil Microbiology (3) w.**  
Prerequisites, courses 100 and General Bacteriology. Microorganic life of the soil in relation to soil fertility. MR. ALBRECHT; MR. GRAHAM.

**306 Soil Development and Morphology (2) f.**

Prerequisite, course 100. Course 102 is recommended. Soil origin and development as determined by environmental factors. Offered in 1956-57 and alternate years. Mr. MARSHALL.

**307 Physical Properties of Soils (3-5) w.**

Prerequisites, course 100 and college physics. The physical constitution of soils in relation to soil structure, consistency, water relationships, aeration, and temperature. Offered in alternate years. Not offered in 1956-57. Mr. WOODRUFF.

**308 Soil Conservation (3) f.**

Prerequisite, course 100. Agricultural Engineering 221 recommended. Conservation of soils with respect to fertility, erosion, and other deterioration. Mr. WOODRUFF.

**350 Special Readings (1-3) f, w, s.**

Individual study of assigned subjects. MEMBERS OF THE STAFF.

**351 Soil Management Problems (2-3) s.**

Prerequisite, ten credit hours in soils, or the equivalent. A study of soil management with emphasis on either (a) the geology and mineralogy of soil development, or (b) soil fertility, plant nutrition and plant composition, or (c) fertilizers and fertilizer reactions. Credit under either (a), or (b), or (c) variable with extra readings. MEMBERS OF THE STAFF.

**400 Problems (2-5) f, w, s.**

Prerequisite, one year of graduate study for non-majors in soils. Independent investigation of soil problems not terminating in a thesis. MEMBERS OF THE STAFF.

**403 Theories and Applications in Soil Research (2) w.**

Prerequisite, graduate standing. The development of theories underlying the major phases of soil research and the methods of conducting soil investigations. Offered in alternate years. Not offered in 1956-57. Mr. ALBRECHT.

**404 Physical Chemistry and Mineralogy of Soils (3-5) f.**

Prerequisite, physical or colloid chemistry. The nature and properties of the inorganic and organic soil colloids. Offered in 1956-57. Mr. MARSHALL.

**410 Seminar (1) f, w.**

Discussion of recent developments in soil science. Papers on assigned topics including research problems are presented for discussion. Mr. MARSHALL.

**490 Soil Research (Credit to be arranged) f, w, s.**

Special investigation in soils. MEMBERS OF THE STAFF.

**SPANISH (See ROMANCE LANGUAGES)****SPEECH AND DRAMATIC ART**

Speech and Hearing Clinic. In courses 1, 2, 175, 176, 333, 334, 346, 371, 372, and 376, the instructor will refer any students having unsatisfactory habits of speech to the Speech Clinic. Students enrolled in other courses in the Department of Speech and Dramatic Art may enter the Clinic. Any student enrolled in the University may be admitted at the discretion of the Director. Residents of the State of Missouri may be admitted whenever the facilities permit, on complying with regulations governing the Clinic. Mr. SANDERS; Mrs. TROMBLY; Miss WELLS.

*Course 1, or the equivalent, is prerequisite to all other courses in the department, except 6, 10, and 252.*

**1 Oral Communication (2) f, w.**

Individual attention to speech problems. Required of students in Arts and Science and Engineering, except those who fulfill the requirements through the speech survey. Mr. REGAN; Mr. SANDERS; Mr. WELCH.

**2 Voice and Articulation (2) f, w.**

Prerequisite, Course 1, or the equivalent. A study of the techniques for improving the speaking voice and of theories underlying those techniques. Attention is given to the student's articulation, pronunciation, voice quality, and general expressiveness. Mr. DAVIDSON; Mrs. HIGDON; Mr. POPE.

**6 Introduction to the Theatre (2) f, w.**

Consideration of contributions to modern dramatic production by directors, actors, designers and playwrights; illustrated lectures; recordings. An appreciation of the contemporary theatre. Mr. RHYSBURGER.

**7 Beginning Collegiate Debate (1) f.**

Procedures and practice in collegiate debating for students without any or only limited experience in intramural or interscholastic debating. Mr. ROGGE.

**10 British and American Oratory (2) f, w.**

Analysis of masterpieces of British and American oratory with reference to the audience, the occasion, the speaker, and the subject. Mr. ALY; Mr. REID.

**20 Theatre (1) f, w.**

Practical work and participation in theatre activities under faculty supervision. Mr. BLADOW.

