

University of Missouri-Columbia 2-27-78

Bulletin

Agriculture

UNIVERSITY OF MISSOURI-COLUMBIA

Calendar for 1978-79

First Semester

New Student Orientation and Registration
 Registration
 Classwork begins, 7:40 a.m.
 Labor Day Recess
 Pre-registration (Winter) begins
 Pre-registration (Winter) ends
 Thanksgiving Recess begins, 5:30 p.m.
 Classwork resumes, 7:40 a.m.
 Classwork First Semester ends, 5:30 p.m.
 Stop Day
 Final Examinations begin
 First Semester closes, 5:00 p.m.

Second Semester

New Student Orientation
 Registration
 Classwork begins, 7:40 a.m.
 Pre-registration (Summer & Fall) begins
 Pre-registration (Summer & Fall) ends
 Spring Recess begins, 12:30 p.m.
 Classwork resumes, 7:40 a.m.
 Classwork Second Semester ends, 5:30 p.m.
 Stop Day
 Final Examinations begin
 Second Semester closes, 5:30 p.m.
 Annual Commencement

Summer Session

Eight-Week Session

Registration and Orientation
 Classwork begins, 7:30 a.m.
 Summer Welcome begins
 Independence Day Recess
 Summer Welcome ends
 Summer Session closes, 5:00 p.m.
 Summer, Commencement

Four-Week Session I

Registration and Orientation
 Classwork begins, 7:30 a.m.
 Independence Day Recess
 Session I closes, 5:00 p.m.

Four-Week Session II

Registration
 Classwork begins, 7:30 a.m.
 Session II closes, 5:00 p.m.
 Summer Commencement

1978

Mon., Aug. 21
 Tues., Aug. 22
 Wed., Aug. 23
 Mon., Sept. 4
 Mon., Oct. 16
 Wed., Oct. 25
 Tues., Nov. 21
 Mon., Nov. 27
 Thurs., Dec. 7
 Fri., Dec. 8
 Sat., Dec. 9
 Sat., Dec. 16

1978

Thurs., Jan. 12
 Fri., Jan. 13
 Mon., Jan. 16
 Mon., March 20
 Fri., March 24
 Sat., March 25
 Mon., April 3
 Wed., May 3
 Thurs., May 4
 Fri., May 5
 Fri., May 12
 Sat., May 13

1979

Thurs., Jan. 11
 Fri., Jan. 12
 Mon., Jan. 15
 Mon., March 19
 Fri., March 23
 Sat., March 24
 Mon., April 2
 Wed., May 2
 Thurs., May 3
 Fri., May 4
 Fri., May 11
 Sat., May 12

Mon., June 12
 Tues., June 13
 Sun., June 18
 Tues., July 4
 Wed., July 19
 Fri., Aug. 4
 Fri., Aug. 4

Mon., June 12
 Tues., June 13
 Tues., July 4
 Fri., July 7

Mon., July 10
 Tues., July 11
 Fri., Aug. 4
 Fri., Aug. 4

Mon., June 11
 Tues., June 12
 Sun., June 17
 Wed., July 4
 Tues., July 17
 Fri., Aug. 3
 Fri., Aug. 3

Mon., June 11
 Tues., June 12
 Wed., July 4
 Fri., July 6

Mon., July 9
 Tues., July 10
 Fri., Aug. 3
 Fri., Aug. 3

BULLETIN

UNIVERSITY OF MISSOURI-COLUMBIA

Volume 79 Number 4 February 27, 1978 General 1978 Series Number 4

Robert E. Kren, *Director, Office of Public Information*
 John Rhein, *Publications Manager*

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UNIVERSITY OF MISSOURI-COLUMBIA

College of Agriculture Announcement

1978-79

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Compiled in the Office of the College of Agriculture

Administrative Officers

Herbert W. Schooling, Ed.D., Chancellor

Elmer R. Kiehl, Ph.D., Dean, College of Agriculture; Director, Agricultural Experiment Station

John H. Longwell, Ph.D., Dean Emeritus, College of Agriculture; Director Emeritus, Agricultural Experiment Station

Schell Bodenhamer, Ph.D., Associate Dean for Extension, College of Agriculture

Homer C. Folks, Ph.D., Associate Dean for Resident Instruction, College of Agriculture

William H. Pfander, Ph.D., Associate Dean for Research, College of Agriculture; Associate Director, Agricultural Experiment Station

Samuel B. Shirky, A.M., Associate Dean Emeritus, College of Agriculture; Associate Director Emeritus, Agricultural Experiment Station

Homer J. L'Hote, A.M., Assistant Dean, College of Agriculture; Assistant Director, Agricultural Experiment Station

J. Wendell McKinsey, A.M., Assistant Dean, College of Agriculture; Director, International Programs in Agriculture

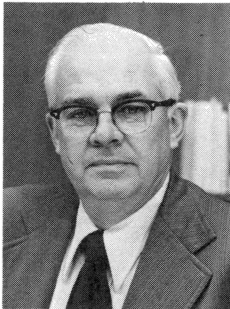
Ralph R. Rogers, M.S., Assistant to Dean and Director, College of Agriculture and Agricultural Experiment Station

Charles E. Campbell, Ed.D., Assistant Director of Agriculture Extension

Ray C. McClure, M.Ed., Counseling Coordinator, Counseling Psychologist, College of Agriculture; Instructor, Extension Education

Roger L. Morrison, M.S., Administrative Assistant to Associate Dean for Resident Instruction; Director of Agriculture Placement Office

James Reid, B.S., Fiscal Officer, College of Agriculture



Agriculture is a basic industry concerned with food and fiber. The challenge of producing enough food, clothing, and shelter to meet the world's needs will always be with us. Periods of surpluses come and go, but the growing world population will continue to pressure world food supplies.

Students in our College of Agriculture can prepare for a wide variety of careers. One reason American farmers are so productive is that they can call on the most advanced technology in the world in the form of feeds, seeds, fertilizers, pesticides, machinery, and services such as financing and veterinary medicine. After products are harvested on the farm, they move into a complex and efficient processing and marketing system that gives Americans a delightful choice of nutritious, tasty foods.

The key to this successful agricultural industry is highly trained personnel. Our College of Agriculture faculty is dedicated to helping individuals prepare for satisfying, financially rewarding careers in this industry. We have excellent and extensive facilities for instruction—from research farms to highly specialized laboratories. Our faculty provides individual advice and counsel to students as they plan their courses of study. Our graduates are in strong demand.

We encourage you to read through this publication to learn more about the opportunities for career education and personal growth in the College of Agriculture. We welcome your questions or visits.

Yours sincerely,

A handwritten signature in cursive script that reads "Elmer R. Kiehl".

Elmer R. Kiehl
Dean

The College of Agriculture

The General Assembly established the University of Missouri-Columbia College of Agriculture in 1870. For a number of years public sentiment had called for practical, useful college work instead of the established classical and humanitarian programs.

Prof. George C. Swallow, first Dean of the College, and his successor, Dean J. W. Sanborn, were able to initiate useful programs within the College of Agriculture. With the able help of Norman Colman, at that time U.S. Commissioner of Agriculture, and W. H. Hatch, Congressman from Missouri, Congress passed the Hatch Act in 1887. This law gave federal financial aid to each state to establish and operate an agricultural experiment station.

The Missouri Agricultural Experiment Station was established in 1888. Research work conducted by the station produces a wealth of information which is included in college courses and is available to farmers. The late Dean F. B. Mumford said, "From the very beginning, the College of Agriculture adopted a policy of extending its influence beyond the classroom to the farmer and his family actually engaged in the business of farming."

While on the State Board of Agriculture and the University Board of Curators, Colman working with Dean Sanborn started farmers' institutes throughout the state. College of Agriculture staff members were the principal speakers. From the

institutes evolved short courses in 1886. Farmer's Week in 1896 (later called Agriculture Science Week), and the Agricultural Extension Service in 1914.

Three major divisions of the College—the Agricultural Experiment Station, the Resident Instruction Program, and the Agricultural Extension Service—have had tremendous influence on Missouri agriculture.

RESOURCES

FACULTY

Research, teaching, and extension are responsibilities of the College of Agriculture faculty, which numbers about 300.

The opportunity for agriculture students to learn is not limited to courses they take in the College. Students register for classes irrespective of the college or division in which they enroll.

COLLEGE FACILITIES

Classrooms and laboratories are in several buildings on the main campus and at nearby research farms. Students studying agricultural subjects are closely associated with the total student body.

AGRICULTURAL RESEARCH AREAS

Land in the Columbia area assigned to the College and to the Agricultural Experiment Station totals 4,079 acres. In addition, the College has a number of farms and area centers in other parts of the state: the Delta Center at Portageville—930 acres; the Southwest Missouri Center near Mt. Vernon—887 acres; the North Missouri Center near Spickard—1,600 acres; Forage Systems Research Center near Linneus—1,200 acres; Greenley Center, Knox County—700 acres.

Research at area centers provides new information on problems in different sections of the state for use in teaching at Columbia. The land at Columbia is used for teaching and extension, as well as research projects.



COLLEGE OF AGRICULTURE STUDENT SERVICES

DEAN'S OFFICE

The Dean's Office is for the benefit and convenience of students. It establishes registration procedures, assigns advisers, maintains student records, enforces scholastic probation rules, and processes petitions and withdrawals.

PLACEMENT SERVICE

The College of Agriculture provides a placement service for graduating seniors, alumni seeking employment, and undergraduates wanting part-time and summer employment. The Placement Office maintains employment opportunity lists, distributes information concerning jobs, and schedules interviews.

Graduates of the College have been in great demand in 1976-77; 40 per cent of the graduates entered agribusiness and industry, 15 per cent went into farm production and management, 7 per cent entered teaching, 2 per cent joined the military, 9 per cent entered government, and 27 per cent continued their education in professional or graduate schools. The estimated average annual starting salary for those graduating in 1978-79 with a B.S. degree is approximately \$11,000.

For additional information contact the Placement Office, 2-64 Agriculture Bldg., telephone 314/882-4846.

STUDENT ADVISEMENT

The College of Agriculture prides itself in the effort put forth in student advisement. To set the stage for this, each student is assigned an academic adviser during the first semester. This key person then assists the student in course selection and involvement in student activities. The adviser also serves as a resource person in dealing with personal or other problems. Students are urged to meet and become acquainted with their adviser early in the semester, and to consult with their adviser when planning their academic program.

Professional counseling and career information are also available at the Office of



Counseling Services on the Columbia campus.

For further assistance, contact Ray C. McClure, Counseling Coordinator, 2-64 Agriculture Bldg., telephone 314/882-2450.

STUDENT ACTIVITIES

The College of Agriculture offers a wide variety of extracurricular student activities. For example:

1. Departmental clubs sponsor activities related to major interests, such as field trips and speakers as well as social events.
2. Students with special interests have formed clubs such as Married Aggies, 4-H, Rodeo Club, etc.
3. Each class and departmental club elects representatives to the Agricultural Divisional Student Council which sponsors activities, such as a leadership conference, a senior yearbook, and an Ag student newspaper.
4. Honorary organizations such as Alpha Zeta and Gamma Sigma Delta promote the ideals of scholarship and leadership, and recognize outstanding achievements by students in the College.

Students in the College also participate in campus-wide activities such as the Missouri Students Association, Marching Mizzou, and the athletic programs.

Ag students come from foreign countries and U.S. urban and rural areas. At UMC they reap the benefits of a large university, as well as the advantages of a small college, due to personal contact with Agriculture faculty and administrators.

UNIVERSITY SERVICES

Supervision of student housing is limited to University- and privately-owned

residence halls and to houses operated by fraternities, sororities, and cooperatives. University-owned apartment complexes are available for married students. Information on Student Health Service, band, student activities, Counseling Services, Speech and Hearing Clinic, military courses, motor vehicle registration, and general regulations and requirements may be found in the UMC *General Information* and the "M" Book.

ADMISSION

College Preparation

Students who follow a selected college preparatory course of study in high school improve their likelihood of being successful in college. The following units are recommended whenever possible: 4 units of English, 2-3 units of Mathematics (not including General Mathematics), 1-2 units of Social Science, and as much science as possible. Special emphasis should be placed on chemistry and biology. Special interest courses such as Vocational Agriculture may help students prepare for work in their chosen areas.

Admission to the Freshman Class

Candidates for admission to the freshman class of the College of Agriculture must have their principals or counselors forward official transcripts of their high school credits to the *Director of Admissions, 130 Jesse Hall, Columbia, Mo. 65201*.

Admission to the UMC College of Agriculture is based on high school rank and test scores. High school seniors must take one of the following standardized tests, and submit the scores and their high school rank to the Admissions Office: (1) School and College Ability Test (SCAT), which is part of the Missouri college placement test; (2) Ohio Psychological (OHIO); (3) American College Test (ACT); (4) Scholastic Aptitude Test (SAT).

High school graduates ranking in the upper 25 per cent of their graduating class may be admitted irrespective of test scores.

High school graduates with low class scores may be admitted if they score at a sufficiently high level on one of the above tests. See your high school counselor for details.

Advanced Credit Guidelines

Advanced standing to entering freshmen may be granted by:

1. performance on Missouri College Placement Tests (Math and English)—see your high school counselor or principal;
2. demonstrating proficiency in certain college courses such as English, math, history, botany, zoology, chemistry, accounting, political science, and foreign languages;
3. scoring well on the *general or subject matter* examinations of the CLEP (College Level Examination Program).

A maximum of three semester credit hours may be granted for each CLEP *Subject Examination*. Examinations must be passed with a score equal to the 50th percentile or higher on college sophomore norms and must be taken before the student has *90 semester credits*.

Students who want credit by the CLEP *General Exam* must take the exam before completing *30 semester hours* of college credit.

A student in the College can earn a maximum of 24 credits by the General Exam under the following restrictions:

1. **English:** A student may earn 6 credits by CLEP General that will count toward fulfilling the communications requirement.
2. **Mathematics:** A maximum of 3 credits is allowed in mathematics, however these credits *will not fulfill a Math 10 or the College Algebra requirement*.
3. **Natural Science:**
Physical Science: 3 credits by CLEP General *but no CLEP CREDIT IF Chemistry 1, or Physics 1 or 3 are taken.*
Biological Science: 3 credits by CLEP General *but no CLEP credit if the student takes Biological Sciences 1.*
4. **Social Science-History and Humanities:** A student may obtain 6 credits in Social Science-History and 3 credits in Humanities by CLEP General *or* 6 credits in Humanities and 3 credits in Social Science-History by CLEP General for a *9-hour credit* maximum.
5. *A record of previous enrollment in courses or subsequent enrollment in courses covered under restrictions above negates CLEP credit.*

Further information on advanced placement testing may be obtained by visiting the UMC Counseling Services, Noyes Building, or by contacting the Dean's office.

NEW STUDENT ENROLLMENT

- Ask your high school counselor, principal or other school official to send high school transcript, including class rank, to the Admissions Office, 130 Jesse Hall.
- Send application for admission to Admissions Office.
- When you receive a notice of acceptance, send \$20 as a pre-payment on fees.
- If you desire University housing, return housing application with a \$40 deposit.
- Pre-enroll during the June-July pre-enrollment session.

PRE-REGISTRATION

A period of advance registration is held during the summer for all freshman and transfer students. This program provides personal counseling and advisement on choice of classes. After receiving a permit to enroll, new students may proceed with advance registration during this period. If they have not taken the Missouri Placement Test, freshmen should report to the Information Desk, Memorial Union, before 8:30 a.m. so they will be able to complete registration that day. Students who have already taken the test, or upon completion of the test should report to the Dean's Office for pre-registration.

Transfer and former students who have been cleared for admission should report to the Dean's Office to be assigned an adviser. Students with questions should contact the Dean's Office.

(For detailed information on admission and registration, please refer to the UMC General Information.)

Satisfactory/Unsatisfactory Grading System

Students enrolled in the College of Agriculture may participate in the University system of *S/U* grading. Consider the disadvantages as well as the advantages of this system, and keep the following in mind:

1. *S* is the equivalent of *A*, *B*, or *C* performance.
2. *U* is the equivalent of *D* or *F* performance.
3. Students are allowed to enroll in only one course per semester on an *S/U* basis.
4. *S/U* grades and hours are not included in computing GPAs. Consult with your adviser if you need additional information.
5. A student may not enroll *S/U* if on probation.

Delayed Grades

A delayed grade may be recorded when the student's work is incomplete but otherwise worthy of credit, or when the instructor feels unable to assign a grade at the end of the semester.

1. A delayed grade must be made up within two semesters following enrollment in the course; the student should make arrangements with the instructor to complete the course.
2. *Do not re-register for the course.*

HONORS PROGRAM

The College of Agriculture Honors Program, designed to provide the academically talented student with greater curriculum flexibility, encourages breadth and depth of study in one or more specific areas.

To qualify, a student must have earned an accumulative GPA of 3.0 or above on 15 or more semester hours while enrolled for any baccalaureate degree program at the University of Missouri.

To remain in the program, a student must maintain an accumulative GPA of 3.0 or above. If the accumulative GPA falls below 3.0, the student has two semesters to raise it to 3.0. The semester GPA must not fall below 2.0 at any time.

Students must be admitted to the Honors Program before classes begin the last semester they are enrolled in the College of Agriculture; no student shall be admitted retroactively. An accumulative GPA of 3.0 or above is required for graduation through the Honors Program, which is recorded on the transcript.

If students are eligible for and wish to participate in the program, their advisers should petition the Dean with a recommendation for an advisory committee of at

least two faculty members, one of whom does not have to be in the major department or in the College of Agriculture. The Dean must approve the advisory committee.

The student and the advisory committee develop a schedule of courses which best meets the educational objectives for the particular student. There are no restrictions on courses, except for the State Law Requirement of history or political science. *The study program, signed by the student and advisory committee, must be submitted to the Dean by the last day of classes of the semester that the committee was appointed.* Upon the Dean's approval of the study program, the student is officially admitted to the Honors Program.

The student and the advisory committee must approve and sign changes in the study program; a change becomes effective upon approval of the Dean.

Even though students, because of grade-point average, become ineligible for the program, they continue to be advised by their advisory committees. If amendments are required in the program, the advisory committee should consider incorporating as many of the general requirements of the College as is practical.