**105 Principles of Radio and Television (3) f.**

Prerequisite, course 2. Radio and television broadcasting as a special form of speaking, with consideration of the problems arising from the nature of the audience. Mr. PAXTON.

**106 Types of Radio and Television Programs (3) w.**

Prerequisite, course 2. Program building, based on analysis of the kinds of programs in present use. Mr. PAXTON.

**172 Collegiate Debate (1) f.**

Prerequisite, course 7 or consent of the instructor. Procedures and practice in collegiate debating leading to interscholastic debates. Mr. ROGGE.

**175 Public Speaking (3) f, w, s.**

Prerequisite, course 1 or the equivalent and sophomore standing. Lectures, assigned reading, and practice in parliamentary procedure, preparation, and delivery of speeches. Mr. ALY; Miss BROOKSHIRE; Mr. CHING; Mr. KUHR; Mrs. McCURDY; Mrs. HIGDON; Mr. ROGGE.

**176 Persuasive Speaking (3) f, w.**

Prerequisite, course 175. Public and conference speaking with emphasis on the principles of logical and psychological persuasion; special attention to the individual problems of each student. Mr. REID; Mr. HAAKENSEN; Mrs. McCURDY.

**252 Staging Techniques for Theatre and Television (3) f, w, s.**

Prerequisite, 5 hours of humanities. Theory and functions of stage and television settings; methods of scene construction; brief consideration of principles of stage and television lighting. Mr. BLADOW.

**300 Problems (Credit to be arranged) f, w.**

Individual problems designed for students whose major interests require special attention. MEMBERS OF THE STAFF.

**305 Radio and Television Production: I (3) w.**

Prerequisite, courses 105 and 106 or the equivalent. Analysis of problems in production of radio and television broadcasts with special reference to discussion and speechmaking. Mr. HAAKENSEN.

**306 Radio and Television Production: II (3) w.**

Prerequisite, courses 105 and 106 or the equivalent. Analysis of problems in production of radio and television broadcasts with special reference to dramatic programs. Mr. HAAKENSEN.

**308 Radio, Television and Society (3) w.**

Prerequisite, 106 or consent of instructor. The role of broadcast media as influential factors in society; a study of the nature and extent of the impact of radio and television. Mr. HAAKENSEN.

- 311 American Phonetics (3) f, w, s.**  
Analysis of the sounds of American speech, with some attention to historical and comparative phonetics; standards of pronunciation; dialect studies. MR. REIM.
- 322 Speech Correction (3) w, s.**  
Systematic study of defects of speech, with emphasis on articulatory problems; lectures, case presentations, laboratory demonstrations, readings. MISS WELLS.
- 323 Speech Therapy (3) f.**  
Prerequisite, course 322 or the equivalent. Study and practice of types of therapy employed with the defective in speech. MISS WELLS.
- 324 Speech Rehabilitation (3) w.**  
Prerequisite, course 322 or the equivalent. Study of major speech disorders with observation and practice of techniques employed in rehabilitation and in diagnostic procedures. MISS WELLS.
- 326 Audiology (3) s.**  
Mechanism and functioning of hearing with special reference to the measurement of speech sound perception. MISS WELLS.
- 333 Oral Interpretation: Prose (3), f, w.**  
Prerequisite, two semesters of literature. Intensive study of forms of prose; principles of oral reading; individual drill, and classroom presentation of selections. MISS BROOKSHIRE.
- 334 Oral Interpretation: Poetry (3) f, w.**  
Prerequisite, two semesters of literature. Intensive study of forms of poetry; theories of interpretation; practice in reading; programs of readings presented to the class audience. MISS BROOKSHIRE.
- 340 Theatre and Television Workshop (8) s, only.**  
A participative laboratory in theatre and television production including STARLIGHT THEATRE, SHOWCASE and MISSOURI FORUM TV shows. MR. BLADOW; MR. HAAKENSEN; MR. RHYSBURGER.
- 343 Dramatic Interpretation (3) f, s.**  
Study and practice of make-up; Techniques of Stage and Television pantomime in theory and practice; improvisation. MR. BLADOW.
- 346 Characterization and Acting (3) w.**  
Acting technique in theory and practice; methods and procedure in building characterization for plays; individual and group rehearsal and performance. MR. BLADOW.
- 352 Elementary Design for Stage and Television (3) f.**  
Prerequisite, course 252. History of the development of the physical plant and stage and television decoration. Principles of scenic design; sketching, rendering, and scene painting techniques. MR. BLADOW.
- 353 Advanced Design for Stage and Television (3) w.**  
Prerequisite, course 352. History of architectural forms and periods applicable to scenic design. Trends and styles in design and production. Problem in design and lighting. MR. BLADOW.
- 361 Principles of Direction For Stage and Television (3) f, s.**  
Analysis, study and practical demonstrations of fundamental principles of directing; consideration of all the visual aspects of directing. MR. RHYSBURGER.
- 364 Play Production For Stage and Television (3) w, s.**  
Prerequisite, course 361. Directing different kinds of plays for stage and television; casting, rehearsals, and production. MR. RHYSBURGER.
- 371 Discussion (3) f.**  
Prerequisite, course 175. Procedures in various forms of modern group discussion, studied in application to current problems. MR. ALY; MR. HAAKENSEN; MR. ROGGE.
- 372 Debating (3) w.**  
Prerequisite, course 175. Procedures in debating with practice in analysis, briefing, and delivery. MR. ALY; MR. ROGGE.

- 374 **Argumentation (3) w.**  
Prerequisite, course 176. Technique of persuasion by means of logical and psychological analysis. MR. ALY.
- 376 **Public Address (3) w.**  
Prerequisite, course 175. Principles of speech composition; persuasive speaking adapted to audience and occasion; study and delivery of deliberative, professional, social, and ceremonial speeches. MR. ALY.
- 381 **Principles of Rhetoric (3) f, w.**  
Prerequisite, course 175. Development of rhetoric from the time of Corax, with emphasis upon Aristotle; derivation and application of standards for judging effectiveness in speaking. MR. REID.
- 391 **Beginning Playwriting (3) f, w.**  
Study and practice of the fundamentals of playwriting with special emphasis upon the dramatic form of the one-act play and its adaptability to the mediums of stage, radio, and television. MR. RHYNSBURGER; MR. DAY.
- 393 **Radio and Television Playwriting (3) w.**  
Basic techniques of writing drama for the aural medium, with adaptation for television. MR. RHYNSBURGER.
- 400 **Problems (Credit to be arranged) f, w, s.**  
Individual work not leading to dissertation. MEMBERS OF THE STAFF.
- 401 **Speech Bibliography and Method (3) f, s.**  
The discovery, delimitation, and investigation of graduate problems in the field of speech. MR. ALY.
- 405 **Television Speaking (3) f.**  
Theory and practice of speechmaking applied to television programming. MR. HAAKENSON.
- 406 **Television Drama (3) w.**  
Theory and practice of the arts of production utilized in television drama. MR. RHYNSBURGER.
- 411 **Comparative Phonetics (3) f.**  
Review of the sound systems of French, German, Spanish, and other languages, with application to problems of foreign accent. MISS WELLS.
- 422 **Speech Pathology (3) f, s.**  
Prerequisite, course 322 or the equivalent. Studies in the causes, symptoms, and management of disorders of speech; review of current theories and of recent experimental work. MISS WELLS.
- 434 **Theories of Oral Interpretation (3) w.**  
Prerequisite, course 333 or 334. Examination of the basic philosophies of the interpretation of literature. Consideration of the development of interpretation in England and America. MR. ALY.
- 450 **Research (Credit to be arranged) f, w, s.**  
Research equivalent to that done for dissertation, but not leading directly to the preparation of a thesis. MEMBERS OF THE STAFF.
- 462 **Theories of Dramatic Production (3) w.**  
Prerequisite, course 364. Methods of producing tragedy, melodrama, comedy, and farce. Influence of styles of directing on interpretation and presentation. MR. RHYNSBURGER.
- 472 **Forensics (3) w.**  
Prerequisite, course 374. Analysis and criticism of topics and propositions, with review of current bibliography and materials. MR. ALY.
- 485 **Rhetorical Criticism (3) f.**  
Prerequisite, course 381. A study of rhetorical theory in principles and practice; application of categories of rhetorical criticisms to periods and movements in public address. MR. REID.

- 488 **History and Criticism of British Oratory (3) w.**  
Prerequisite, course 381. A study of structure, modes of persuasion, and style in typical British oratory from the seventeenth century to the present. MR. REID.
- 489 **History and Criticism of American Oratory (3) f.**  
Prerequisite, course 381. The history of public speaking in America, with emphasis upon the relation of historical development to current problems in criticism of public address. MR. ALY.
- 490 **Research (Credit to be arranged) f, w, s.**  
Candidates for advanced degrees will meet with advisers for consultation on their individual problems. MR. ALY; MR. BLADOW; MR. HAAKENSEN; MR. REID; MR. RHYNSBURGER; MISS WELLS.