The B.S. degree under the Honors Program requires 128 hours; however, the total number of hours may be reduced by up to 6 hours if the student successfully completes graduate-level courses in lieu of those hours. This provision is subject to the requirements of the specific departments. The student must dually enroll in the Graduate School to receive graduate credit.

INDEPENDENT STUDY COURSES

Some of the courses in the College are available by correspondence. For information, write the Center for Independent Study Through Correspondence, 514 S. Fifth St., Columbia, Mo. 65201.

NONTRADITIONAL STUDY PROGRAM

The Nontraditional Study Program in Agriculture provides an opportunity for

interested and qualified individuals to earn a degree in Agriculture, even though they cannot return to campus as full-time students.

Primarily, the Program is designed for people who

- have interrupted their college career some-time in the past;
- find it difficult or impossible to return to campus to complete degree requirements;
- have a need and desire for the B.S. degree in Agriculture and the motivation necessary to complete the requirements for the degree;
- are engaged in farming or agriculturally related business or desire to prepare themselves for these occupations;
- and who have not been full-time students during the five years preceding enrollment in the Nontraditional Study Program.

The degree awarded and the number of hours required for the degree is the same as for the campus-based program. Credit may be earned through examinations, extension courses, special projects, life-learning experiences, and/or several other unique avenues.

The course program, designed by the student and adviser, will include suggestions as to acceptable methods of obtaining the required credits.

FEES AND EXPENSES

Detailed information regarding fees and expenses is furnished in the UMC *General Information*. Also, the Cashier, Jesse Hall, will furnish on request pamphlets on student fees, tuition, and residence.

Students must estimate their own needs for clothing, transportation, and personal expenses. Other basic costs for *one semester* for an unmarried Missouri resident are estimated as follows:

Incidental Fee	\$300
Student Activities Fee	22
Room & Board in a UMC Residence	
Hall, including social fee	705
Books and supplies	70
Total for one Semester	\$1,097

(Married students have living expenses considerably different from those listed.)

In addition to the above, the student who is not a resident of Missouri is required to pay a tuition fee of \$600 per semester.

STUDENT FINANCIAL AIDS

Financial assistance for the college student may be in the form of scholarships, loans, grants, and work-study jobs. When the best financial planning of the student and family indicates financial assistance is needed, then one could seek help from the various forms of financial assistance available.

A number of scholarships specifically for students in the College of Agriculture are listed in this bulletin. Entering freshmen are asked to complete an application form and have a personal interview when applying for a scholarship.

Transfer students from junior colleges in Missouri may apply for designated scholarships. The student's academic record will be the basis for determining whether or not a scholarship will be awarded.

In addition to the financial assistance information in this bulletin, further information and application forms are available from: Student Financial Aids, Room 11 Jesse Hall, Columbia, Mo. 65201.

Each year, current information is sent to the Counselor's Office of each Missouri high school.

SCHOLARSHIPS

Freshmen—All freshmen must complete an application and be interviewed for agricultural scholarships. High school seniors are interviewed during October and November. Application forms may be obtained from your high school agricultural instructor, counselor, or principal, or by writing to Ray C. McClure, Counselor Coordinator, College of Agriculture, Columbia, Mo. 65201. Forms should be returned by March 1.

Upperclassmen—Any upperclass student wishing to apply for a scholarship may obtain an application form in the Associate Dean's Office in 2-64 Agriculture Building.

UNIVERSITY OF MISSOURI-FARMLAND INDUSTRIES-HOMER YOUNG NATIONAL MERIT SCHOLARSHIP: UMC presents a scholarship to an entering Agriculture freshman who is a National Merit Finalist. Preference is given to Missouri residents. However, if qualified students are not identi-

fied in Missouri, then finalists from other Farmland trade areas are considered. This scholarship ranges, according to need, from \$100-\$1,500.

AGRICULTURAL ENGINEERING ALUMNI SCHOLARSHIP: A \$150 award is given to a Missouri high school graduate enrolled in the College of Agriculture or College of Engineering and pursuing a career in agricultural engineering. This is a renewable scholarship.

ALPHA TAU ALPHA AWARD: Alpha Tau Alpha, agricultural education honor society, presents a \$100 check to an outstanding agricultural education major.

AMERICAN HOTEL AND MOTEL ASSOCIATION FOUNDATION SCHOLARSHIP: A \$500 scholarship is awarded to a student or students studying Food Service and Lodging Management.

AMERICAN SOCIETY OF AGRONOMY SENIOR RECOGNITION AWARD: One outstanding student is selected from each university having an active Agronomy Club. A plaque, based on scholarship and contribution to the club, is awarded.

RICHARD A. BLOOMFIELD SCHOLARSHIP: The income from this fund provides a scholarship to an undergraduate student in the College of Agriculture majoring in an area which relates chemistry to agriculture. The scholarship is at least \$100.

JOHN K. BRYAN MEMORIAL SCHOLARSHIP: To be eligible, a student must be accepted in a 4-year program, intend to make a career in the food science/lodging industry, be a citizen of the U.S., maintain a 2.5 grade point average, and show an active interest in the food service/lodging industry. This requirement is fulfilled by the student working at least 8 weeks in a full-time job in the food service and/or lodging industry preceding the semester for which the award is made. The amount of the award ranges from \$100 to \$600 in any one school year.

DAMON V. CATRON SCHOLARSHIP: An award of \$200 goes to an outstanding senior scholar majoring in Food Science and Nutrition.

COLLEGE OF AGRICULTURE FOUNDATION SCHOLARSHIPS: Alumni and friends of the College of Agriculture provide scholarships of approximately \$300 each. Apply to the University Extension Center in the following counties: Carroll, Grundy, Lewis, Monroe, Newton, St. Louis and Henry. Selection is based on academic excellence, agricultural and community activities, and a sincere interest in agriculture, forestry, home economics or preveterinary.

HENRY I. COHN MEMORIAL AGRICULTURAL SCHOLARSHIP: Established as a memorial to Mr. Cohn, this award provides an incentive for high ability students to prepare for careers in agriculture in the UMC College of Agriculture. Selection is made by the College of Agriculture Scholarship Committee.

CURATORS INTERSCHOLASTIC EVENTS SCHOLARSHIPS: Scholarships are awarded to winners of a high rating in each of eight State FFA Contests. Each winner receives a waiver of fees for the two semesters of the freshman year. Special applications must be made to the Agricultural Education department.

ANSELMA DEGUZMAN MEMORIAL AWARD: An award of \$25 is given to a Food Science Association-UMC student member who has exhibited a sincere and active interest in the Association's activities and objectives. Make application to the Executive Committee of the Association.

MR. & MRS. JACOB ENSMINGER SCHOLARSHIP: The earnings from this scholarship fund are awarded annually to a junior, senior, or graduate student majoring in agriculture. Consideration is based on academic achievement, leadership, extracurricular activities, character, and financial need. The College of Agriculture Scholarship Committee selects the recipient.

FARMLAND INDUSTRIES, INC. SCHOLARSHIPS: Farmland Industries Inc. presents two \$400 scholarships to a junior and a senior of high scholastic standing in the College of Agriculture. They must have a predominantly agricultural background and their parents must be members of an agribusiness cooperative.

FEDERAL LAND BANK SCHOLARSHIPS: Two \$500 scholarships are available to high school graduates. Recipients are selected on the basis of scholarship, participation in farm and high school activities, community responsibilities, and good character. Continuation of the award for the second semester is contingent on a satisfactory record for the first semester. These scholarships were established by the Federal Land Bank of St. Louis.

FEDERATED GARDEN CLUBS SCHOLARSHIPS IN FLORICULTURE: Federated Garden Clubs of Missouri presents one or more \$300 awards to outstanding floriculture majors. Application must be made to the Horticulture Dept.

ERNEST M. AND FLO DICKEY FUNK SCHOLARSHIP IN POULTRY SCIENCE: The income from this fund (\$7,000) is for poultry students selected by the department staff.

GAMMA SIGMA DELTA SOPHOMORE AWARD: Gamma Sigma Delta, honorary fraternity, presents \$100 to the highest ranking sophomore in the College of Agriculture.

GILBREATH-MCLORN FUND IN ENTOMOLOGY: Interest from the Olive Gilbreath-McLorn fund is given to either graduate or undergraduate students majoring in entomology.

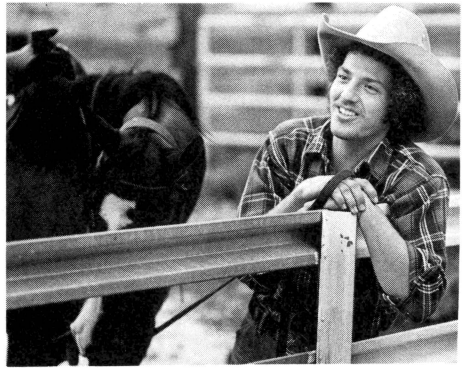
GREENLEE AWARD: \$50 is available to a regularly enrolled student majoring in poultry. Selection of the recipient is made by the Dept. of Poultry Husbandry.

HOWARD R. HACKLER MEMORIAL SCHOLARSHIP: The family and friends of Mr. Hackler established a scholarship of \$400 a year for one or more students with farm background and an interest in Angus cattle. Preference is given to UMC students enrolled in the College of Agriculture or College of Veterinary Medicine.

DAVID M. HARDY SCHOLARSHIP IN CO-OP MANAGEMENT: The St. Louis Bank for Cooperatives gives a \$500 scholarship to an upperclassman or graduate student enrolled in agricultural business and interested in employment with a farmers' cooperative marketing, purchasing, or credit association. The recipient may also be given an optional opportunity for summer employment by such a farmer's organization.

CHARLES M. HARROLD AWARD: An award of \$200 is given to a junior majoring in Food Science and Nutrition and who exhibits a sincere professional interest in food science.

LEONARD HASEMAN SCHOLARSHIP IN ENTOMOLOGY: Missouri Pest Control Association Inc., presents a \$100 check to a graduate or under-



graduate student majoring in any field of entomology. The scholarship is renewable.

HECHLER MEMORIAL SCHOLARSHIP: Two scholarships of approximately \$200 each are awarded to upperclass students majoring in Agriculture, Engineering, Home Economics, Forestry, or Veterinary Medicine. Recipients must reside in Chariton County at the time of graduation from high school. Transfer students to UMC must have at least two semesters of resident study on the Columbia campus to be eligible.

RICHARD HIGGINS SCHOLARSHIP: Juniors and seniors in Agriculture, Engineering, Education, Arts & Science, or B&PA may be eligible for this \$100 award. Usually one or two Agriculture students receive this scholarship each year.

INSTITUTE OF FOOD TECHNOLOGY FRESHMAN AND SOPHOMORE AWARDS: Awards are available nationwide for Food Science and Nutrition freshmen and sophomores in the College of Agriculture.

JEFFERSON CITY PRODUCTION CREDIT ASSOCIATION SCHOLARSHIP: Two scholarships of \$250 each are presented to a boy and a girl residing in the 13-county area served by Jefferson City Production Credit Association and are enrolled in the College of Agriculture, Home Economics, or vocational home economics in Education.

AGRICULTURE SCHOLARS: The College offers several scholarships, ranging from \$100 to \$400, based on scholastic achievement to entering freshmen.

KEMPSTER MEMORIAL SCHOLARSHIPS: The income from a fund of \$4,000 is available for scholarships for students selected by the Poultry Dept. staff.

MR. AND MRS. RUDOLF D. KRUSE, SR.—CARROLL COUNTY SCHOLARSHIP: A \$300 check is presented to a Carroll Co. high school graduate enrolled in the College of Agriculture. Application should be made at the County Extension Director's office in Carrollton, Mo.

H. H. KRUSEKOPF ALPHA ZETA SCHOLARSHIP: A \$200 award is given to an outstanding member of the Alpha Zeta fraternity.

LONGWELL LEADERSHIP AWARD: Awarded to an outstanding sophomore in the College of Agriculture, the student's name is engraved on the Longwell Leadership Award Trophy. Selection is made by a committee of four students, a representative from the Assoc. Dean's office, and Dean Emeritus John Longwell.

WILLIAM LESLIE MAGRUDER MEMORIAL FUND FOR AGRICULTURE: Earnings from the fund

are used as scholarships, prizes, or awards for worthy students studying to become teachers of vocational agriculture. The chairman of the Dept. of Agricultural Education recommends the recipients.

E. P. MEINERS MEMORIAL SCHOLARSHIP IN ENTOMOLOGY: Interest from this fund is given to either a graduate or undergraduate student majoring in entomology. The funds may also be used for travel to entomology museums, or for procuring specimens, collections, or museum equipment needed to further entomological study and research.

M. F. MILLER ALPHA ZETA ALUMNI AWARD: The \$100 award is given on the basis of scholastic excellence of a freshman in Agriculture. The funds are provided through miscellaneous alumni contributions to the College of Agriculture.

MISSOURI ASSOCIATION OF MILK AND FOOD SANITARIANS SCHOLARSHIP: A \$100 scholarship is awarded to an undergraduate or graduate student enrolled in Sanitary Science, or related fields such as Food Science. The award is based on good moral character, financial need, activities, and grades. Students may apply through Dr. R. T. Marshall, 203 Eckles Hall.

MISSOURI POLL-ETTE AWARDS: One or two awards of \$100 each are presented to worthy students who may be in the sophomore, junior, or senior year in the College of Agriculture, College of Home Economics, or in the first or second year of the College of Veterinary Medicine. Applicants must write personal letters to the committee describing their livestock activities and, in particular, their interest in the Polled Hereford breed.

MISSOURI RESTAURANT ASSOCIATION: A scholarship not to exceed \$300 is available to students majoring in Food Service and Lodging Management. The scholarship is applied toward payment of tuition and fees.

MISSOURI SEEDMEN'S ASSOCIATION ACHIEVEMENT AWARD: A \$100 check is given to an upperclassman majoring in field crops. The recipient is named at the annual Association meeting.

MOORMAN MANUFACTURING COMPANY SCHOLARSHIPS IN AGRICULTURE: The MoorMan Manufacturing Co. contributes annually to the scholarship program of the College of Agriculture. This contribution, currently \$2,500 per year, is awarded to deserving students within the College upon recommendation of the scholarship committee.

STANLEY A. MORROW MEMORIAL SCHOLARSHIP: Friends and business associates of the late Mr. Morrow, president of the Intermediate Credit Bank, 1956-69, established a memorial fund in his honor. Dividends from this trust fund provide scholarships for students enrolled in Agriculture.

PRODUCTION CREDIT ASSOCIATION OF MISSOURI SCHOLARSHIPS: Missouri PCA presents three \$300 scholarships to students enrolled in Agriculture.

A. C. RAGSDALE SCHOLARSHIP IN DAIRY HUSBANDRY: A \$200 scholarship is presented to a senior in the Dept. of Dairy Husbandry. The recipient's name is engraved on a plaque and selection is made by the department committee.

RALSTON PURINA SCHOLARSHIP: A \$500 scholarship is awarded to an incoming junior or senior in Agriculture ranking in the upper 25 per cent of the class.

DWIGHT F. RICHARDS AGRICULTURE SCHOLARSHIP AWARD: A \$100 scholarship is awarded to an outstanding agriculture student graduated from West Plains (Mo.) High School.

ROBERTSON'S FARM SUPPLY 4-H SCHOLARSHIP: Robertson's Farm Supply, Inc., presents a \$300 scholarship to an outstanding 4-H boy or girl who is a freshman in Agriculture, Home Economics, or Forestry. Students in the College of Engineering majoring in agricultural engineering and students in the College of Education preparing to teach vocational home economics are eligible for this scholarship.

JAMES S. ROLLINS SCHOLARSHIP: Six \$50 awards are given in recognition of merit and character to students in various divisions on the Columbia campus. One is awarded to a junior in the College of Agriculture.

SANTA FE SCHOLARSHIPS: Santa Fe Railways presents two \$500 awards to FFA members who are entering freshmen in Agriculture.

SAM B. SHIRKY CENTENNIAL SCHOLARSHIP: A \$400 scholarship is awarded annually to a College of Agriculture student who is selected on the basis of high school and college academic performance.

GRANVILLE M. SMITH, JR. TRUST: Proceeds from this Trust are awarded to graduate or undergraduate students enrolled in Agriculture. Residents of Sullivan and Adair counties are given preference.

SOUTHWEST ELECTRIC COOPERATIVE SCHOLARSHIP: A \$400 scholarship is awarded to a freshman in the College of Agriculture or College of Home Economics. Southwest Electric distributes the applications.

STAMPER-KEMPSTER MEMORIAL AWARDS IN POULTRY: Undergraduate awards of \$100 per semester are available to students interested in Poultry Husbandry and employed by that department. Recipients may be freshmen or other undergraduates who maintain a grade average of 2.5 or better. The F. M. Stamper Co. Mill, Moberly, provides these awards.

STAMPER TRAVEL GRANTS: The F. M. Stamper Co. in memory of F. M. Stamper, founder, and Howard H. Stamper, long-time president of the company, established grants of \$500 annually to pay travel expenses of students to acquaint them with the poultry industry and the science and technology involved in that industry.

WILLIAM L. AND CLEO TAYLOE MEMORIAL FUND: The late Mr. Tayloe and his wife established through their estate a trust fund which provides scholarships for students enrolled in Agriculture. Recipients are recommended by the College of Agriculture Scholarship Committee.

LEE C. WARTH BEEKEEPING FUND: Income from the \$3,500 Warth endowment is presented to a student majoring in entomology and is to be used for the promotion of beekeeping through research, teaching, or extension activities.

HENRY JACKSON WATERS SCHOLARSHIP: A \$200 or more award is given to an Agriculture junior in animal nutrition with good scholarship, and an interest in research and nutrition.

MAURICE N. WITT SCHOLARSHIP: Unrestricted scholarship funds are awarded to freshmen and/or upperclass students in the College of Agriculture.

WURDACK SCHOLARSHIP: Established under the will of Hugh Wurdack, funds are used for scholarships for students registered in the College of Agriculture. Selection is made by the College of Agriculture Scholarship Committee.

AGRICULTURAL CURRICULUM

REQUIREMENTS FOR DEGREES BACHELOR OF SCIENCE

The College of Agriculture offers a broad and flexible educational program leading to the Bachelor of Science Degree. The undergraduate curriculum is organized so a student may select a program of study in one of three general areas of em-

phasis. These three areas—science, business, or professional—are available to all students in the College of Agriculture. For example, a student may wish to major in Agricultural Economics, and at the same time select one of the three areas of emphasis in developing his over-all program of study.