## SURGERY

- 198 **Introduction to Surgery**  
General principles of surgery are covered briefly along with instruction on how to apply bandages and dressings. For sophomore students in the second semester. DR. BURDETTE AND STAFF.

### Surgery Clinical Clerkship

General surgery is taught by means of conferences, lectures, ward rounds, and seminars and through attendance on the surgical wards and in surgical clinics. Students are assigned to patients on the wards and also assist in the operating room. Insofar as possible a patient is assigned to the same student each time he is admitted either to the hospital or the outpatient clinic. Included in the course of study are a series of conferences on oncology and surgical pathology. Clinics include general surgery, neurological surgery, ophthalmology, otorhinolaryngology, urology, and orthopedics. An introduction to operative technique is taught in a weekly canine surgery laboratory. Offered in rotation to one-third of the junior class for twelve weeks. DR. BURDETTE AND STAFF.

### Surgery Clinical Clerkship

Instruction in surgery is continued in the senior year with emphasis on the surgical specialties. Courses in pre and post-operative care, thoracic and cardiovascular surgery, anesthesiology, and surgical anatomy are included as well. The student is also given more responsibility in the care of his patients, under appropriate supervision. Offered to one-fourth of the senior class in rotation during a period of twelve weeks. DR. BURDETTE AND STAFF.

## VETERINARY ANATOMY

- 100 **Veterinary Gross Anatomy (7) f.**  
A study of the gross structures of the dog, from which comparisons are made and applied to other domestic animals, consisting of osteology, myology, arthrology, angiology, splanchnology and neurology. DR. WEINMAN.
- 101 **General Veterinary Science (3) f, W.**  
For agricultural students. Prerequisite: Zoology I. An elementary study of the anatomy and physiology of domestic animals and the prevention of common diseases of farm animals. MEMBERS OF THE STAFF.
- 105 **Veterinary Histology (3) f.**  
A study of the microscopic structure of the body to cover cells, tissues and organs, histogenesis, embryogenesis, and structure. DR. CRENSHAW.
- 110 **Veterinary Gross Anatomy (7) w.**  
A continuation of 100 with greater emphasis on a study of comparative anatomy of the common domestic animals. DR. WEINMAN.
- 115 **Veterinary Histology (3) w.**  
A continuation of 105. DR. CRENSHAW.
- 122 **Veterinary Applied Anatomy (1) w.**  
A review of systematic anatomy as it pertains to clinical application, physical diagnosis and surgery. DR. WEINMAN.



- 200 Problems (Credit to be arranged) f, w, s.**  
Assignment of special problems for training in research in veterinary anatomy or histology. DR. CRENSHAW; DR. WEINMAN.
- 300 Problems (Credit to be arranged) f, w, s.**  
Assignment of special problems for training in research in veterinary anatomy or histology. DR. CRENSHAW; DR. WEINMAN.
- 315 Advanced Veterinary Anatomy (5) f, w, s.**  
Prerequisite: Approval of department chairman. Regional, systematic, and topographic dissections as related to Veterinary Medicine and Surgery.

## VETERINARY BACTERIOLOGY AND PARASITOLOGY

- 107 Poultry Sanitation and Disease Prevention (3) w.**  
Prerequisite, General Veterinary Science 101 and Botany 202, General Bacteriology. Preventive measures for control of poultry diseases and parasites. DR. DURANT.
- 124 Veterinary Bacteriology (3) f.**  
A general course to acquaint the student with the fundamentals, and to study various representative forms in relation to bacteriological techniques in veterinary medicine. DR. McDOUGLE; DR. SHELTON.
- 126 Veterinary Parasitology (5) f.**  
General introduction to parasitology, a study of veterinary proto-zoology, morphological and biological aspects of helminthology, and a brief review of external parasites. DR. SHELTON.
- 132 Veterinary Bacteriology (5) w.**  
Pathogenic microorganisms of farm animals and their relation to public health. Reactions to various antigens and production methods of veterinary biologics. Virology is included with consideration given to filterable viruses important in veterinary medicine. DR. McDOUGLE; DR. SHELTON.
- 134 Veterinary Parasitology (3) w.**  
A detailed study of the parasites of each domestic animal. Special emphasis is placed on the parasites of public health importance. DR. SHELTON.
- 200 Problems (Credit to be arranged) f, w, s.**  
Assignment of special problems for training research in veterinary bacteriology. MEMBERS OF THE STAFF.
- 300 Problems (Credit to be arranged) f, w, s.**  
Prerequisite, a degree in Veterinary Medicine. MEMBERS OF THE STAFF.
- 301 Research Methods in Veterinary Parasitology (3) w.**  
Prerequisite, graduate standing in biological science or Veterinary Medicine. The study and application of methods used for parasitological research in domestic animals. DR. SHELTON.
- 410 Seminar (1-2) f, w.**  
Study of researches in poultry diseases. Open to graduate students in veterinary medicine and to graduate students specializing in animal, dairy and poultry husbandry. MEMBERS OF THE STAFF.
- 490 Research (Credit to be arranged) f, w, s.**  
An inquiry into the nutrition and metabolic activities of disease producing agents of farm animals and poultry. MEMBERS OF THE STAFF.

## VETERINARY MEDICINE AND SURGERY

- 140 Veterinary Clinical Orientation and Diagnosis (2) w.**  
Methods and procedures employed for determining the condition and health of the patient. DR. NIEMEYER.

- 142 **Veterinary Medicine (3) f.**  
Prerequisites 124 and 132. The diagnosis and treatment of diseases and parasites of poultry. DR. McDOUGLE.
- 148 **Veterinary Medicine (5) f.**  
The study of diseases of small animals, consisting of diagnosis, prognosis, treatment, care, breeds, and type. DR. HOWELL.
- 152 **Veterinary Surgery (3) f.**  
The basic principles of surgery with laboratory applications. DR. HOWELL.
- 158 **Veterinary Clinic (4) f.**  
A practical application of diagnosis and treatment of clinical patients. MEMBERS OF THE STAFF.
- 164 **Veterinary Radiology (1) w.**  
Basic fundamentals in the use of X-ray equipment. DR. CASE.
- 166 **Veterinary Medicine (5) w.**  
A detailed study of the diseases of large animals, including diagnosis, prognosis, treatment and care. DR. MCGINITY.
- 168 **Veterinary Surgery (3) w.**  
A continuation of course 152 including small animal surgery and ophthalmology. DR. HOWELL.
- 178 **Veterinary Clinic (4) w.**  
Continuation of course 158. MEMBERS OF THE STAFF.
- 182 **Veterinary Professional Orientation (1) f.**  
Medical economics, applied veterinary ethics, and laws pertaining to the practice of veterinary medicine. DR. GROTH.
- 184 **Veterinary Surgery (3) f.**  
Continuation of courses 152 and 168 with emphasis on large animals. DR. EBERT.
- 186 **Veterinary Clinic (8) f.**  
Ambulatory clinic required of senior students. Advanced application and continuation of course 178. MEMBERS OF THE STAFF.
- 188 **Veterinary Obstetrics and Reproductive Diseases (5) f.**  
Diseases of the reproductive organs, their causes, control, treatment; and normal and abnormal parturition. DR. UREN; DR. BIERCHWAL; DR. MCGINITY.
- 192 **Veterinary Clinic (15) w.**  
Continuation of course 186. MEMBERS OF THE STAFF.
- 198 **Veterinary Medicine (5) w.**  
The study of infectious diseases of farm animals including their relationship to public health. DR. GROTH.
- 310 **Advanced Techniques in Radiology (Credit to be arranged) s.**  
Special application to domestic animals. Prerequisite, a degree in Veterinary Medicine. DR. CASE.
- 320 **Advanced Surgical Techniques (Credit to be arranged) s.**  
Special application to small animals. Prerequisite, a degree in Veterinary Medicine. DR. HOWELL; DR. EBERT.

## VETERINARY PATHOLOGY

- 108 **Stock Farm Sanitation and Disease Prevention (3) f, w.**  
Prerequisite, course 101 and Botany 202, General Bacteriology. Preventive measures for diseases and parasites of farm animals. DR. RODABAUGH.
- 128 **Veterinary Pathology (5) f.**  
A detailed study of disease manifestations of the body as caused by various disease producing agents. DR. ELDER; DR. KINTNER.