Students are currently following this curriculum:

GENERAL REQUIREMENTS

Areas of Emphasis (Minimum Hours)
Professional Business Science

Communications			
English Composition	6	6	6
Public Speaking	3	3	3
Communications Elective	<u>3</u>	<u>3</u>	<u>3</u>
Total	12	12	12
Natural Science & Mathematics			
Chemistry	5	5	5
College Algebra	3	3	3
Botany or Plant Science or Zoology or Animal Science	5	5	5
Science or Math Elective	<u>3</u>	<u>3</u>	<u>3</u>
Total	16	16	16
Social Science & Humanistic Studies			
History or Political Science	3-5	3-5	3-5
Rural Sociology or Psychology or Sociology	3	3	3
Social Science or Humanistic Studies Elective	<u>6-8</u>	<u>6-8</u>	<u>6-8</u>
Total	14	14	14
Business & Economics			
Agricultural Economics or General Economics	5	5	5
Economics Elective	<u>3</u>	<u>3</u>	<u>3</u>
Total	8	8	8
*If test out of English Composition I into English Composition 60, 12 hours of communications are still required.			

DEPARTMENTAL REQUIREMENTS

Major field & supporting courses	48	32	32
Natural & Social Sciences, including Math & Statistics			16
Business & Economics		<u>16</u>	
Total	48	48	48
*See program listings for specific courses			

ADDITIONAL ELECTIVES

At least 12 of these 30 credit hours must be taken in courses other than those in the College of Agriculture, with not more than two courses of the 12 credit hours being in any one department			
	30	30	30
Total Hours	128	128	128

OTHER REQUIREMENTS FOR B.S. DEGREE IN AGRICULTURE

- A. In the total program of 128 credit hours, a minimum of 50 credit hours must be in courses numbered 100 and above of which a minimum of 24 credit hours must be in courses numbered 200 and above.
- B. In the total program of 128 credit hours, a minimum of 32 credit hours must be in courses offered by the College of Agriculture. Twelve hours of this requirement may be satisfied by transferring agricultural credit from another institution.

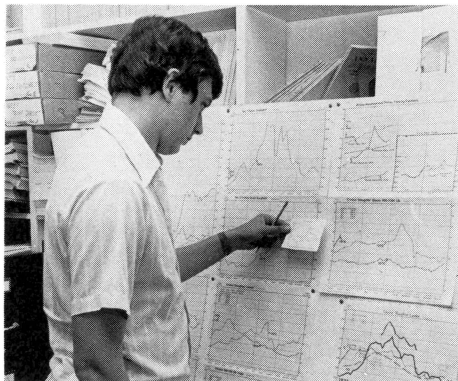
Specific courses in the curriculum requirements for a Bachelor of Science degree are not listed in this general outline. However, the number of credits required in the various categories are designated. These categories serve as a guide for the student and the adviser in selecting a curriculum consistent with a student's vocational and educational objectives.

After a student has selected a major and has been assigned a faculty adviser, a program of study should be planned by following the requirements outlined in the following pages.

MASTER OF SCIENCE

The Master of Science degree is offered by all departments in the College of Agriculture. Students wishing to pursue an M.S. degree should consult with the department in which they wish to obtain a degree, and specifically, with the professor in that department under whom each wishes to work. If a student and the professor can mutually develop a desirable program of study, the student can then apply to the Graduate School.

An applicant for admission to the Graduate School should write the Director of Admissions, 130 Jesse Hall, Columbia, Mo. 65201, for application forms.



DOCTOR OF PHILOSOPHY

The Doctor of Philosophy is a research degree offered by all departments in the College of Agriculture. This means that any candidate for the doctoral degree must complete an original piece of research work, which culminates in the writing of a doctoral dissertation and generally leads to the publication of one or more scientific papers. Refer to the *Graduate School Bulletin* for further information.

SUBJECT MATTER AREAS

The teaching, research, and extension work of the College of Agriculture includes the School of Forestry, Fisheries and Wildlife, and 15 other subject matter areas. Research work also includes that of the College of Veterinary Medicine.

AGRIBUSINESS

Undergraduate students in the College of Agriculture may elect to enroll in the Agribusiness option. They may do this by indicating their interest in the *business emphasis* in the following departments: Agricultural Economics, Agricultural Engineering, Agronomy, Animal Husbandry, Dairy Husbandry, Entomology, Food Science and Nutrition, Horticulture, and Poultry Husbandry.

If you desire additional information, contact your adviser or Associate Dean, College of Agriculture, 2-64 Agriculture Bldg., Columbia, Mo. 65201.

AGRICULTURAL ECONOMICS

Main Office—Mumford Hall
Telephone 882-2831

Chairman: Charles L. Cramer, Ph.D.

Professors:
Robert J. Bevins, Ph.D.
Kenneth B. Boggs, Ph.D.
Curtis H. Braschler, Ph.D.

Harold F. Breimyer, Ph.D.
 Thomas G. Brown, Ph.D.
 Robert M. Finley, Ph.D.
 Glenn Grimes, M.S.
 Albert R. Hagan, Ph.D.
 Joseph C. Headley, Ph.D.
 Victor E. Jacobs, Ph.D.
 Stanley R. Johnson, Ph.D.
 Elmer R. Kiehl, Ph.D., Dean
 J. Wendell McKinsey, M.S., Asst. Dean
 Coy G. McNabb, Ph.D.
 Donald D. Osburn, Ph.D.
 C. Brice Ratchford, Ph.D.
 V. James Rhodes, Ph.D.
 Kenneth Schneeberger, Ph.D.
 Philip F. Warnken, Ph.D.
 Jerry G. West, Ph.D.
 Herman Workman, Ph.D.

Associate Professors

Myron Bennett, M.S.
 Gary T. Devino, Ph.D.
 Carrol Kirtley, Ph.D.
 Stephen F. Matthews, Ph.D.
 Joseph C. Meisner, Ph.D.
 Francis P. McCamley, Ph.D.
 Leroy Rottmann, M.S.
 Richard K. Rudel, Ph.D.
 Randall E. Torgerson, Ph.D.
 Edward Wiggins, M.S.

Assistant Professors

Ervin Dauenhauer, M.S.
 Patrick Cantlon, M.S.
 David E. Ervin, Ph.D.
 Norlin Hein, Ph.D.
 James Kliebenstein, Ph.D.
 John Kuehn, Ph.D.

Instructors

Michael W. Woolverton, M.B.A.

General Requirements (see page 11)

Departmental Requirements

PROFESSIONAL EMPHASIS

This course of study is planned for the student who intends to pursue a career such as farming, professional farm management, or agricultural credit.

Major Field:	Hours
220, Gen. Agricultural Marketing OR Mktg. 204	3
225, Statistical Analysis OR Stat. 207 OR 234 OR 250	3
230, Farm Programs OR 270, Resources & Economic Development OR 271, International Agricultural Development	3
250, Econ. of Ag. Production & Distribution OR Econ. 251	3
251, Agricultural Prices	3
261, Farm Management	3
280, Financing the Farm Business OR Fin. 203	3
299, Topics in Agricultural Economics	1
312, Planning the Farm Business OR 314, Farm Business Analysis	3
333, Agricultural Law	3

Supporting Courses:

Econ. 229 or 253	3
Math 60 or 205 or 207	3
Accy. 37 or 137	3
Comp. Sci. 75 or 104 or Accy. 258	3
Agron. 30 or Biol. Sci. 12	5
Agric. 12 or Biol. Sci. 1 & 2	5
Additional agricultural courses at 100 level or higher (other than Ag. Econ. or Rur. Soc.)	6

Electives: 22 hrs.

BUSINESS EMPHASIS

This course of study is planned to prepare the student for a career in agricultural business.

Major Field:	Hours
220, Gen. Agricultural Marketing OR Mktg. 204	3
225, Statistical Analysis or Stat. 206 OR 234 OR 250	3
230, Farm Programs OR 270, Resources & Economic Development OR 271, International Agricultural Development	3
250, Econ. of Ag. Production & Distribution OR Econ. 251	3
251, Agricultural Prices	3
280, Financing the Farm Business or Fin. 203	3
290, Marketing Farm Commodities: Theory & Practice	1
299, Topics in Agricultural Economics	1
320, Agricultural Business Management	3
333, Agricultural Law OR Mgt. 254	3

Supporting Courses:

Mgt. 202	3
Accy. 37 or Accy. 137	3
Math 60 or 205 or 207	3
Econ. 229 or 253	3
Comp. Sci. 75 or 104 or Accy. 258	3
Agron. 30 or Biol. Sci. 12	5
Agric. 12 or Biol. Sci. 1 & 2	5
Additional agricultural courses at 100-level or higher (other than Ag. Econ. or Rur. Soc.)	6

Electives: 21 hrs.

SCIENCE EMPHASIS

This course of study is designed primarily for the student who plans to do graduate work.

Major Field:	Hours
220, Gen. Agricultural Marketing OR Mktg. 204	3
225, Statistical Analysis OR Stat. 207 OR 234 OR 250	3
230, Farm Programs OR 270, Resources & Economic Development OR 271, International Agricultural Development	3
250, Econ. of Ag. Production & Distribution OR Econ. 251	3
251, Agricultural Prices	3
261, Farm Management	3
290, Marketing Farm Commodities: Theory & Practice	1
299, Topics in Agricultural Economics	1

Supporting Courses:

Econ. 229 or 253	3
Econ. 351	3
Econ. 353	3
Math 205 or 207 or 208	3
Stat. 320	3
Comp. Sci. 104 or 201 or 203	3
Agron. 30 or Biol. Sci. 12	5
Agric. 12 or Biol. Sci. 1 & 2	5

Electives: 30 hrs.

AGRICULTURAL EDUCATION

**Main Office—435 General Classroom Building
Telephone 882-7379, 882-7451, 882-3232**

Chairman: Curtis R. Weston, Ed.D.; Prof.

Professors

- George F. Ekstrom, Ph.D., Emeritus
- Donald D. Osburn, Ph.D.
- Cecil V. Roderick, M.Ed., Emeritus
- Bob R. Stewart, Ed.D.

Associate Professors

- Larry Miller, Ph.D.
- Glen Shinn, Ph.D.

Assistant Professors

- Robert Denker, M.Ed.
- James R. Oglesby, Ph.D.

Students interested in becoming certificated to teach vocational agriculture should enroll in the College of Agricultural Education. Graduates of the program in Agricultural Education may be qualified to teach in the following instructional areas: Agricultural Production, Agricultural Mechanics, Agricultural Sales and Services, Ornamental Horticulture, and Conservation. Students must have at least a 2.0 average to enroll for the student teaching sequence of professional courses in the senior year. Programs are planned by the students and their advisers to meet State requirements for certification to teach.

General Requirements (see page 11)

Departmental Requirements

PROFESSIONAL EMPHASIS

Education: 29 hrs	Hours
Educational Psychology A102	2
Educ. Psych. A140, Intro. to Educational Measurement & Evaluation	2
Educ. Admin. C140, School Org. & Admin. for Secondary Teachers	2
Spec. Ed. L339	3
PAVTE F100, Foundations of Ag. Educ	2
PAVTE F303, The Teaching of Agriculture	3
PAVTE F304, Programs for Out-of-School Groups in Agriculture	2

PAVTE F305, Programs & Instructional Materials in Agriculture	2
PAVTE F306, Teaching Agricultural Mechanics	3
PAVTE F199, Student Teaching	6

Agriculture (Major areas*): 49-59 hrs.

AGRICULTURAL MECHANIZATION: 10 hrs.

- Ag. Engr. 1, Farm Power
- Ag. Engr. 20, Welding
- Ag. Engr. 60, Shop Tools & Processes
- Electives (Ag. Engr. 103, 201, 210, 215, 240, 306, 386)

ANIMAL SCIENCE: 11 hrs.

- An Husb. 202, Principles of Animal Nutrition
- An. Husb. 313, Genetics of Livestock Impvmt.
- Electives (Animal Husb. 12, 20, 101, 321, 341; Dairy
Husb. 1, 310; Poultry Husb. 101)

PLANT SCIENCE: 10 hrs.

- Agron. 100, Soil Systems
- Electives (Agron. 30, 230, 302, 303, 304, 305, 306,
308)

AGRICULTURAL ECONOMICS: 11 hrs.

- Agric. Econ. 50
- Agric. Econ. 260, General Farm Mgmt. OR
261, Farm Mgmt.
- Agric. Econ. 312, Planning the Farm Business

GENERAL ELECTIVES: 0-14 hrs.

*Each student may choose a major area of emphasis for specialization or take additional courses in all major areas.

AGRICULTURAL JOURNALISM

**Main Office—1-98 Agricultural Building
Telephone 882-8237**

Chairman: Richard L. Lee, Ph.D.

Faculty members are listed under Extension Education.

The College of Agriculture in cooperation with the School of Journalism offers a degree in agricultural journalism. This curriculum provides training to enter a wide variety of occupations in the newspaper and magazine fields, radio and television, public relations, and advertising. Students must have 60 hours credit and a 2.75 GPA to take School of Journalism courses.

General Requirements (see page 11)

Departmental Requirements

Major Field: 30 hrs.	Hours
School of Journalism	
Must include:	
<i>Journalism</i>	
100, History & Principles of Journalism	3
105, News	3
110, Editing	2
120, Advertising Principles & Practice	3
300, Mass Media & Society	2

306, Reporting3
 310, Newspaper Editing2

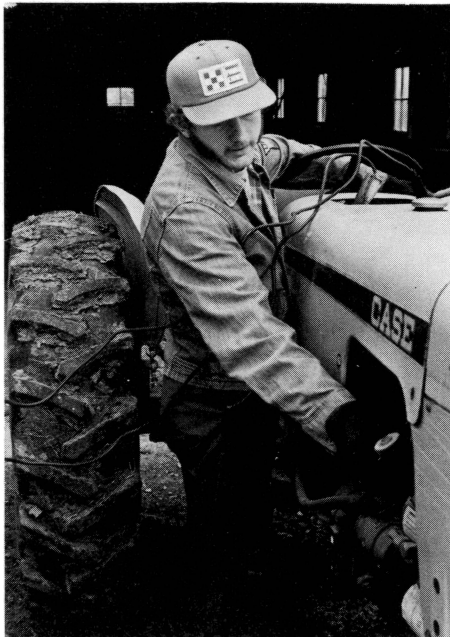
Business and/or Economics: 6 hrs.

Agriculture and/or Journalism Electives: 12 hrs.

Additional Electives: 30 hrs.

Courses to fill departmental requirements are selected by students and their advisers. Basic typing skills are required for journalism courses.

The flexibility in this curriculum permits students to obtain a broad background in agriculture and journalism, plus some specialization in either of these fields if they so desire.



AGRICULTURAL MECHANIZATION (Agricultural Engineering Department)

**Main Office—100 Agricultural Engineering Bldg.
 Telephone 882-2369**

Chairman: C. LeRoy Day, Ph.D., Prof. (Electric Power & Processing)

Professors

- Donald B. Brooker, M.S., Crop Drying & Materials Handling
- James C. Frisby, Ph.D., Power & Machinery
- Mack M. Jones, M.S., Emeritus
- Kenneth L. McFate, M.S., Farm Electrification & Materials Handling
- Ralph L. Ricketts, M.S., Emeritus
- Milton D. Shanklin, Ph.D., Bioengineering
- John C. Wooley, M.S., Emeritus

Associate Professors

- Fred M. Crawford, M.S., Farm Electrification
- Charles F. Cromwell, Jr., M.S., Irrigation & Drainage; Supt., Delta Center
- H. David Currence, Ph.D., Electric Power & Processing
- Maurice R. Gebhardt, Ph.D., Power & Machinery
- Robert M. George, M.S., Materials Handling
- G. LeRoy Hahn, Ph.D., Livestock Environment Engineering
- Walter F. Heidlage, Ph.D., Youth Programs
- James S. McKibben, M.S., Emeritus
- Neil F. Meador, Ph.D., Farm Structures
- Richard E. Phillips, Ph.D., Farm Structures
- Glen C. Shinn, Ph.D., Farm Mechanics

Assistant Professors

- David E. Baker, M.S., Safety
- Edward J. Constien, B.S., Power & Machinery
- Charles Fulhage, Ph.D., Waste Management
- James M. Gregory, Ph.D., Soil and Water Engineering
- William G. Hires, Ph.D., Farm Mechanics
- Robert W. Schottman, M.S., Soil & Water Engineer
- Dennis M. Stevers, Ph.D., Waste Management
- James M. Steichen, Ph.D., Water Management

Research Associates

- Carroll R. Amerman, Ph.D., Hydrology
- Maynard E. Anderson, Ph.D., Food Engineering
- James R. Fischer, Ph.D., Food Engineering
- Eugene L. Iannotti, Ph.D., Waste Management
- Larry A. Kramer, M.S., Hydrology
- Herman F. Mayes, M.S., Livestock Market Engineering
- Robert F. Priest, B.S., Hydrology & Hydraulics
- David L. Rausch, M.S., Reservoir Sedimentation
- David B. Smith, M.S., Power & Machinery

Instructors

- Perry M. Brooks, Jr., M.S., Farm Mechanics
- Leslie L. Christianson, M.S., Farm Electrification

New processes and equipment to meet mechanization requirements are being developed by manufacturers at an increasing rate. However, the new developments are of value only when farmers accept and use them properly. Agricultural Mechaniza-

tion gives the training needed to provide two-way communication between the manufacturer and the agricultural customer. Training is offered in four major areas: (1) power and machinery, (2) soil and water management, (3) structures and farmstead mechanization, and (4) electrical power and processing.

The Agricultural Engineering Department offers the agricultural mechanization program through the College of Agriculture. The Department also offers an agricultural engineering program through the College of Engineering. Curriculum details for the latter are given in the *College of Engineering Bulletin*.

General Requirements (see page 11)

The Natural Science and Mathematics portion of the General Requirements should include Physics 11.

Departmental Requirements

PROFESSIONAL EMPHASIS

This option prepares students to operate a mechanized farming enterprise.