- 136 **Veterinary Pathology (5) w.**  
Continuation of course 128. Special attention is given specific body tissues and organs. DR. ELDER; DR. KINTNER.
- 144 **Veterinary Clinical Pathology (2) f.**  
The application of laboratory methods in the diagnosis of disease. DR. BERRIER.
- 162 **Veterinary Meat Inspection (3) w.**  
Meat and meat products in relation to public health, including basic phases of meat inspection. DR. ELDER.
- 200 **Problems (Credit to be arranged) f, w, s.**  
Assignment of special problems for training in research in veterinary pathology. DR. ELDER.
- 300 **Problems (Credit to be arranged) f, w, s.**  
Prerequisite, a degree in veterinary medicine. MEMBERS OF THE STAFF.
- 305 **Pathological Technique (Credit to be arranged) f, w.**  
Prerequisite, 10 hours of chemistry. A study of special methods and techniques in the fixation, preparation, and staining of pathological specimens. DR. ELDER; DR. KINTNER.
- 410 **Seminar (1-2) f, w.**  
Study of researches in animal diseases. Open to graduate students in veterinary medicine and to graduate students specializing in animal and dairy husbandry. DR. ELDER.
- 420 **Advanced Histo-Pathology (5) f, w.**  
Advanced microscopical study of pathological tissue. Open to graduates in veterinary medicine. MEMBERS OF THE STAFF.
- 430 **Advanced Clinical Pathology (4) f, w.**  
Laboratory techniques and their interpretation in relation to animal diseases. Open to graduates in veterinary medicine. MEMBERS OF THE STAFF.
- 490 **Research (Credit to be arranged) f, w, s.**  
Experimental investigation of animal disease and of measures of prevention and treatment. Open to graduate students who have the requisite preparation. MEMBERS OF THE STAFF.

## VETERINARY PHYSIOLOGY AND PHARMACOLOGY

- 120 **Veterinary Physiology (5) w.**  
The normal physiological functions of nervous, circulatory, and respiratory systems. DR. ROSEBOOM; DR. DALE.
- 121 **Animal Physiology (3) w.**  
Prerequisite: General Veterinary Science 101. Introduction to the physiology of the nervous, circulatory, respiratory, digestive, excretory, and reproductive systems. For undergraduates not in the School of Veterinary Medicine. DR. ROSEBOOM; DR. DALE.
- 130 **Veterinary Physiology (5) f.**  
The normal physiological functions of nutrition, reproduction, and the special senses. DR. ROSEBOOM; DR. DALE.
- 138 **Veterinary Pharmacology (3) w.**  
A study of pharmacy and pharmacodynamics. DR. UREN; DR. ROSEBOOM; DR. DALE.
- 146 **Veterinary Pharmacology and Therapeutics (3) w.**  
A study of drugs important in veterinary medical practice and their actions. DR. UREN; DR. ROSEBOOM; DR. DALE.
- 200 **Problems (Credit to be arranged) f, w, s.**  
Assignment of problems for training in research in veterinary physiology and pharmacology. DR. UREN; DR. ROSEBOOM; DR. DALE.
- 330 **Veterinary Physiology (5) f.**  
Physiology of nervous, respiratory, circulatory, and digestive system. Demonstrated with Laboratory Animals and Man. For graduate students other than Veterinarians. Offered in alternate years. Not offered in 1956-57. DR. DALE.

- 450 Research (Credit to be arranged) f, w, s.**  
Experimental investigations of the physiology of domestic animals. Open to graduate students who have the requisite preparation. MEMBERS OF THE STAFF.
- 490 Research (Credit to be arranged) f, w, s.**  
Experimental investigations of the physiology of domestic animals. Open to graduate students who have the requisite preparation. MEMBERS OF THE STAFF.

## ZOOLOGY

- 1 General Zoology (5) f, w, s.**  
Animal form, function, evolution, and interrelationships. The social implications of scientific attitudes and of zoological technology. MR. WELLS.
- 50 Experimental Zoology (3) f.**  
Prerequisite, course 1. An introduction to experimental methods including laboratory participation in examples of classical experiments in different branches of Zoology. MR. NOVITSKI AND MEMBERS OF THE STAFF.
- 150 Human Heredity (3) f.**  
Prerequisite, 5 hours in biology. If preceded by Zoology 340, this course carries only one hour of credit. The principles of human inheritance as encountered in the study of families and pedigrees and of large populations. MR. NOVITSKI.
- 200 Comparative Anatomy of Vertebrates (5) w.**  
Prerequisite, course 1. A comparative study of the organ-systems of a series of vertebrates. MR. CONAWAY.
- 222 Vertebrate Embryology (5) f.**  
Prerequisite, course 1; course 200, Comparative Anatomy, recommended. A comparison of the basic patterns of development in vertebrates. MR. CONAWAY.
- 230 Invertebrate Zoology (5) w.**  
Prerequisite, course 1. Structure, ecology, and phylogeny of the more important invertebrates. MR. FRANK.
- 300 Problems (1-5) f, w, s.**  
Individual work under supervision, designed to supplement regularly organized courses in zoology and as an introduction to research. MEMBERS OF THE STAFF.
- 302 Evolution (3) w.**  
Prerequisite, Zoology 1 or Botany 1 and five additional hours from zoology, geology or botany; or upper class standing. A survey of the evidence for organic evolution, with a critique of the various theories proposed in the field. MEMBERS OF THE STAFF.
- 303 Microtechnique (3) f.**  
Prerequisite, junior standing. Methods and techniques used in the preparation of tissues for microscopic examination. MR. CONAWAY.
- 304 Problems and Materials in the Teaching of Zoology (2) f.**  
Prerequisite, course 1 and senior or graduate standing. Objectives and organization of General Zoology and related courses. Problems, materials, and techniques particular to the teaching of zoology. MR. WELLS.
- 310 Parasitology (3) f.**  
Prerequisite, 8 hours in zoology. A general survey of animal parasites with emphasis on morphology, life history, and host-parasite relationships. MR. FRANK.
- 322 Experimental Embryology (3) f.**  
Prerequisite, course 222 or equivalent training. A study of the developmental processes as revealed by experimental methods. Offered in alternate years. Not offered in 1956-57. MR. FLEMING.
- 330 Cellular Physiology (3-5) f.**  
Prerequisite, biology, 10 hours; organic chemistry, 5 hours; physics, 5 hours. The cell as a functional unit. Lectures alone may be taken by graduate students or by consent of the instructor. MR. FLEMING.

- 333 Histology of Vertebrates (4) w.**  
Prerequisite, 5 hours of zoology and junior standing. Microscopic anatomy of vertebrate tissues and organ systems. MR. CONAWAY.
- 340 Genetics (3-5) w.**  
Prerequisite, 8 hours in biology, upperclass standing. If preceded by zoology 150, this course carries only four hours of credit. The experimental study of heredity and variation. Lectures alone may be taken by graduate students. MR. NOVITSKI.
- 355 Biology of Animal Populations (3) w.**  
Prerequisite, course 1 and senior or graduate standing. Principles and problems of population ecology with illustrations of basic research techniques used. A large segment of the course will consist of an examination of original publications. MR. FRANK.
- 360 Biometry (3) f.**  
Prerequisite, Mathematics 7 or 10. An introduction to the statistical methods most commonly used in biology. MR. FRANK.
- 365 Comparative Endocrinology (3) f.**  
Prerequisite, 8 hours zoology, and senior or graduate standing. An examination of endocrine systems and their functions as they occur throughout the animal kingdom, with special emphasis on the invertebrates. Offered 1956-57 and alternate years. MR. FLEMING.
- 370 Comparative Animal Physiology (3) w.**  
Prerequisite, course 1. Functional differentiation of animal groups, its adaptive and evolutionary significance. MR. WELLS; MR. FLEMING.
- 400 Problems (1-5) f, w, s.**  
Research not expected to terminate in a thesis or advanced study in special subjects. MEMBERS OF THE STAFF.
- 410 Seminar in Zoology (1) f, w.**  
Discussions of investigations in zoology by qualified students, instructors and guests. MR. CONAWAY AND MEMBERS OF THE STAFF.
- 420 Endocrinology (3) f.**  
(Same as Dairy Husbandry 420). The hormones of the pituitary and the endocrine glands with special reference to their influence upon growth, reproduction, and milk secretion. MR. TURNER.
- 422 Advanced Experimental Embryology (3) f.**  
Prerequisite, courses 322 and 330, or equivalent training. Recent developments in cellular structure and physiology as applied to developmental processes.
- 423 Advanced Experimental Embryology Laboratory (3) w.**  
Development of special techniques for research in experimental embryology.
- 451 Seminar in Genetics (1) f, w.**  
(Same as Botany 451.) Discussion of current investigation in genetics. A reading knowledge of German and French is desirable. MR. NOVITSKI.
- 452 Advanced Genetics (3) f.**  
(Same as Botany 452.) Prerequisite, Zoology 340 or equivalent training. Readings and discussion of the nature of the gene, and its relation to development. MR. NOVITSKI.
- 453 Advanced Genetics (3) w.**  
(Same as Botany 453.) Prerequisite, Zoology 340 or equivalent training. Reading and discussion of sex determination, quantitative inheritance, speciation, and related topics. MR. NOVITSKI.
- 454 Advanced Genetics Laboratory (3) f.**  
Prerequisite, course 452; may be taken concurrently. Experimental study of chromosomal aberrations, crossing-over, and related problems. MR. NOVITSKI.
- 456 Cytogenetics (3) f.**  
(Same as Botany 456.) Prerequisite, Zoology 340 or equivalent training. Lectures and laboratory study dealing with chromosomal basis of heredity.