Major Field: 48 hrs.	Hours
Agronomy 30 OR Agriculture 12 .....	.5
Agronomy 100 .....	.3 or 5
Agricultural Engineering Courses .....	.22
Electives (Engineering 30 suggested) .....	.16

BUSINESS EMPHASIS

This option prepares students for a career in agribusiness with banks, credit companies, insurance companies, manufacturers or retailers of agricultural equipment, petroleum products, feeds, fertilizers, or other agricultural products.

Major Field: 48 hrs.	Hours
Agronomy 30 OR Agriculture 12 .....	.5
Agronomy 100 .....	.3 or 5
Agricultural Engineering Courses .....	.19
Agribusiness Courses .....	.16
Electives (Engineering 30 suggested) .....	.3

SCIENCE EMPHASIS

This option prepares students for a technical career with agencies which provide services to the farmer (such as Soil Conservation Service, extension service, electric power companies, and manufacturers of agricultural equipment), or to continue study for the Master of Science degree.

Major Field: 32 hrs.	Hours
Agronomy 30 OR Agriculture 12 .....	.5
Agronomy 100 .....	.3 or 5
Engineering 30 .....	.3
Agricultural Engineering Courses .....	.19

Natural and Social Sciences: 16 hrs.

Select from the following:

Chemistry	Computer Science
Mathematics	Biology
Physics	Geology
Statistics	

Additional Electives: 30 hrs.

AGRONOMY

**Main Office—135 Mumford Hall
Telephone 882-2801**

Chairman: E. C. A. Runge, Ph.D., Prof. (Soil Genesis & Chemistry)

Professors

Laurel E. Anderson, Ph.D., Weed Science Extension
 Robert W. Blanchar, Ph.D., Soil Chemistry
 Lloyd E. Cavanah, M.S., Crop Production
 Ed H. Coe, Ph.D., Corn Genetics
 O. Hale Fletchall, Ph.D., Weed Science
 Ellis R. Graham, Ph.D., Soil Chemistry
 Christopher J. Johannsen, Ph.D., Land Use Extension
 Norman E. Justus, Ph.D., Supt., S.W. Center
 Gordon Kimber, Ph.D., Wheat Cytogenetics
 Gary F. Krause, Ph.D., Ag. Expt. Sta. Statistician
 Kenneth L. Larson, Ph.D., Forage Physiology
 Arthur G. Matches, Ph.D., Pasture & Forage Crops
 William J. Murphy, M.S., Crops Extension
 Curtis J. Nelson, Ph.D., Crop Physiology
 Myron J. Neuffer, Ph.D., Corn Genetics
 Elroy J. Peters, Ph.D., Weed Science
 J. Milton Poehlman, Ph.D., Crop Breeding, International Agriculture
 Gyorgy P. Redei, Ph.D., Arabidopsis Genetics
 William P. Shappenfield, Ph.D., Crop Breeding
 Clarence L. Scrivner, Ph.D., Soil Genesis & Mineralogy
 Ernest R. Sears, Ph.D., Wheat Cytogenetics
 Dale T. Sechler, Ph.D., Crop Breeding
 George E. Smith, Ph.D., Soil Fertility; Director, Water Resources Research Center
 George H. Wagner, Ph.D., Soil Microbiology
 Howell N. Wheaton, Ph.D., Forage Crops Extension
 Marcus S. Zuber, Ph.D., Crop Breeding

Associate Professors

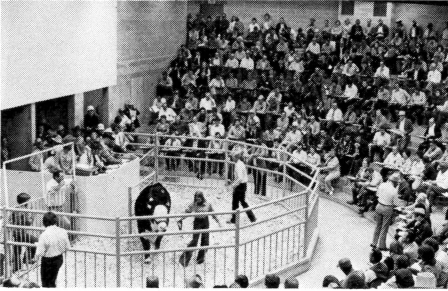
James R. Brown, Ph.D., Soil Fertility
 Gary W. Colliver, Ph.D., Soil Fertility
 Gregory G. Doyle, Ph.D., Corn Cytogenetics
 Roger C. Hanson, Ph.D., Soils Extension
 Harold D. Kerr, Ph.D., Weed Science
 Earl M. Kroth, Ph.D., Soil Fertility
 Russell L. Larson, Ph.D., Biochemistry
 James A. Roth, M.S., Soil Fertility
 Joe H. Scott, B.S., Crops Extension
 Viola M. Stanway, M.S., Seed Technology
 William J. P. Upchurch, Ph.D., Soil Mineralogy

Assistant Professors

Jack B. Beckett, Ph.D., Corn Cytogenetics
 Dale E. Blevins, Ph.D., Crop Physiology
 Darrel L. Eklund, Ph.D., Statistics
 J. Grover Shannon, Ph.D., Soybean Breeding
 David A. Slepser, Ph.D., Forage Breeding
 William R. Teague, Ph.D., Soil Physics

Research Associates

James B. Bussard, A.B., Biochemistry
 Virgil D. Luadders, Ph.D., Crop Breeding



Instructors

- James C. Baker, M.S., Crop Physiology
- Robert G. Hall, M.S., Crop Production
- Richard E. Mattas, M.S., Soil Fertility
- Alan Phillips, M.S., Seed Production
- Philip Stryker, M.S., Agronomy Research Center; Soil Management

Study in Agronomy may be directed to give a greater emphasis in either the area of Crop Science or Soil Science. At the undergraduate level many courses satisfy the needs of either area. This allows a single listing of courses from which a student may choose. Many variations may be developed to fit individual needs. The student interested in Weed Science should refer to Pest Management.

General Requirements (see page 11)

Departmental Requirements

PROFESSIONAL EMPHASIS

This curriculum is for those students who expect to engage in farming or agricultural advisory services with emphasis on agronomic production.

Major Field: 48 hrs.

<i>Must include:</i>	Hours
Agronomy 30 .....	.5
Agronomy 100 .....	.5
Agronomy 130 .....	.1
Additional Courses in Agronomy .....	.9

Additional hours are to be selected in consultation with the adviser.

BUSINESS EMPHASIS

The business emphasis in agronomy prepares students for employment in the farm supply field, with emphasis on fertilizers, seeds, grains, herbicides, and agricultural chemicals. It is designed to meet the needs of those in the business field who work with distribution agencies or have direct relations with farmers.

Major Field: 32 hrs.

<i>Must include:</i>	Hours
Agronomy 30 .....	.5
Agronomy 100 .....	.5
Agronomy 130 .....	.1
Additional hours of Agronomy .....	.6

Additional hours are to be selected in consultation with the adviser.

Business and Economics: 16 hrs.

In consultation with the adviser, select courses from Accounting, Agricultural Economics, Economics, Statistics, and other courses related to Business Management

SCIENCE EMPHASIS

The science emphasis in Agronomy is for students who intend to enter graduate school for study leading to research or teaching in crop or soil science. Those completing the soil science area can be accredited by the Soil Science Society of America.

Major Field: (same as field in **Business Emphasis**)

Natural Sciences: 16 hrs.

In consultation with the adviser select courses from Chemistry, Physics, Mathematics, Statistics, Biological Sciences (Botany, Genetics), and other related subjects16

Additional Electives: 30 hrs. (professional, business & science)

In consultation with the adviser additional courses may be selected from Agronomy, Biological Sciences (Botany, Genetics), Chemistry, Mathematics, Statistics, Physics, and other related subjects. A minimum of 12 hours must be in courses other than those in the College of Agriculture, with not more than two of these being in one department.

ANIMAL HUSBANDRY

Main Office—125 Mumford Hall
Telephone 882-8236

Chairman: John F. Lasley, Ph.D., Prof. (Animal Breeding)

Professors

- John M. Asplund, Ph.D., Animal Nutrition
- Clarence M. Bradley, Ph.D., Extension
- Billy N. Day, Ph.D. Physiology
- John W. Massey, Ph.D., Extension
- William H. Pfander, Ph.D., Digestion & Metabolism
- John C. Rea, Ph.D., Extension
- Clarence V. Ross, Ph.D., Production & Management
- James E. Ross, M.S., Extension
- Homer B. Sewell, Ph.D., Extension

Associate Professors

- Trygve L. Veum, Ph.D., Production & Management

Assistant Professors

Maurice Alexander, M.S., Extension, Meat Animal Evaluation
George W. Jesse, Ph.D., Production & Management
Ralph J. Lipsey, Ph.D., Production & Management
Ronald E. Morrow, Ph.D., Production & Management

Instructors

Jack Breuer, M.S., Reproductive Biology, Advisement Chairman
Wayne E. Loch, M.S., Animal Husbandry

Postdoctoral Fellows

Mark Ellersieck, Ph.D., Animal Breeding
Ken Esbenshade, Ph.D., Physiology
Larry L. Wilson, Ph.D., Animal Nutrition

Animal Husbandry is a broad field centered on the study of biology, breeding, production, and management of agriculturally important animals. Graduates in Animal Husbandry are currently employed in many areas including farming; livestock farm management; feed and animal health product companies involved with chemical additive formulation, feed formulation, public relations, research, and sales; livestock markets as buyers, marketing counselors, or salesmen; meat packing in administration, agricultural relations, grading, product procurement, or sales; feedlots as managers or consultants; breed associations and livestock publications as fieldmen; state or federal Departments of Agriculture, in extension, foreign work, market reporting, and meat grading; or in education working in extension, teaching, or research.

The primary areas of study are (1) Animal Breeding and Physiology, (2) Animal Nutrition, and (3) Production and Management. Student and faculty advisers select those courses that fit the student's needs, interests, and objectives. The greatest amount of specialization occurs at the advanced degree (M.S. and Ph.D.) levels.

Within each of the three major interest areas in Animal Husbandry there are three primary emphasis areas: **Professional Emphasis** for those students who desire a broad departmental training; **Business Emphasis** for those students interested in agribusiness as related to the animal industry, and the **Science Emphasis** chosen

by many students who are interested in obtaining advanced degrees in preparation for careers in research and/or teaching or admission to professional programs.

General Requirements (see page 11)

Departmental Requirements

PROFESSIONAL EMPHASIS

Major Field: 27 hrs.	Hours
12, Animal Science .....	.5
20, Livestock & Meat Science .....	.5
212, Applied Nutrition .....	.3
202, Principles of Animal Nutrition .....	.3
303, Physiology of Reproduction .....	.3
313, Genetics of Livestock Improvement .....	.3

And at least two of the following (or equivalent):

199, Horse Science .....	.3
321, Beef Production & Management .....	.3
331, Sheep Production & Management .....	.3
341, Pork Production & Management .....	.3

Electives: 21 hrs.

The Professional Emphasis curriculum is designed to prepare a student for employment in the animal industry. A partial list of work areas includes farming, management of a livestock enterprise, feed industry, meat industry, pharmaceutical or drug industry, various government jobs, sales, and others. If students decide to change objectives, they and their advisers can adjust their programs to fit either the Business or Science emphasis.

BUSINESS EMPHASIS

The Business Emphasis curriculum is designed to prepare the student to enter some activity associated with the business aspects of Animal Science. If students wish to change objectives, they and their advisers can adjust their programs to fit either the Professional or Science emphasis.

Major Field: 27 hrs. (same as **Professional Emphasis**)

Electives: 21 hrs. (include 16 hrs. Business & Economics)

SCIENCE EMPHASIS

The science emphasis is designed to provide scientific background, understanding, and preparation for the student who wishes to continue studying for academic or professional advanced degrees, M.S. or Ph.D., in preparation for a career in teaching and/or research. This emphasis also prepares a student for admission to the College of Veterinary Medicine or School of Law. If students desire to change objectives, they and their advisers can adjust their programs to fit either the Professional or Business emphasis.

Major Field: 27 hrs. (same as **Professional Emphasis**)

Electives: 21 hrs. (include 16 hrs. of Natural and Social Sciences)

ATMOSPHERIC SCIENCE

Main Office—701 Hitt Street
Telephone 882-6591

Chairman: Wayne L. Decker, Ph.D., Prof.

Professors

Grant L. Darkow, Ph.D.
Ernest C. Kung, Ph.D.
James D. McQuigg, Ph.D.

Associate Professors

G. Leroy Hahn, Ph.D.
Norton Strommen, Ph.D.

Assistant Professors

Sharon K. LeDuc, Ph.D.
Stephen E. Mudrick, Ph.D.

Research Associates

Gerald Barger, Ph.D.
Clarence Sakamoto, Ph.D.

General Requirements (see page 11)

Departmental Requirements

PROFESSIONAL & SCIENCE EMPHASIS

This course of study prepares the student for employment as a meteorologist in government and industry. It also serves as a preparatory curriculum for advanced study in Atmospheric Science. Many students enter graduate school upon completion of this program.

Atmospheric Science: 29 hrs. Hours

Select from the following:	
50, Introductory Meteorology	3
200, Independent Study	1-3
302, Weather Briefing	1
303, Meteorology of the Biosphere	3
304, Meteorological Analysis I	3
305, Meteorological Analysis II	3
314, Cloud & Precipitation Physics	3
316, Micrometeorology	3
350, Fundamentals of Meteorology	3
366, Climates of the World	3
392, Atmospheric Thermodynamics & Statics	5
393, Atmospheric Kinematics & Dynamics	5

Physical Science: 9 hrs.

Physics 1	3
Physics 123	3
Physics 124	3

Mathematical Science: 10 hrs.

Math 80	5
Math 175	5

Additional Electives: 30 hrs.

The student consults with an adviser to select additional courses in the physical and mathematical sciences. Math 201 and 304 are normally included in these optional courses.

BIOCHEMISTRY

Main Office—322A Chemistry Bldg.
Telephone—882-7606

Other Offices—105 Schweitzer Hall—882-7696
—M121 Medical Sciences—882-8795



Chairman: James L. Gaylor, Ph.D., Prof.

Assoc. Chairman: John M. Franz, Ph.D., Assoc. Prof.

Professors

Benedict J. Campbell, Ph.D., Biochemistry
Milton S. Feather, Ph.D., Biochemistry
George B. Garner, Ph.D., Biochemistry
Charles W. Gehrke, Ph.D., Manager, Ag. Experiment Station Chem. Labs
Owen Koeppel, Ph.D., Provost for Academic Affairs
S. Roy Koirtiyohann, Ph.D., Environmental Trace Substances Research Center
Thomas D. Luckey, Ph.D., Biochemistry
Arlene P. Martin, Ph.D., Pathology & Biochemistry
Dennis T. Mayer, Ph.D., Emeritus
Merle Muhrer, Ph.D., Biochemistry
Boyd L. O'Dell, Ph.D., Biochemistry
Edward E. Pickett, Ph.D., Biochemistry
Marie Vorbeck, Ph.D., Pathology & Biochemistry
Arnold White, Ph.D., Investigator, Dalton Research Center
Robert L. Wixom, Ph.D., Biochemistry

Associate Professors

Camillo A. Ghiron, Ph.D., Biochemistry
Ezio Moscatelli, Ph.D., Investigator, Dalton Research Center
William D. Noteboom, Ph.D., Biochemistry
Beryl Ortwerth, Ph.D., Ophthalmology & Biochemistry
Douglas D. Randall, Ph.D., Biochemistry
David B. Shear, Ph.D. Biochemistry
Warren L. Zahler, Ph.D., Biochemistry

Assistant Professors

Creighton N. Cornell, Ph.D., Biochemistry
Russell Larson, Ph.D., Agronomy & Biochemistry
James Wyche, Ph.D., Biological Science & Biochemistry

Instructors

Paul R. Rexroad, M.S.
Charles A. Huibregtse, Ph.D.

*Joint Faculty Members

General Requirements (see page 11)

Departmental Requirements

Major Field: 50 hrs. Hours	
Inorganic Chemistry	10
Organic Chemistry	8
Quantitative Analysis	4
Calculus	6-10
Physics	8-9
Biochemistry	11
Physical Chemistry	3-6

Supporting Courses: to include 20 hours of Biological or Agricultural Sciences to include the following areas: (1) general biology; (2) plant or animal physiology; (3) genetics; (4) microbiology, embryology or developmental biology.

Additional Electives: 8 hrs.

DAIRY HUSBANDRY

**Main Office—103 Eckles Hall
Telephone 882-4454**

Chairman: Harold D. Johnson, Ph.D., Prof. (Environmental Physiology)

Professors

John R. Campbell, Ph.D., Nutrition
Frederic A. Mertz, Ph.D., Nutrition & Rumen Physiology
Fred H. Meinershagen, M.S., Dairy Production
Charles P. Merilan, Ph.D., Physiology & Biophysics
John D. Sikes, Ph.D., Breeding & Management

Associate Professors

Ralph R. Anderson, Ph.D., Endocrinology
Rex E. Ricketts, Ph.D., Dairy Production & Nutrition
Henry A. Garverick, Ph.D., Environmental Physiology & Dairy Production.

The Dairy Department staff recommends the following courses for the three areas of emphasis in addition to the general requirements listed under the B.S. Degree in Agriculture. The department requirements should total 78 hours.

General Requirements (see page 11)

Departmental Requirements

PROFESSIONAL EMPHASIS

For students interested in the production aspects of dairy science.

Major Field: 10 hrs.	Hours
1, Dairy Husbandry	3
12, Animal Science	5
110, Dairy Cattle Judging	2

Dairy Husbandry Courses: 10 hrs.

Select from the following:

200, Problems	cr. arr.
210, Advanced Dairy Cattle Judging	2
300, Problems	cr. arr.
310, Dairy Production	3
380, Dairy Cattle Breeding	3
385, Artificial Breeding	3
410, Seminar	1
150, Physiology of Domestic Animals	3

Supporting Courses: 22 hrs.

Select from the following:

Agronomy	Entomology
Animal Husbandry	Food Science & Nutrition
Atmospheric Science	Rural Sociology
Biochemistry	Veterinary Anatomy-
Chemistry	Physiology
Civil Engineering	Veterinary Pathology



Business and Economics: 6 hrs.

Select from the following:

Accountancy	Management
Agricultural Economics	Marketing

Additional Electives: 30 hrs.

BUSINESS EMPHASIS

For students interested in agribusiness related to dairy science.

Major Field: (same as Professional Emphasis)

Dairy Husbandry Courses: (same as Professional Emphasis, excluding 150, Physiology of Domestic Animals)

Supporting Courses: 12 hrs.

Select from the following:

Agronomy	Biochemistry
Animal Husbandry	Food Science & Nutrition
Atmospheric Science	Rural Sociology

Business and Economics: 16 hrs.