- 470 Advanced Cellular Physiology (3) w.**  
Prerequisite, course 330 or equivalent training. Intensive discussion of special topics in continuation of course 330. MR. FLEMING.
- 471 Advanced Cellular Physiology Laboratory (3) w.**  
Prerequisite, course 330 or equivalent training. Designed to give the student training in the common techniques used in cellular physiology. MR. FLEMING.
- 490 Research in Zoology (Credit to be arranged) f, w, s.**  
Investigation of unsolved problems undertaken with the expectation that the work will terminate in a thesis. A reading knowledge of French and German is essential. MEMBERS OF THE STAFF.

## Field Zoology

### *Including Wildlife Conservation and Management*

Students who expect to specialize in wildlife conservation and management should confer with Mr. Elder in their freshman year.

- 5 Ornithology (3) w.**  
Prerequisite, 5 hours in biology or consent of instructor. Structure, identification, habits, and importance of birds of this region. Field work, lectures, and laboratory study. MR. ELDER.
- 60 Principles of Wildlife Conservation (3) f.**  
The biological principles involved in the conservation of animal life under natural conditions. MR. CAMPBELL.
- 102 Wildlife Writing (2) f.**  
Prerequisite, Zoology 60, 305, and either 309 or 311. The techniques of presenting the philosophy of conservation, wildlife management procedures and the results of technical research to the public. MEMBERS OF THE STAFF.
- 210 Field Zoology (3) f.**  
Prerequisite, 10 hours in zoology, junior standing. An introduction to the field and systematic study of the local fauna both invertebrate and vertebrate. MR. WITT.
- 215 Conservation for Teachers (3) s.**  
Methods and source materials effective in teaching conservation. Emphasis is given to our use and misuse of the renewable resources and the effect upon wildlife and man. MEMBERS OF THE STAFF.
- 301 Problems (1-5) f, w, s.**  
Individual work under supervision. MEMBERS OF THE STAFF.
- 305 Animal Ecology (3) w.**  
Prerequisite, Zoology 1 and either Botany 1 or Zoology 230. Biological principles governing the distribution of animals and their relations to their environment. MR. WITT.
- 309 Mammalogy (3) f.**  
Prerequisite, 8 hours in zoology or equivalent training. Taxonomy, distribution, structure, habits, and importance of mammals with special emphasis upon those of the central United States. MR. ELDER.
- 311 Ichthyology (3) w.**  
Prerequisite, 8 hours in zoology or equivalent training. The taxonomy, distribution, life history, and ecology of fishes, with emphasis upon those occurring in Missouri. MR. WITT.
- 318 Research Methods in Hydrobiology (4) f.**  
Prerequisite, zoology 10 hours, chemistry 10 hours, physics 5 hours. Field and laboratory techniques in limnology and fisheries investigations. MR. WITT.

- 401 Problems (1-5) f, w, s.**  
 Research not expected to terminate in a thesis, or advanced study in special aspects of field zoology or of wildlife conservation and management. MEMBERS OF THE STAFF.
- 405 Limnology (3) w.**  
 Prerequisite, graduate standing or consent of instructor. Biology, physics and chemistry of inland waters. MR. CAMPBELL.
- 411 Seminar in Wildlife Conservation and Management (1) f, w.**  
 Presentation and discussion of biological problems related to this field by instructors and students. MEMBERS OF THE STAFF.
- 415 Wildlife Management (5) f.**  
 Prerequisite, Zoology 305 and Botany 306 or equivalent. Backgrounds of land use and ecological forces basic to wildlife management. MR. ELDER.
- 418 Fisheries Management (2-3) w.**  
 Prerequisite, Zoology 318, or consent of instructor. Theory and practice in present day fisheries management. The student may elect to take lectures alone. MR. CAMPBELL.
- 491 Research in Field Zoology (Credit to be arranged) f, w, s.**  
 Investigation of unsolved problems in field zoology or in wildlife conservation and management, undertaken with the expectation that the work will terminate in a thesis. MEMBERS OF THE STAFF.





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