Select from the following:

<i>Accountancy</i>	Hours
36, Accounting I	3
37, Accounting II	3
137GH, Honors Accounting II	3
<i>Agricultural Economics</i>	
220, General Agricultural Marketing	3
225, Statistical Analysis	3
260, General Farm Management	3
280, Financing the Farm Business	3
290, Marketing Farm Commodities:	
Theory & Practice	1
291, Marketing Farm Commodities:	
Livestock & Livestock Products	2
292, Marketing Farm Commodities:	
Poultry Products	1
295, Marketing Farm Commodities:	
Milk & Dairy Products	1
312, Planning the Farm Business	3
314, Farm Business Analysis	3
333, Agricultural Law	3



UNIVERSITY OF MISSOURI-COLUMBIA

APPLICATION FOR ADMISSION

Instructions . . .

1. APPLICATIONS for admission and complete transcripts for ALL schools and colleges of the University of Missouri-Columbia should be sent to the Director of Admissions, 130 Jesse Hall, Columbia, Missouri 65201 and should be on file not later than May 1 (Freshmen) and July 1 (Transfer and Graduate Students) for Fall Semester; December 1 for Winter Semester; and May 1 for Summer Session. (Supplemental applications are required for admission to the School of Nursing, the College of Veterinary Medicine, the School of Medicine and the School of Law.)
2. FRESHMEN applicants must submit an official high school transcript (with class rank) and required test scores.
3. UNDERGRADUATE TRANSFER applicants must submit official transcripts from each college attended. (Transfers entering Arts & Science or Journalism must also submit a high school transcript.)
4. GRADUATE applicants must submit an official transcript showing baccalaureate degree and transcript(s) showing any additional graduate work. Additional information concerning graduate study may be obtained from the Graduate School, 205 Jesse Hall.
5. OUT-OF-STATE APPLICANTS: It is the duty of each applicant to apply and register under the proper residence and to pay the proper tuition fees. A pamphlet giving detailed information on tuition and residence rules may be obtained from the Admissions Office, 130 Jesse Hall or the Cashier's Office, 123 Jesse Hall.
6. FINANCIAL AID: An application for admission to UMC *does not* serve as an application for financial aid. UMC accepts *either* the Financial Aid Form (FAF) of the College Scholarship Service *or* the Family Financial Statement (FFS) of American College Testing. Both forms are available in school counseling offices. They are released at the beginning of a new calendar year and should be filed by April 30. Late applications will be considered according to the date received and the availability of funds. Questions should be directed to the Office of Student Financial Aids, 11 Jesse Hall.
7. HOUSING: An application for admission to UMC *does not* serve as an application for housing. Single student housing applications/brochures are printed and mailed in February to all who have requested them. Married student housing applications/brochures are available throughout the year. If you are applying for admission before February 1 for the fall semester (October 1 for the winter semester, April 1 for the summer session) and want an application for University-owned housing, check item 22. If you are applying for admission after the aforementioned date, do not check item 22 but write directly to the Housing Office, 123 Jesse Hall. (Please do not duplicate requests.)

Additional Information . . .

No transcript can be accepted directly from the student; admission status cannot be determined until complete credentials are on file in the Admissions office. Failure to complete this form fully or giving of misinformation concerning previous enrollment in other colleges or universities will void your admission. All transcripts become the property of UMC.

Because of limited enrollment and/or higher minimum standards, general acceptance as a student at the University of Missouri-Columbia does not guarantee acceptance to specialized or professional programs.

Some information requested is required by Title VI of the Civil Rights Act of 1964, Title IX of the Higher Education Amendments of 1972 and section 504 of the Rehabilitation Act of 1973 and is for the purpose of reporting to Federal Compliance Agencies concerning equal education opportunity, in order to keep the records required by the Federal Government, and to assure that there will not be discrimination on the basis of race, color, religion, handicap, national origin or sex.



UNIVERSITY OF MISSOURI-COLUMBIA

Please Print (In Ink) or Type and DO NOT Write in Shaded Areas.
See Additional Instructions on Reverse Side.

020 0 0 0
1-3 4 - 6 7 - 12

1. Name

020 22-56 22 Last First Middle Maiden 56

3. I would like information on campus services for the physically handicapped* Yes No

4. Veteran of the U.S. Armed Forces? 020 67 1 Yes No

2. Social Security Number

020 13-21

020 Name C C 1
22 - 56 63 64 65 67 68

5. Permanent Address and Telephone Number (This address will be used for all University correspondence prior to your first registration)

150 I.D. No. M 1 151 I.D. No. M

1-3 4 - 12 13 - 15 21 Number and Street or RFD No. 40 41 Apt. No. or Box No. 60 61 1-3 4 - 12 13 - 16 21 City 40

State 41-42 43 Zip 47 Country 151 48-49 50 Area Code Telephone No. 59 County 60-62 63

6. Address of Parent, Spouse, or Guardian/Other (Check one) (if different from item 5)

150 I.D. No. 1 1-3 I.D. No. 4-12

1-3 4 - 12 13 21 Number & Street or RFD No. 40 41 Apt. No. or Box No. 60 61 13 21 City 40 State 41-42 43 Zip 47 Country 48-49 63

7. Previously been enrolled at UMC? Yes No If yes, when? _____

8. Ever enrolled in Correspondence (Indep. Study) or Extension Courses at UMC? Correspondence Yes No Extension Yes No If yes, when? _____

9. School or College entering (check one) 07 Agriculture; 01 Arts & Science; 04 Bus. & Pub. Admin.; 14 Education; 17 Engineering; 21 Forestry, Fisheries, Wildlife; 60 Graduate; 24 Home Economics; 27 Journalism; 31 Law; 37 Medicine; 47 Nursing; 54 Public & Comm. Services; 57 Vet. Medicine

10. Immediate degree sought at UMC? Academic major _____ 060 (18 - 21) 030 060 Bach. Mstrs. Spec. Doct. Prof. None

11. Applying as (check one) Undergraduate Graduate

12. Term of expected entrance (check one) 030 23 - 26 090 22 - 25 fall winter summer Year: _____

13. (Undergraduate Applicants Only) If you have taken the G.E.D. High School Equivalency Test, indicate date _____ Month Year Yes No

14. (Undergraduate Applicants Only) Leaving High School early to attend UMC? Yes No

15. High School attended 110 13 - 18 Name City State Month Year

16. Date of H.S. Graduation _____ Month Year

030 I.D. No. 1-3 4 - 12 13 14-15 16 A 22 23 - 26 27 28 29 41

060 I.D. No. 1-3 4 - 12 14-15 16 17 18 - 21 22-23 24-25 41

060 I.D. No. 1-3 4 - 12 14-15 16 17 18 - 21 22-23 24-25 41

090 I.D. No. 1-3 4 - 12 14-15 16 18 - 21 22 - 25 26-27 28-29 30 31 - 36 37 - 42 43 44 - 46

110 I.D. No. 1-3 4 - 12 13 - 18 63

APPLICATION FOR ADMISSION-UNIVERSITY

17. Name and location of ALL colleges attended, Dates of attendance, Degrees earned or expected prior to enrollment at UMC. (If none, enter "none") If currently enrolled, indicate in date space. List schools beginning with most recent. (Failure to indicate colleges or universities in which you have been enrolled will void your admission.)

CEEB	ONLY	NAME OF COLLEGE	LOCATION (CITY & STATE)	DATES OF ATTENDANCE	DEGREES EARNED	DEGREE DATES
Card 1 13-16	1.					
Card 2 13-16	2.					
Card 3 13-16	3.					
Card 4 13-16	4.					
Card 5 13-16	5.					

100 | I.D. No. | | | | | | | | | | | | | | | 1
1-3 4 - 12 13 - 16 79

100 | I.D. No. | | | | | | | | | | | | | | | 1
1-3 4 - 12 13 - 16 79

100 | I.D. No. | | | | | | | | | | | | | | | 1
1-3 4 - 12 13 - 16 79

58 Use only for Colleges Not in CEEB 71 Code Directory.

100 | I.D. No. | | | | | | | | | | | | | | | 1
1-3 4 - 12 13 - 16 79

58 Use only for Colleges Not in CEEB 71 Code Directory.

100 | I.D. No. | | | | | | | | | | | | | | | 1
1-3 4 - 12 13 - 16 79

58 Use only for Colleges Not in CEEB 71 Code Directory.

160 | I.D. No. | | | | | | | | | | | | | | | 1
1-3 4 - 12 17 18 - 21 22

23 26 28 29 - 34 35 36 - 38

Place of Birth-City
39-40 41-42 43-44 45 [Item 22] 60

61-62 63-64 65 70 71-72 73-74

163 | I.D. No. | | | | | | | | | | | | | | | 1
1-3 4 - 12 13 14 [Item 26] 48 51 53

P.G.S. Name | | | | | | | | | | | | | | | 1

18. Sex * M F

19. Date of Birth
160 28 | 160 29-34 | | | |
Month Day Year

20. Previous to enrollment, will you have satisfied the 1 year residence requirement in Missouri?
160 35 | R Yes N No (See item 5 of instructions)

21. Place of Birth
160 45-64 | 45 | City | 60 61 | State | 62 63 | Country | 64 65

22. After reading instruction No. 7, check to receive an application for
 UMC-owned single student housing
 UMC-owned married student housing

23. Ethnic Origin * American Indian/Alaskan Native Hispanic
 Asian or Pacific Islander White-Non Hispanic
 Black-Non Hispanic Non-Resident Alien

24. Religious Preference
160 71-72

25. Citizen of the U.S.? Yes No
If no, what country?
160 73

26. Name of Parent, Spouse, or Guardian/Other (Check one)
163 14-48 | | | |
Last First Middle

27. Did Parent or Guardian attend UMC one semester or more?
163 51 | Yes No

28. (Graduate Applicants Only) Have you taken the required Graduate level examinations? Yes No
If yes, have these scores been submitted to the UMC Graduate Office?
 Yes No

29. Check to receive scholarship, financial payment and program information on
 Army ROTC Navy ROTC Air Force ROTC

30. Legal Signature (In Ink)

31. Date

Complete All Items and Return This Form To:
Director of Admissions, 130 Jesse Hall, University of Missouri-Columbia, Columbia, Missouri 65201



UNIVERSITY OF MISSOURI-COLUMBIA

APPLICATION FOR ADMISSION

UNDERGRADUATE AND GRADUATE

RETURN TO:

Director of Admissions
130 Jesse Hall
University of Missouri-Columbia
Columbia, Missouri 65201

<i>Management</i>	
202, Fundamentals of Management	3
254, Business Law A	3
255, Business Law B	3
308, Operations Management	3
309, Organizational Process	3
336, Personnel Management	3

<i>Marketing</i>	
204, Principles of Marketing	3
206, Distribution Systems	3
312, Marketing Management	3
316 Sales Management	3

<i>Journalism</i>	
120, Advertising Principles & Practice	3

Additional Electives: 30 hrs.

SCIENCE EMPHASIS

For students interested in research and/or technology.

Major Field: (same as **Professional Emphasis**)

Dairy Husbandry Courses: (same as **Professional Emphasis**)

Supporting Courses: 12 hrs.

Select from the following:

Accountancy	Food Science & Nutrition
Agricultural Economics	Veterinary Anatomy-
Agronomy	Physiology
Animal Husbandry	Veterinary Pathology
Biochemistry	Physiology

Natural and Social Sciences: 16 hrs.

Select from the following:

Atmospheric Science	Mathematics
Biological Sciences	Microbiology
Chemistry	Physics

Additional Electives: 30 hrs.

ENTOMOLOGY

Main Office—1-87 Agriculture Building
Telephone 882-7384

Chairman: Mahlon L. Fairchild, Ph.D., Prof. (Corn Insects)

Professors:

- George M. Chippendale, Ph.D., Insect Physiology
- Wilfred S. Craig, Ph.D., Ext. Entomologist, Project Leader
- Wilbur R. Enns, Ph.D., Taxonomy, Acarology, Fruit Insects
- Carol M. Ignoffo, Ph.D., Insect Pathology
- Arthur L. Jenkins, M.S., Emeritus
- William H. Kearby, Ph.D., Forest Entomology, Insect Ecology
- Armon J. Keaster, Ph.D., Corn Insects
- Charles O. Knowles, Ph.D., Toxicology of Insecticides
- Curtis W. R. Wingo, Ph.D., Emeritus
- Thomas R. Yonke, Ph.D., Biosystematics & Ecology

Associate Professors:

- Donald J. Farish, Ph.D., Insect Behavior
- James L. Huggans, Ph.D., Ext. Field Testing Specialist
- Ralph E. Munson, Ph.D., Survey Entomologist
- George W. Thomas, M.A., Ext. Pesticide Chemicals Coordinator & Entomologist

Assistant Professors:

- Robert D. Hall, Ph.D., Medical & Veterinary Entomology
- Keith Harrendorf, M.S., Cotton Insects, Delta Center
- Flernoy G. Jones, Ph.D., Insects of Man & Livestock, 4-H, Structural Insects, Beekeeping
- Reed L. Kirkland, Ph.D., Pest Management
- Rodney H. Ward, Ph.D., Population Dynamics, Ecology

Research Associates:

- B. Dean Barry, Ph.D., Host Plant Resistance
- Herman J. Benezet, Ph.D., Toxicology of Insecticides
- Kenneth D. Biever, Ph.D., Bioclimatology
- Michael R. Carroll, M.S., Forest Insects
- Jarret D. Hoffman, M.S., Lab Environments
- Donald L. Hostetter, M.D., Insect Pathology
- Norman L. Marston, Ph.D., Geneticist, Ecologist
- Benjamin Puttler, B.S., Parasites of Cutworms
- Gerald T. Schmidt, Ph.D., Parasite Behavior
- Gustave D. Thomas, Ph.D., Ecology of Livestock Insects
- Chih-Ming Yin, Ph.D., Insect Physiology

Entomology is the study of insects and how they relate to man and the environment. Included in a broad spectrum of relationships are insects competing for man's food and fiber; insect vectors of plant, livestock, and human diseases; insects beneficial to man; and insects functioning in the natural environment.

The student in Entomology receives training in several disciplines or supporting sciences. This broad background enables the entomologist to obtain employment with the U.S.D.A., state departments of agriculture, universities, private industry, or self-employment in pesticide application.

The Department of Entomology offers advanced degree (M.S. and Ph.D.) programs to qualified students. A student desiring undergraduate training in Entomology should consult the Pest Management curriculum.

ENVIRONMENTAL SCIENCE EMPHASIS

Main Office—100 Agricultural Engineering Building
Telephone 882-2369

Coordinator: C. LeRoy Day, Ph.D., Prof., Agricultural Mechanization

Coordinating Committee

- Charles L. Cramer, Ph.D., Prof., Agricultural Econ.
- Wayne L. Decker, Ph.D., Prof., Atmospheric Science
- Donald P. Duncan, Ph.D., Prof., Dir., School of Forestry, Fisheries & Wildlife
- Mahlon L. Fairchild, Ph.D., Prof., Entomology
- Donald A. Hegwood, Ph.D., Prof., Horticulture

In addition to achieving a major in one of the programs in Subject Matter Areas, a student may include an environmental emphasis by completing at least 24 credit hours from the lists below. These would replace an equivalent number of elective hours under the heading, **Additional Electives**.

Elect one or more courses from each of the three groups listed below and additional courses from the list of General Environmental Courses to total at least 24 hours.

Socially Oriented Courses	Hours
Agricultural Economics .....	.3
Anthropology 250 .....	.3
Regional & Community Affairs 190 .....	.3
Rural Sociology 220 .....	.3
Sociology 316 .....	.3

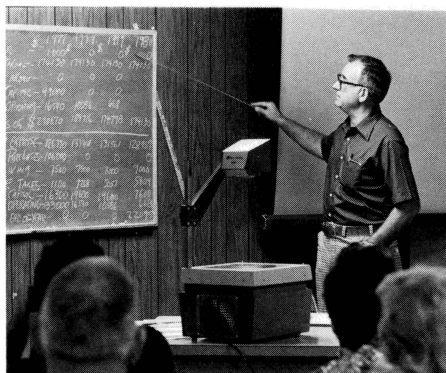
Resource Oriented Courses	
Agricultural Economics 270 .....	.3
Agricultural Economics 386 .....	.3
Atmospheric Science 50 .....	.3
Entomology 101 .....	.3
Entomology 201 .....	.3
Food Science & Nutrition 30 .....	.5
Forestry, Fisheries & Wildlife 60 .....	.3
Forestry, Fisheries & Wildlife 202 .....	.3
Horticulture 254 .....	.3
Plant Pathology 301 .....	.3

Engineering and Technology Courses	
Agricultural Engineering 201 .....	.3
Agricultural Engineering 202 .....	.3
Atmospheric Science 316 .....	.3
Physics 205 .....	.2-3

General Environmental Courses	
Agronomy 100 .....	.3 or 5
Agronomy 308 .....	.3
Atmospheric Science 303 .....	.3
Atmospheric Science 366 .....	.3
Agriculture/Biological Sciences 6 .....	.3
Biological Sciences 362 .....	.5
Entomology 319 .....	.3
Forestry, Fisheries & Wildlife 101 .....	.3
Forestry, Fisheries & Wildlife 324 .....	.3
Forestry, Fisheries & Wildlife 353 .....	.2
Horticulture 10 .....	.3
Plant Pathology 307 .....	.4
Regional & Community Affairs 360 .....	.3
Rural Sociology 304 .....	.3

The following departments in the College of Agriculture are participating in the offering of programs with an environmental emphasis as described above:

Agricultural Economics	Entomology
Agricultural Engineering	Food Science and Nutrition
Agronomy	Horticulture
Animal Husbandry	Plant Pathology
Atmospheric Science	Poultry Husbandry
Biochemistry	Rural Sociology
Dairy Husbandry	



EXTENSION EDUCATION

**Main Office—103 Whitten Hall
Telephone 882-4517**

Chairman: John G. Gross, Ph.D.

Professors

Paul H. Gwin, M.S.
Delmar E. Hatesohl, Ph.D.
Richard L. Lee, Ph.D.
Joseph J. Marks, M.A.

Associate Professors

F. Duane Dailey, M.S.
Elwood K. Leslie, Ed.D.

Assistant Professors

Debrah H. Jefferson, M.S.
John L. Mowrer, Ph.D.

Instructors

Harlan Lynn, M.A.
James G. Shaner, M.A.
Norman A. Swan, Jr., M.A.

More than 3,000 Extension offices throughout the nation make up the vast facility for extending knowledge to Americans. In Missouri there are 117 centers and a professional Extension staff of more than 425 people.

Extension Education provides a graduate program to develop the competencies needed to effectively extend the educational resources of the University to the people.

Students interested in Extension are advised to complete the undergraduate degree in the discipline of their choice, and then complete a master's degree in a discipline with supporting Extension Education courses as electives, or enroll for a Master of Science in Extension Education. Many professional positions in Extension require a master's degree.

FOOD SCIENCE AND NUTRITION

**Main Office—1-74 Agriculture Building
Telephone 882-2639**

Chairman: H. Donald Naumann, Ph.D., Food Science & Distribution

Professors

- Milton E. Bailey, Ph.D., Food Chemistry
- Ruth E. Baldwin, Ph.D., Food Sensory Evaluation
- Harold J. Bassett, Ph.D., Food Processing
- Owen J. Cotterill, Ph.D., Food Science
- Joseph E. Edmondson, Ph.D., Food Microbiology
- Marion L. Fields, Ph.D., Food Microbiology
- Harold B. Hedrick, Ph.D., Food Science
- Robert T. Marshall, Ph.D., Food Microbiology
- William C. Stringer, Ph.D., Food Sci. & Distribution
- John M. Welch, Ph.D., Emeritus

Associate Professor

Robert F. Lukowski, Ed.D., Food Service Mgmt.

Assistant Professors

Dante Laudadio, Ph.D., Food & Lodging Mgmt.
Nan Unklesbay, Ph.D., Food Sci. & Nutrition

Instructors

Bernice M. Korschgen, M.S., Food Evaluation
Dean S. Shelley, M.S., Food Processing

Three career opportunity areas are (1) Food Science—the basic studies which aid our understanding of food and its functions; (2) Distribution—supplying food to the market; and (3) Food and Lodging Management—food service and hospitality. In each area the student may emphasize business, professional, or scientific development. Career opportunities related to food processing and manufacturing, food distribution and service, the hotel and restaurant industries, research and product development, product and environmental quality control, and similar functions are available. The following examples illustrate departmental programs designed to provide competency for these different career opportunity areas.

FOOD SCIENCE

General Requirements (see page 11)

Departmental Requirements

SCIENCE OPTION (must include at least 26 hours of the courses listed below)

Major Field: 32 hrs.	Hours
30, Food Science & Nutrition	5
250, Physical Principles for Food Processing	3
309, Food Chemistry I	5
330, Food Processing	5
360, Food Quality & Sanitation	3
372, Food Microbiology	3

373, Food Microbiology Lab	2
375, Sensory Analysis of Food	3

Science and Mathematics: 16 hrs.

Electives: 30 hrs.

PROFESSIONAL OPTION (same as Science Option)

Major Field: 29 hrs.

Additional courses: 19 hrs. (to include 6 hrs. in the technology of food processing and 6 hrs. in business management)

Electives: 30 hrs.

BUSINESS OPTION

Major Field: 32 hrs.	Hours
30, Food Science & Nutrition	5
75, Attributes of Food Quality	3
360, Food Quality & Sanitation	3

Additional Courses: 16 hrs. (in Food Science & Nutrition and in Business Management, Economics, and Statistics)

Electives: 30 hrs.

FOOD AND LODGING MANAGEMENT

General Requirements (see page 11)

Departmental Requirements

Major Field: 32 hrs.

Food Science & Nutrition	5
Food Preparation	10
Food Quality	3
Food Sanitation	3
Food and Beverage Management	3
Hospitality Marketing	3
Operational Management	3
Management & Training of Personnel	3
Case Studies and Research	3
Meat Selection & Identification	3

Field Training

Business and Economics: 25 hrs.

Select from the following: Accountancy, Economics, Management, Collective Bargaining, Corporation Finance, Data Processing and Statistics.



Additional Electives: 12 hrs.

May include Microwave Heating of Foods, Sensory Analysis, Labor Relations, Organizational Behavior.

FOOD DISTRIBUTION

General Requirements (see page 11)

Departmental Requirements

Major Field:	13 hrs.	Hours
Food Science & Nutrition5
Food Microbiology3
Food Processing5

Supporting Courses: 19 hrs.

Business and Economics: 35 hrs. (same as under Food and Lodging Management)

Physical and Biological Sciences: 5 hrs. Biochemistry OR Microbiology5

Additional Electives: 25 hrs.

GENERAL AGRICULTURE

Students may choose to major in General Agriculture rather than a specific subject area. Students in General Agriculture must meet the General Requirements and Additional Electives outlined, but may replace the departmental requirements with the following—complete 48 semester hours offered by departments in the College: agriculture courses used to meet General Requirements count toward this total; 15 semester hours must be in one department in the College; and 8 semester hours must be in each of two additional departments in the College.

HORTICULTURE

Main Office—1-43 Agriculture
Telephone 882-2745

Chairman: Donald A. Hegwood, Ph.D., Prof.

Professors:

Arthur E. Gaus, Ph.D., Horticulture Ext.
Delbert D. Hemphill, Ph.D., Physiology
Aubrey D. Hibbard, Ph.D., Pomology
Victor N. Lambeth, Ph.D., Olericulture
William R. Martin, Jr., B.S., Emeritus
Marlin N. Rogers, Ph.D., Floriculture
Raymond A. Schroeder, Ph.D., Horticulture
James E. Smith, Jr., M.S., Emeritus
Ronald E. Taven, M.S., Horticultural Landscaping

Associate Professors

John H. Dunn, Ph.D., Turfgrass
Ray R. Rothenberger, Ph.D., Floriculture
Leon C. Snyder, Jr., M.A., Landscape Design

Assistant Professors:

Keith R. Geller, M.L.A., Landscape Design
David S. Koranski, Ph.D., Ext. Floriculture

Gary G. Long, Ph.D., Horticultural Landscaping
David H. Trinklein, Ph.D., Floriculture

Horticulture is a diverse field encompassing the areas of (1) ornamental plants such as flowers, ground covers, lawn and turf grasses, shade and flowering trees, and shrubs, and (2) food plants such as fruits and vegetables. Horticulture requires highly trained persons with varying combinations of professional, business, and scientific skills.

The horticulture undergraduate student and the faculty adviser develop an individualized curriculum, designed to best prepare the student to fulfill individual objectives.

General Requirements (see page 11)

Departmental Requirements

PROFESSIONAL EMPHASIS

The professional course of study prepares the student for positions such as: horticulture extension agent; horticultural writer; horticultural attache; landscape designer; production technician for the processing industry; state or federal marketing supervisor; superintendent of estates, institutional grounds, cemeteries, golf courses or parks; and vocational horticulture teacher in high school or college, etc.

Major Field:	12 hrs.	Hours
203, Plant Propagation3
204, Plant Environments3
205, Plant Nutrition3
206, Plant Protection3

Supporting Courses: 33 hrs.

Usually selected from the following:

<i>Horticulture</i>	Hours	
10, Landscape Appreciation3
20, Basic Home Horticulture3
30, Plant Science5
60, Flower Arranging2
150, Micro-Environmental Design3
151, Plants for Interior Design2
160, Garden Flowers3
201, Ornamental Woody Plants I3
202, Ornamental Woody Plants II3
250, Landscape Graphics3
252, Planting Design I3
254, Landscape Design3
255, Landforms3
257, Construction Materials3
266, Plant Forcing Structures2
268, Floral Design3
269, Flower Store Management3
272, Planting Design II3
300, Problems	cr. arr.
301, Post-Harvest Physiology3
330, Fruit Production5
344, Commercial Vegetable & Truck Crop Growing5



345, Vegetable Forcing	3
350, Landscape Graphics Communication	3
352, Planting Design III	4
354, Advanced Landscape Design	4
355, Turf	3
357, Nursery Crop Production & Management	4
361, Fall Greenhouse Crops	4
362, Spring Greenhouse Crops	4
390, Horticulture Internship	c.r. arr.
Biol. Sci. 214, Plant Taxonomy	4
Plant Path. 301, Intro. to Plant Pathology	3
Biol. Sci. 313, Plant Physiology	3-5
Entomol. 312, Bionomics of Insect Pests	3
Agron. 100, Soil Systems	3 or 5
Agron. 230, Crops & Soils Mgmt.	3
OR others with approval.	

BUSINESS EMPHASIS

This course of study is for the student who plans to enter a business that deals primarily with growing and/or marketing horticulture products, or with services related to these products. It also prepares the student to enter the agribusiness field in industries that serve the various branches of horticulture.

The student is prepared for such opportunities as arborist, flower grower, fruit grower, garden center operator, landscape contractor, lawn maintenance company employee, nurseryman, retail florist, sales or technical representative for agribusiness, administrative or management positions in agribusiness, etc.

Major Field: (same as **Professional Emphasis**)

Supporting Courses: 17 hrs.

Choose from Supporting Courses under Professional Emphasis.

Business and Economics: 16 hrs.

<i>Select from the following:</i>	<i>Hours</i>
Accountancy 36	3
Accountancy 37	3
Economics 229	3
Management 202	3
Agricultural Economics 220	3
Economics 251	3
Journalism 120	3
OR others with approval.	

Additional Electives: 30 hrs.

Students and their advisers should select electives from the list of Supporting Courses under Professional Emphasis.

SCIENCE EMPHASIS

This course of study is planned for students who intend to continue their studies beyond the bachelor's degree, in order to qualify for research positions in industry, governmental agencies, universities, and/or teaching at the college or university level.

Major Field: (same as **Professional Emphasis**)

Supporting Courses: 17 hrs.

Choose from Supporting Courses under Professional Emphasis.

Natural and Social Sciences: 16 hrs.

<i>Select from the following:</i>	<i>Hours</i>
Chemistry 11	5
Chemistry 12	5
Biochemistry 110	3
Biochemistry 193 & 195	5
Physics 11	5
Biol. Sci. 212 (Basic Microbiology)	4
OR others with approval	

Additional Electives: 30 hrs.

See the list of Supporting Courses under Professional Emphasis.

PEST MANAGEMENT CURRICULUM

Main Office—45 Agriculture Building
Telephone 882-6729

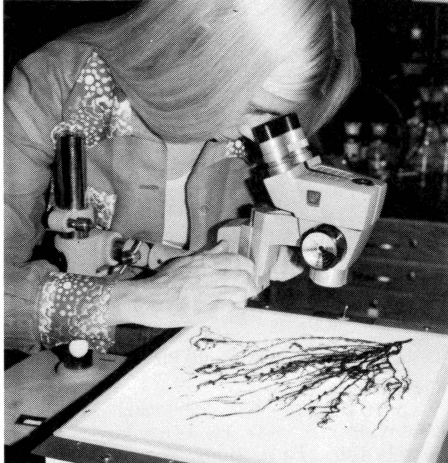
Coordinator: Reed L. Kirkland, Ph.D., Entomology

Coordinating Committee:

- Victor H. Dropkin, Ph.D., Plant Pathology
- Paul W. Steiner, Ph.D., Plant Pathology
- John H. Dunn, Ph.D., Horticulture
- O. Hale Fletchall, Ph.D., Agronomy
- Armon J. Keaster, Ph.D., Entomology
- Rodney H. Ward, Ph.D., Entomology

The pest management curriculum is interdisciplinary in nature and includes courses designed to give the student broad experience in areas associated with plant and animal protection. Pest management graduates are required to have knowledge in many fields of agricultural science, with special expertise in entomology, plant pathology, weed science, and animal damage control.

The courses of study in these disciplines emphasize the biological principles behind the management of pest populations. Moreover, students are presented a holistic view of biological and environmental interactions. At UMC, the emphasis in teaching is placed on the systems approach in which all control procedures are unified to manage the pest species, while taking into consideration the long-term preservation of the environment.



At present, most professional opportunities in this area are related to agricultural production. In the near future, many pest management specialists will be involved in the solution of wide-range problems related to urban, rural, aquatic, and forest environments.

General Requirements (see page 11)

Curriculum Requirements

Major Field: 26 hours	Hours
Agron. 306, Weed Control	3
Plant Path. 301, Intro. to Plant Pathology	3
Entomol. 312, Bionomics of Insect Pests	3
Agric. 180, Principles of Pest Management	3
Entomol. 181, Pesticide Chemicals	3
Ag. Engr. 198, Pesticide Application Equipment	3
Summer Internship	5
Computer Sci. 104, Computers & Programming I	3

Supporting Courses: 22 hrs.

Select from the following:

<i>Agronomy</i>	
100, Soil Systems	5
170, Basic Plant Genetics	3

230, Crops & Soils Management	3
302, Fertilizers	2
<i>Horticulture</i>	
203, Plant Propagation	3
204, Plant Environments	3
<i>Entomology</i>	
101, Insects in the Environment	3
304, Systematic Entomology	3
315, Medical & Vet. Entomology	3
319, Insect Ecology	3
322, Biological Control of Insects	3
405, Taxonomy of Immature Insects	3
<i>Forestry, Fisheries & Wildlife</i>	
60, Ecology of Wildlife & Man	3
202, Environmental Quality in Forest Systems	3
<i>Plant Pathology</i>	
307, Mycology	4
361, Insects in Relation to Plant Diseases	3
391-392-393, Clinical Plant Pathology	2-1-1
<i>Atmospheric Science</i>	
50, Meteorology	3
<i>Biological Sciences</i>	
12, General Botany	5
212, Basic Microbiology	4
214, Plant Taxonomy	4
362, General Ecology	5
<i>Mathematics</i>	
207, Calculus for Social & Natural Sciences I	3
<i>Statistics</i>	
31, Elementary Statistics	3

OR others with approval of adviser.

Additional Electives: 30 hrs.

PLANT PATHOLOGY

**Main Office—108 Waters Hall
Telephone 882-2643**

Chairman: Robert N. Goodman, Ph.D., Prof.
(Phytopathology)

Professors

- Oscar H. Calvert, Ph.D., Field Crops Pathology
- Victor H. Dropkin, Ph.D., Nematology
- William Q. Loegering, Ph.D., Genetics of Disease Resistance, Emeritus
- Daniel F. Millikan, Ph.D., Virology
- Einar W. Palm, Ph.D., Extension Plant Pathology
- Jack R. Wallin, Ph.D., Epidemiology

Associate Professors

- Charles H. Baldwin, Jr., Ph.D., Research-Extension Plant Pathology (Portageville)
- Merton F. Brown, Jr., Ph.D., Fungus Ultrastructure
- Anton Novacky, Ph.D., Phytopathology
- Om P. Sehgal, Ph.D., Virology

Assistant Professors

- Arthur L. Karr, Jr., Ph.D., Fungus Physiology
- Paul W. Steiner, Ph.D., Fruit Pathology, Research-Extension

Research Associate

- Arnold S. Foudin, Ph.D., Epidemiology

Plant Pathology encompasses the study of the nature, cause, development, and control of diseases that affect the produc-

tion, shipment, storage, and use of food, fiber, and ornamental plants.

A professional plant pathologist requires a firm background in such basic sciences as botany, bacteriology, mathematics, chemistry, and physics. Specialization begins *after* the bachelor's degree, in agriculture or biological science, as the student works toward the Master of Science or Doctor of Philosophy degree.

There are six important fields in which plant pathologists work: teaching, research, conservation, sales, and administration. Positions in most of these fields are found at home and abroad, in schools, universities, government centers, industry, and business.

Increasing numbers of positions are becoming available in foreign agriculture, both private and governmental, as well as in private enterprise as crop production consultants.

POULTRY HUSBANDRY

Main Office—Building T-14
Telephone 882-6649

Chairman: James E. Savage, Ph.D.

Professors

Harold V. Biellier, Ph.D.
Ernest M. Funk, Ph.D., Emeritus
Quinton B. Kinder, M.S., Emeritus
Walter D. Russell, M.S.
Alfred B. Stephenson, Ph.D.

Associate Professors

Glenn S. Geiger, M.S.
Joe M. Vandepopuliere, Ph.D.

Students with an interest in Poultry may choose a course of study in one of three areas: **Professional, Business, or Science**. A student's program can be adjusted to change areas of emphasis if desired.

General Requirements (see page 11)

Departmental Requirements

Major Field: 8 hrs.	Hours
12, Animal Science	5
101, Poultry Science	3

Poultry Husbandry Courses: 15 hrs.

May include:

292, Marketing Farm Commodities:	
Poultry Products	1
307, Egg Technology	3

Supporting Courses: 25 hrs.

Additional Electives: 30 hrs.

The curricula for the three areas of emphasis are flexible to accommodate the interest of each student, but in general the Professional Areas include more courses in poultry production and management; the Business Area has higher proportion of courses in accountancy, agricultural economics, finance; and marketing; and the Science Area requires additional courses in biochemistry, chemistry, computer science, genetics, mathematics, nutrition, and physiology.

RURAL SOCIOLOGY

Main Office—102 Sociology Building
Telephone 882-6358

Chairman: Rex R. Campbell, Ph.D., Population, Demography

Professors

Douglas Ensminger, Ph.D., Rural Development, Agricultural Policy
Edward W. Hassinger, Ph.D., Social Organization, Medical Sociology
Daryl J. Hobbs, Ph.D., Rural Development, Social Organization
Herbert F. Lionberger, Ph.D., Communication, Sociology of Youth
Robert L. McNamara, Ph.D., Emeritus

Associate Professors

Joel A. Hartman, Ph.D., Communal Societies, Religion, Social Change
William D. Heffernan, Ph.D., Community Organization
John S. Holik, Ph.D., Social Organization
Michael F. Nolan, Ph.D., Social Change
James R. Pinkerton, Ph.D., Population, Human Ecology

Assistant Professor

Jere L. Gilles, Ph.D., Development

General Requirements (see page 11)

Departmental Requirements*

SUBJECT MATTER CORE

In all of the following alternative programs of study, a "core" of six courses, consisting of 18 credit hours, provides/the general substantive foundation upon which the unique features of each program is built. This core is comprised of six courses selected from the following list:

155, Agriculture in Communal Settings
175, Corporate Farms vs Family Farms
180, Social Research I
185, Contemporary Social Problems
220, Population and Ecology
299, Recent Theories in Sociology
310, Rural Social Organization
340, Community Social Structure

*Each program is planned by an adviser working with the student; certain substitutions are permitted.

SCIENCE EMPHASIS

This course of study is designed for those students who plan to do graduate work in sociology or rural sociology. In addition to the six "core" courses, the student's program would include Sociology 181, Social Research II (also Sociology 180, if not included in the core), and additional courses in Sociology/Rural Sociology and/or related disciplines, to make up the 48 hours of departmental requirements required by the College of Agriculture.

It is recommended that courses in symbolic logic and/or philosophy of science be used to satisfy the humanistic studies elective of the general education requirements.

BUSINESS EMPHASIS

The following program is suggested for students who plan to enter the business world. In addition to the Rural Sociology "Core," the student should take 201, Group Organization and Leadership, and nine other courses either from the remaining courses offered by the departments of Sociology and Rural Sociology, or from the following courses offered by other departments:

Accy. 37, Accounting II
Ag. Econ. 220, General Agricultural Marketing
Ag. Econ. 250, Economics of Agricultural Production & Distribution
Econ. 251, Theory of the Firm (price theory & economics of the firm)
Econ. 253, Macroeconomic Policy (functions and operations of the economy)
Ag. Econ. 230, Farm Programs
Ag. Econ. 241, Cooperative Business Organizations
Ag. Econ. 251, Agricultural Prices
Ag. Econ. 290, 291, 292, and/or 294—Marketing Farm Commodities
Ag. Econ. 344, Management of Cooperative Firms
Fam. Econ. & Mgt. 175, The Consumer in our Society
Fin. 203, Corporation Finance
Mgt. 202, Fundamentals of Management
Mktg. 204, Principles of Marketing
Mktg. 312, Marketing Management
Mktg. 316, Sales Management

It is assumed that the student will use Agricultural Economics (or General Economics) and Accounting I to satisfy the business and economics general education requirement of the College.

PROFESSIONAL EMPHASIS

The following programs are designed to provide students with the foundations for a saleable body of knowledge/skills for various types of careers, such as research technicians, demographic analyst, youth work, Peace Corps, community development, social service agencies, etc.

1. *Demographic Analyst or Research Technician.* In addition to the six core courses and 290,

Practicum, a block of 27 additional hours are necessary to complete the departmental requirements. The following courses should be included (RS—Rural Sociology/S—Sociology):

RS 181, Social Research II
RS 376, Advanced Social Statistics
RS 184, Social Impact Analysis
RS 311, Applied Sociology
S 305, Dynamics of Population
Pol. Sci. 324, Survey Research Methods

2. *Rural/Community Development.* In addition to the six core courses and 290, Practicum, the student should select nine or more courses from the following list (RS—Rural Sociology/S—Sociology):

RS 170, Sociological Aspects of Poverty
RS 201, Organization & Leadership in Modern Society
S210, Public Opinion & Communication
S 215, Collective Behavior
RS 225, Social Processes of Communication & Diffusion
S 260, Social Psychology
S 343, Advanced Social Psychology
S 344, Group Dynamics & Role Theory
S 371, Attitude Change
RS 304, Human Ecology
S 305, Dynamics of Population
RS 310, Rural Social Organization
S 317, The Sociology of Work & Leisure
S 318, Industrial Sociology
RS 335, Social Change & Trends
S 336, Social Movements & Conflicts
RS 340, Community Social Structure
S 354, Political Sociology
Ag. Econ. 270, Resources & Economic Development
Pol. Sci. 312, Issues in Public Bureaucracy
Pol. Sci. 317, Public Policy
Pol. Sci. 325, Politics of Pressure Groups
Pol. Sci. 328, Political Behavior
Reg. & Comm. Afrs. 192, The Field Community Development
Reg. & Comm. Afrs. 194, Planning & the Community

It is assumed that the student will use Political Science 1 or 11 to satisfy the Missouri State Law requirement.

3. *People Services/Agency Systems.* In addition to the six core courses and 290, Practicum, students should select nine or more courses from the following list, depending on their areas of interest. Appropriate courses may also be taken in the Departments of Psychology, Child and Family Development, and Family Economics and Management. (RS—Rural Sociology/S—Sociology)

RS 170, Sociological Aspects of Poverty
RS 201, Organization & Leadership in Modern Society
S 211, Criminology
S 227, Ethnic Minority Groups in the United States
S 312, Contemporary Corrections
S 260, Social Psychology
S 262, Sociology of Age & Sex Roles
S 344, Group Dynamics & Role Theory
S 377, Racial & Cultural Relations
S 339, The Black Americans

- S 215, Collective Behavior
- S 214, The Family
- RS 355, Youth in Contemporary Society
- S 322, Aging in American Society
- S 317, The Sociology of Work & Leisure
- S 318, Industrial Sociology
- S 323, Death & Dying
- S 324, Sociological Concepts & Health
- S 326, The Sociology of Sickness & Illness
- S 340, Community Social Structure
- RS 347, The Sociology of Community Health
- S 352, Occupations & Professions
- RS 370, The Sociology of Religion

Additional Electives: 29 hrs.

**PRE-VETERINARY
MEDICAL PROGRAM**

Students wishing to prepare for application to the College of Veterinary Medicine may enroll in the College of Agriculture under the science emphasis programs. In satisfying the requirements of the science program, the requirements for entering veterinary medicine may also be satisfied. However, before applying to the College of Veterinary Medicine, a student should

make certain that the following requirements have been satisfied.

A minimum of 64 semester hours, exclusive of ROTC and Physical Education, is required for admission to the College of Veterinary Medicine. Credit received in the CLEP exams or for testing out of a course may be counted in total hours, but will not be counted as part of the required hours below. The 64 semester hours must include the following or equivalent.

For further information refer to the *Veterinary Medicine Bulletin* or UMC College of Veterinary Medicine.

<i>Subjects</i>	<i>Hours Required</i>
English .....	.6
College Algebra .....	.3
Inorganic Chemistry .....	.8
Organic Chemistry .....	.8
Physics .....	.5
Biological Science .....	.10
Social Science & Humanistic Studies .....	.10
Electives: Select courses toward the B.S. degree of your choice.	



Student consultants Steve Specker, left, Pat Bryant, Sue Rourke, and Jim Coale represent UMC's College of Agriculture at presentations to high schools throughout the state.

COOPERATIVE EXTENSION SERVICES

Each year the Cooperative Extension Service provides excellent Agricultural Extension employment opportunities for College of Agriculture graduates in Agricultural Extension. There is a continuing need for graduates in Animal Husbandry, Agronomy, Farm Management, Horticulture, Dairy Husbandry, and Agricultural Engineering. Cooperative Extension employees are faculty members of the University of Missouri. Their job as teachers is to provide continuing education for the people of Missouri in agriculture. University of Missouri Extension faculty may be located on the UMC campus or in one of the University Extension Centers located in each of Missouri's 114 counties.

AGRICULTURAL EXPERIMENT STATION

The Missouri Agricultural Experiment Station was established in 1887 by legislation introduced by Congressman Hatch of Northeast Missouri, which created an agricultural research program coordinated by the United States Department of Agriculture with all land grant colleges.

With few exceptions, the faculty members of the College of Agriculture who teach courses in resident instruction are also staff members of the Missouri Agricultural Experiment Station. They, therefore, have responsibilities for agricultural research as well as for teaching. These research duties of faculty members keep them constantly informed regarding new developments in their areas of specialization.

In modern times when much technical information may be obsolete before it can be printed, the advantages of teachers of agriculture also being researchers in agriculture is obvious. Students can be confident that the information being taught is the most recent proven by research.

The Missouri Agricultural Experiment Station has made many valuable contributions to the progress agriculture has made and is making in this nation. Readers

interested in additional information about the Experiment Station may write the UMC College of Agriculture, Columbia Mo. 65201.

STATEMENT OF COURSES

AGRICULTURAL ECONOMICS

50 AGRICULTURAL ECONOMICS (5). Prerequisite: 16 hours completed. f,w.

200 PROBLEMS (cr. arr.) Prerequisite: introductory course in agricultural economics.

220 GENERAL AGRICULTURAL MARKETING (3). Prerequisite: 50. f,w.

225 STATISTICAL ANALYSIS (3). Prerequisite: Math 10 or equivalent. f,w.

230 FARM PROGRAMS (3). Prerequisite: 60. f.

241 COOPERATIVE BUSINESS ORGANIZATIONS (3). Prerequisite: 220. w.

250 ECONOMICS OF AGRICULTURAL PRODUCTION AND DISTRIBUTION (3). Prerequisite: 50 or Economics 51 & Math 10 or equivalent. f,w.

251 AGRICULTURAL PRICES (3). Prerequisite: 225, & 250. w.

260 GENERAL FARM MANAGEMENT (3). Prerequisite: 60. Cannot also take 261. f,w.

261 FARM MANAGEMENT (3). Prerequisite: 250 & Accountancy 36. Cannot also take 260. w.

270 RESOURCES AND ECONOMIC DEVELOPMENT (3). Prerequisite: 250 & Economics 229. f.

271 INTERNATIONAL AGRICULTURAL DEVELOPMENT (3). Prerequisite: 50 or Economics 51 & junior standing. w.

280 FINANCING THE FARM BUSINESS (3). Prerequisite: 50 & Accountancy 37. f.

290 MARKETING FARM COMMODITIES: THEORY AND PRACTICE (1). General course prerequisite to courses 291, 292, 294, & 295. Prerequisite: 220. w. first 1/3 semester.

291 MARKETING FARM COMMODITIES: LIVESTOCK AND LIVESTOCK PRODUCTS (2). Prerequisite: 290. w. middle 1/3 & last 1/3 semester.

292 MARKETING FARM COMMODITIES: POULTRY PRODUCTS (1) (same as Poultry Husbandry 292). Prerequisite: 290. w. middle 1/3 semester.

294 MARKETING FARM COMMODITIES: GRAIN CROPS (2). Prerequisite: 290. w. middle 1/3 & last 1/3 semester.

295 MARKETING FARM COMMODITIES: MILK AND DAIRY PRODUCTS (1). Prerequisite: 290. w. last 1/3 semester.

299 TOPICS IN AGRICULTURAL ECONOMICS (1). Prerequisite: senior standing. f.

310 IN-SERVICE COURSE IN AGRICULTURAL ECONOMICS (2-10). Course is offered in sections A-E for 2 hours each. Prerequisite: 10 credits in agricultural economics including 260 or 261 or instructor's consent.

- 312 PLANNING THE FARM BUSINESS (3). Prerequisite: 260. f.
- 314 FARM BUSINESS ANALYSIS (3). Prerequisite: 260 or 261. w.
- 320 AGRICULTURAL BUSINESS MANAGEMENT (3). Prerequisite: senior standing, 220 & 280 or equivalent. w.
- 321 ECONOMIC HISTORY OF AGRICULTURE (3). w.
- 332 AGRICULTURAL POLICY (2). s.
- 333 AGRICULTURAL LAW (3). Prerequisite: junior standing or instructor's consent. f,w.
- 338 RURAL REAL ESTATE APPRAISAL (3) (same as Agronomy 338, Agricultural Engineering 338). Prerequisite: 260 or 261 & Agronomy 100. f.
- 342 PROBLEMS OF COOPERATIVE FIRMS (2). Four-week summer session for professional agricultural workers. Prerequisite: 220. s.
- 344 MANAGEMENT OF COOPERATIVE FIRMS (3). Prerequisite: 241 or instructor's consent. w.
- 345 THE ECONOMICS OF COLLECTIVE ACTION IN AGRICULTURE (3). Prerequisite: 220 or 290 or instructor's consent. alt. w. odd yrs.
- 355 ECONOMICS OF AGRICULTURAL PRODUCTION AND DISTRIBUTION (3). Prerequisite: senior or graduate standing. f.
- 364 CORRELATION AND REGRESSION ANALYSIS (3). Prerequisite: 225. f.
- 381 INTERMEDIATE MARKETING (2). Four-week summer session for professional agricultural workers.
- 386 DEVELOPMENT AND MANAGEMENT OF NATURAL RESOURCES (3). Prerequisite: 250 or Economics 251. f.
- 390 FIELD TRAINING (cr. arr.) Prerequisite: 75 hours & instructor's consent. s.
- 400 PROBLEMS (cr. arr.) Prerequisite: instructor's consent.
- 410 SEMINAR (1). f,w.
- 420 THEORY OF MARKETS (3). Prerequisite: 16 hours economics. w.
- 422 ORGANIZING AND ADJUSTING THE FARM BUSINESS (3). Prerequisite: instructor's consent.
- 423 BUSINESS LOGISTICS (3) (same as Marketing 423).
- 424 ADVANCED PRODUCTION ECONOMICS (3). Prerequisite: 225 & 250 & Math 205 or instructor's consent. w.
- 430 ADVANCED PRICE ANALYSIS (3). Prerequisite: 251 & Statistics 385. f.
- 435 ADVANCED FARM MANAGEMENT (3). Prerequisite: 312 or 314. alt. f. even yrs.
- 440 ECONOMICS OF MARKETING MILK AND MILK PRODUCTS (3). Prerequisite: 220, 250. f.
- 450 RESEARCH (cr. arr.)
- 451 ECONOMICS OF MARKETING LIVESTOCK AND LIVESTOCK PRODUCTS (3). Prerequisite: 220 & 250. w.
- 454 WELFARE AND CONSUMPTION ECONOMICS (3). Prerequisite: 12 hours economics.
- 458 ECONOMICS OF MARKETING (3). Prerequisite: Economics 351 or equivalent or instructor's consent. f.
- 465 CURRENT ECONOMIC ASPECTS OF AGRICULTURE (3). Prerequisite: 16 hours economics. w.
- 468 RESOURCE ECONOMICS AND DEVELOPMENT (3). Prerequisite: 12 hours economics & introductory calculus course. alt. w. even yrs.
- 472 ADVANCED LAND ECONOMICS (3). Prerequisite: 12 hours economics. w.
- 475 ECONOMETRICS I (3) (same as Economics 475).
- 476 ECONOMETRICS II (3) (same as Economics 476). Prerequisite: 475.
- 480 RESEARCH METHODOLOGY (3). f.
- 485 ADVANCED TOPICS IN ECONOMICS (3). Prerequisite: graduate standing. w.
- 490 RESEARCH (cr. arr.)
- AGRICULTURAL ENGINEERING**
- 1 FARM POWER (3).
- 20 WELDING (2).
- 60 SHOP TOOLS AND PROCESSES (2). Prerequisite: 20 & Math 10, or equivalent.
- 103 PLANNING FARM BUILDINGS (3). Prerequisite: Math 10.
- 117 EXPERIMENTAL COURSE. Designed for sophomore-level students. Content and number of credit hours to be listed in *Schedule of Courses*.
- 164 AGRICULTURAL MECHANIZATION SEMINAR (1). Prerequisite: senior standing or instructor's consent. f.
- 198 PESTICIDE APPLICATION EQUIPMENT (3).
- 201 FARM WATER MANAGEMENT (3). Prerequisite: Math 10 & junior standing.
- 202 AGRICULTURAL PRACTICES AND POLLUTION CONTROL (3). Prerequisite: a course in general inorganic chemistry & junior standing.
- 210 ADVANCED SHOPWORK (2). Prerequisite: 60 or equivalent.
- 215 ELECTRICITY ON THE FARM (3). Prerequisite: junior standing.
- 240 FARM MACHINERY (3). Prerequisite: junior standing.
- 250 PHYSICAL PRINCIPLES FOR FOOD PROCESSING (3) (same as Food Science & Nutrition 250). Prerequisite: Math 10 & Physics 11.
- 300 PROBLEMS (1-5).
- 306 CROP DRYING AND CONDITIONING (3). Prerequisite: junior standing.
- 310 IN-SERVICE COURSE IN AGRICULTURAL MECHANIZATION (1-8).
- A. Farm Power and Machinery
 B. Farm Buildings and Conveniences
 C. Soil and Water Management
 D. Rural Electrification and Processing
 E. Agricultural Construction and Maintenance

Prerequisites: 10 credits from courses 1, 20, 60, 103, 201, 210, 215 & 240; a B.S. degree in Agriculture or instructor's consent.

320 FARM DRAINAGE AND IRRIGATION (3). Prerequisite: 201.

330 HUMAN SAFETY IN AGRICULTURE (3). Prerequisite: junior standing & one behavioral science course.

338 RURAL REAL ESTATE APPRAISAL (3) (same as Agricultural Economics 338, Agronomy 338). Prerequisite: Agricultural Economics 260 or 261 & Agronomy 100. f.

363 MECHANIZATION SYSTEMS MANAGEMENT (2). Prerequisite: junior standing. If not farm experience, should have completed 240. w.

386 MECHANIZED FEED HANDLING (3). Prerequisite: senior standing.

400 PROBLEMS (cr. arr.)

410 SEMINAR (1).

452 ADVANCED MACHINERY MANAGEMENT TOPICS (3). Prerequisite: 363 or equivalent.

AGRONOMY

30 PLANT SCIENCE (5) (same as Horticulture 30). Recommended: a college course in a biological science. f,w.

100 SOIL SYSTEMS (3 or 5). Prerequisite: Chemistry 1 or 5 or 11. f. or w.

111 SEED ANALYSIS (2). Prerequisite: 30. f,s.

130 UNDERGRADUATE SEMINAR (1). Prerequisite: 30, 100. f,w.

170 BASIC PLANT GENETICS (3). Prerequisite: 30 or equivalent. f.

202 INTERNATIONAL AGRONOMY (2). w.

220 SOIL AS A NATURAL RESOURCE IN LAND USE MANAGEMENT. (4). Prerequisite: 100 or instructor's consent. w.

230 CROPS AND SOILS MANAGEMENT (3). Prerequisite: 30 & 100. w.

300 PROBLEMS (cr. arr.) f,w,s.

302 FERTILIZERS (2). Prerequisite: 100. f.

303 FORAGE CROPS (3). Prerequisite: 30. w.

304 GRAIN CROPS (3). Prerequisite: 30. f.

305 ADVANCES IN CROP SCIENCE (2). Prerequisite: 30. alt. s. odd yrs.

306 WEED CONTROL (3). Prerequisite: 30. f.

307 PHYSICAL PROPERTIES OF SOILS (5). Prerequisite: 100 & college physics. alt. f. even yrs.

308 SOIL CONSERVATION (3). Prerequisite: 100. Recommended: Agricultural Engineering 201. f.

310 COTTON AND OTHER FIBER CROPS (2). Prerequisite: 30. w.

312 SOIL MICROBIOLOGY (3). Prerequisite: 100 & general bacteriology. w.

313 SOIL FERTILITY AND PLANT NUTRITION (3). Prerequisite: 30 & 100. w.

314 SOIL FERTILITY AND PLANT NUTRITION LABORATORY (2). Prerequisite: concurrent or previous enrollment in 313. w.

315 CROP PHYSIOLOGY (3). Prerequisite: 30. w.

319 SOIL CHEMISTRY (3). Prerequisite: 100, Chemistry 12 & Chemistry 205, or Biochemistry 110. f.

320 SOIL GENESIS, MAPPING AND CLASSIFICATION (4). Prerequisite: 100. f.

325 FIELD CROP BREEDING (3). Prerequisite: 30. f.

330 PLANT BREEDING THEORY (3). Prerequisite: 170 or equivalent.

338 RURAL REAL ESTATE APPRAISAL (3) (same as Agricultural Economics 338, Agricultural Engineering 338). Prerequisite: 100 & Agricultural Economics 260 or 261. f.

343 EVOLUTION OF GENETIC CONCEPTS (2) (same as Biological Sciences 343). Prerequisite: 170 or equivalent. alt. w. odd yrs.

350 SPECIAL READINGS (1-3).

351 SOIL MANAGEMENT PROBLEMS (2-3). Prerequisite: 10 hours soils or equivalent. alt. s. even yrs.

384 CYTOGENETICS (3) (same as Biological Sciences 384). Prerequisite: 12 hours biology including some genetics & cytology, or instructor's consent. w.

385 CYTOGENETICS LABORATORY (1) (same as Biological Sciences 385). Prerequisite: 384 or instructor's consent; may take 384 & 385 concurrently. w.

400 PROBLEMS (cr. arr.)

401 ISOTOPES IN SOIL STUDIES (5). Prerequisite: 313 or Biological Sciences 313. w.

407 SOIL PHYSICS (3). Prerequisite: 307, physics, integral & differential calculus. alt. w. even yrs.

410 SEMINAR (1). f,w.

414 ADVANCED SOIL FERTILITY (3). Prerequisite: 313 or equivalent & Biological Sciences 313 or equivalent f. odd yrs.

415 ADVANCED CROP PHYSIOLOGY (3). Prerequisite: 315 & Biological Sciences 313 or equivalent. f.

419 PHYSICAL CHEMISTRY OF SOILS (3). Prerequisite: 319 or Geology 342, & Chemistry 230. alt. w. even yrs.

420 TOPICS IN AGRONOMY (cr. arr.) Prerequisite: graduate standing & instructor's consent. f,w,s.

425 DEVELOPMENT OF PLANT BREEDING CONCEPTS (3). Prerequisite: 170, 325. alt. w. odd yrs.

440 APPLIED QUANTITATIVE AND STATISTICAL GENETICS (3). Prerequisite: 325, Statistics 395, & Poultry Husbandry 423, or equivalents. alt. w. even yrs.

445 CYTOGENETICS IN CROP BREEDING (3). Prerequisite: 384. alt. f. odd yrs.

450 RESEARCH (cr. arr.)

490 RESEARCH (cr. arr.)

ANIMAL HUSBANDRY

12 ANIMAL SCIENCE (5) (same as Agriculture 12, Dairy Husbandry 12, Poultry Husbandry 12). f,w.

20 LIVESTOCK AND MEAT SCIENCE (5) (same as Food Science & Nutrition 20). f,w.

101 LIVESTOCK JUDGING (3). Prerequisite: 20. f.

191 ADVANCED LIVESTOCK SELECTION AND EVALUATION (2). Prerequisite: 101. w.

199 HORSE SCIENCE (3). Prerequisite: 12 or instructor's consent. w.

200 PROBLEMS (1-2). Prerequisite: instructor's consent.

202 PRINCIPLES OF ANIMAL NUTRITION (3). Prerequisite: Biochemistry 110 & Math 10. f,w.

204 ADVANCED MEATS (3) (same as Food Science & Nutrition 204). Prerequisite: 20. w.

212 APPLIED NUTRITION (3). Prerequisite: 202.

214 MEAT CLASSIFICATION, GRADING, JUDGING (2) (same as Food Science & Nutrition 214). Prerequisite: 20. f.

300 PROBLEMS (cr. arr.)

303 PHYSIOLOGY OF REPRODUCTION (3). Prerequisite: 12 & Biological Sciences 1 & 2. f,w.

313 GENETICS OF LIVESTOCK IMPROVEMENT (3). Prerequisite: 12. f,w.

321 BEEF PRODUCTION AND MANAGEMENT (3). Prerequisite: 192 & 202. f.

323 APPLIED ANIMAL GENETICS (3). Prerequisite: 313. w.

331 SHEEP PRODUCTION AND MANAGEMENT (3). Prerequisite: 192 & 202. w.

341 PORK PRODUCTION AND MANAGEMENT (3). Prerequisite: 192 & 202. w.

390 INTERNSHIP IN ANIMAL SCIENCE AND TECHNOLOGY (1-3). Prerequisite: junior standing, two 300-level animal husbandry courses, & instructor's consent.

391 FIELD INSTRUCTION IN ANIMAL SCIENCE (1-3) (same as Dairy Husbandry 391, Poultry Husbandry 391). Prerequisite: junior standing, at least two advanced courses in animal sciences or equivalent, & instructor's consent.

400 PROBLEMS (1-2). Prerequisite: graduate standing & instructor's consent.

401 LIVESTOCK PRODUCTION AND MANAGEMENT RESEARCH METHODS (3). Prerequisite: graduate standing, Statistics 207 or equivalent or instructor's consent. f.

402 ANIMAL NUTRITION (3) (same as Nutrition 402). Prerequisite: 202 & one course in biochemistry. f.

410 SEMINAR (1). f,w.

411 LIVESTOCK FEEDING INVESTIGATIONS (2). Prerequisite: 402. alt. s. even yrs.

413 REPRODUCTIVE BIOLOGY SEMINAR (1) (same as Biochemistry 413). f,w.

423 GENETICS OF POPULATIONS (4) (same as Poultry Husbandry 423, Biological Sciences 423). Prerequisite: 3 hours genetics & 3 hours statistics.

430 THE DEVELOPMENT, GROWTH AND ORGANIZATION OF COLLEGES OF AGRICULTURE (1). Prerequisite: must be Ph.D. candidates.

432 RUMINANT NUTRITION (3) (same as Nutrition 432). Prerequisite: 402 or equivalent. alt. w. odd yrs.

440 TOPICS IN ANIMAL HUSBANDRY (cr. arr.) Prerequisite: graduate standing & instructor's consent.

450 RESEARCH (cr. arr.)

490 RESEARCH (cr. arr.)

ATMOSPHERIC SCIENCE

50 INTRODUCTORY METEOROLOGY (3) (same as Geography 50). f.

200 INDEPENDENT STUDY IN ATMOSPHERIC SCIENCE (1-3). Prerequisite: upperclass standing, 50 or equivalent work, & instructor's consent.

301 TOPICS IN ATMOSPHERIC SCIENCE (cr. arr.) Prerequisite: junior standing & instructor's consent.

302 WEATHER BRIEFING (1). Prerequisite: 50 or graduate standing.

303 METEOROLOGY OF THE BIOSPHERE (3) (same as Geography 303). Prerequisite: 50, graduate standing or instructor's consent. w.

304 METEOROLOGICAL ANALYSIS I (3). Prerequisite: 50, 350, or instructor's consent. f. odd yrs.

305 METEOROLOGICAL ANALYSIS II (3). Prerequisite: graduate standing. w. even yrs.

314 CLOUD AND PRECIPITATION PHYSICS (3). Prerequisite: 1 year college physics & Math 175. alt. f. odd yrs.

316 MICROMETEOROLOGY (3). Prerequisite: Math 304.

350 FUNDAMENTALS OF METEOROLOGY (3). Prerequisite: Math 175 & Physics 123.

366 CLIMATES OF THE WORLD (3) (same as Geography 366). Prerequisite: 50 or equivalent. w.

392 ATMOSPHERIC THERMODYNAMICS AND STATICS (5). Prerequisite: 350 or instructor's consent. f. even yrs.

393 ATMOSPHERIC KINEMATICS AND DYNAMICS (5). Prerequisite: 392. w. odd yrs.

400 PROBLEMS (cr. arr.) Prerequisite: graduate standing & instructor's consent.

401 TOPICS IN ATMOSPHERIC SCIENCE (cr. arr.) Prerequisite: graduate standing & instructor's consent.

402 RADIATION IN THE ATMOSPHERE (3). Prerequisite: 1 year college physics & Math 175. alt. w. even yrs.

410 SEMINAR (cr. arr.) Prerequisite: graduate standing. f,w.

412 ADVANCED DYNAMIC METEOROLOGY (3). Prerequisite: 393, alt. f. odd yrs.

416 ATMOSPHERIC GENERAL CIRCULATION (3). Prerequisite: 393 or instructor's consent. alt. f. odd yrs.
420 METEOROLOGICAL STATISTICS (3). Prerequisite: 350 or Statistics 320 or instructor's consent. alt. f. odd yrs.
466 ADVANCED DYNAMIC CLIMATOLOGY (3). Prerequisite: 393 & 416, or 366, or instructor's consent. alt. w. even yrs.
490 RESEARCH (cr. arr.) f,w.

BIOCHEMISTRY

10 BIOCHEMISTRY, THE FIELD AND THE PROFESSION (1). Graded *S/U*.
110 INTRODUCTORY BIOLOGICAL CHEMISTRY (3). Prerequisite: 5 hours general chemistry. f,w.
193 GENERAL BIOCHEMISTRY (3). Prerequisite: Chemistry 1; 110, Chemistry 210-212, or Chemistry 205; sophomore standing. f,w.
195 GENERAL BIOCHEMISTRY LABORATORY (2). To be taken concurrently with 193. Prerequisite: same as 193. f,w.
203 ELEMENTARY BIOCHEMISTRY (3). Prerequisite: 3 hours organic chemistry. w.
204 ELEMENTARY BIOCHEMISTRY LABORATORY (2). To be taken concurrently with 203. Prerequisite: organic chemistry. w.
206 MEDICAL BIOCHEMISTRY (9). Prerequisite: 8 hours general chemistry, 5 hours organic chemistry. Some quantitative chemistry recommended. f.
270 BIOCHEMISTRY (3). Prerequisite: one year inorganic chemistry, 5 credits organic chemistry with lab. Recommended: quantitative analysis. f.
272 BIOCHEMISTRY (3). Prerequisite: 270. w.
274 BIOCHEMISTRY LABORATORY (3). Prerequisite: 270 & 272, or 272 concurrently. w.
299 SEMINAR (1). Prerequisite: senior standing, a minimum of 10 hours chemistry including a biochemistry course with lab.
300 PROBLEMS (1-3).
301 BIOPHYSICS (3). Prerequisite: general chemistry & physics, calculus & a biological sciences course. f.
303 TECHNIQUES IN NUTRITIONAL BIOCHEMISTRY (3). Prerequisite: 6 hours biochemistry or concurrent with 272 or 322. w.
304 GENERAL BIOCHEMISTRY LECTURES (5). Prerequisite: organic chemistry & quantitative chemistry & biology. f.
305 BIOCHEMISTRY LABORATORY (3). Prerequisite: organic chemistry & quantitative chemistry. f.
310 TRACE ANALYSIS (3) (same as Chemistry 310). Prerequisite: quantitative analysis. w.
311 INTERPRETATION OF MOLECULAR SPECTRA (3). Prerequisite: organic chemistry & instructor's consent. f.
312 INSTRUMENTAL METHODS OF ANALYSIS (4) (same as Chemistry 312). Prerequisite: Chemistry 223 & Chemistry 231 or 231 concurrently. f,w.

320 BIOCHEMISTRY (3). Prerequisite: Chemistry 210-211-212, Chemistry 221, Chemistry 230 & 5 hours biology; concurrent registration on last two acceptable. f.
322 BIOCHEMISTRY (3). Prerequisite: 320. w.
350 CHROMATOGRAPHY (3). Prerequisite: one semester physical chemistry or instructor's consent.
375 TOPICS IN BIOCHEMISTRY (cr. arr.) Prerequisite: general biochemistry; others as specified by instructor each semester course is offered.
400 PROBLEMS (1-6).
401 PLANT BIOCHEMISTRY (3). Prerequisite: 272 or 320-322 or 304 or instructor's consent. alt. f. odd yrs.
402 ADVANCED PHYSIOLOGICAL CHEMISTRY OF DOMESTIC ANIMALS (3). Prerequisite: 272 & Chemistry 212 or equivalent. alt. w. even yrs.
403 TOPICS IN BIOCHEMISTRY (2-3). Prerequisite: general biochemistry, others as specified by instructor each semester course is offered.
404 COMPARATIVE BIOCHEMISTRY (2). Prerequisite: biochemistry. f.
406 COMPARATIVE NUTRITION AND METABOLISM (2) (same as Nutrition 406). Prerequisite: biochemistry. w.
410 SEMINAR (1). f,w.
412 BIOCHEMISTRY OF HORMONES (3). Prerequisite: 272 or instructor's consent. alt. w. even yrs.
413 REPRODUCTIVE BIOLOGY SEMINAR (1) (same as Animal Husbandry 413). Open to qualified students of graduate standing in field of reproductive biology. f,w.
420 CHEMISTRY OF ENZYME COFACTORS (3). Prerequisite: 8 hours organic chemistry; 8 hours biochemistry.
422 ANALYTICAL BIOCHEMISTRY—CHROMATOGRAPHY (2). Eight (2-hour) lectures eight (4-hour) labs. Four weeks. Prerequisite: graduate standing or instructor's consent. f.
423 ANALYTICAL BIOCHEMISTRY—MULTIPLE AUTOMATIC MICROANALYSIS (1). Three (2-hour) lectures and five (4-hour) labs. Two weeks. Prerequisite: graduate standing or instructor's consent. f.
424 ANALYTICAL BIOCHEMISTRY—MASS SPECTROMETRY (2). Eight (2-hour) lectures, eight (4-hour) labs. Prerequisite: two courses in organic chemistry, one course in physics, & instructor's consent. w.
425 BIOPHYSICS TOPICS (2-4). Prerequisite: calculus & physics & physiology or equivalent. alt. w. odd yrs.
440 HORMONES AND METABOLISM (2). Seminar course. Prerequisite: 304 & instructor's consent. alt. w. odd yrs.
450 RESEARCH (2-8).
461 ADVANCED CARBOHYDRATE METABOLISM AND BIOLOGICAL OXIDATIONS (2). Prerequisite: 304 or equivalent. alt. w. odd yrs.
462 ADVANCED METABOLISM: PROTEINS AND NUCLEIC ACIDS (2). Prerequisite: 304 or equivalent. alt. f. odd yrs.

463 ADVANCED LIPID METABOLISM (2). Prerequisite: 304 or equivalent. f.

464 PHYSICAL BIOCHEMISTRY: PROTEINS, ENZYMES, NUCLEIC ACIDS (2). Prerequisite: 320 or equivalent & physical chemistry & differential integral calculus. w.

465 ADVANCED METABOLISM: AMINO ACIDS (2) (same as Nutrition 465). Prerequisite: 304 or equivalent. alt. w. even yrs.

466 REGULATION OF ENERGY METABOLISM (2). Prerequisite: 304 or 322 or equivalent. alt. w. odd yrs.

490 RESEARCH (cr. arr.)

DAIRY HUSBANDRY

1 DAIRY HUSBANDRY (3). f,w.

12 ANIMAL SCIENCE (5) (same as Agriculture 12, Animal Husbandry 12, Poultry Husbandry 12). f,w.

110 DAIRY CATTLE JUDGING (2). f.

150 PHYSIOLOGY OF DOMESTIC ANIMALS (3-5) (lecture 3 hrs; lecture & lab 5 hrs.). Prerequisite: 12 or Biological Sciences 1 & Chemistry 1 or 11. w.

200 PROBLEMS (cr. arr.) f,w.

210 ADVANCED DAIRY CATTLE JUDGING (2). Continuation of 110. w.

300 PROBLEMS (cr. arr.)

310 DAIRY PRODUCTION (3). Prerequisite: 1 & Animal Husbandry 192 or equivalent. f.

335 NEUROBIOLOGY AND ANIMAL BEHAVIOR (3). Prerequisite: 5 hours animal physiology & 5 hours biochemistry, or instructor's consent.

350 SPECIAL READINGS (cr. arr.)

380 DAIRY CATTLE BREEDING (3). w.

385 ARTIFICIAL BREEDING (3). f.

390 FIELD TRAINING IN DAIRY HUSBANDRY (cr. arr.) Prerequisite: one or more of the following: 310, 380, 385 & instructor's consent.

391 FIELD INSTRUCTION IN ANIMAL SCIENCE (1-3) (same as Animal Husbandry 391, Poultry Husbandry 391). Prerequisite: junior standing, at least two advanced courses in animal sciences or equivalent, & instructor's consent.

400 PROBLEMS (cr. arr.)

408 DAIRY CHEMISTRY (3). w.

410 SEMINAR (1). f,w.

420 ENDOCRINOLOGY (3) (same as Biological Sciences 420). f.

425 ANATOMY OF THE MAMMARY GLAND (2). f.

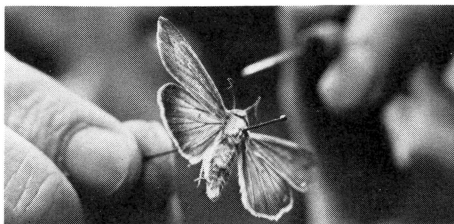
427 RECENT ADVANCES IN ENVIRONMENTAL AND ENDOCRINE PHYSIOLOGY (1) (Seminar). f,w.

430 PHYSIOLOGY OF MILK SECRETION (3). w.

435 PHYSIOLOGY OF CELL PRESERVATION (3). w.

437 ENVIRONMENTAL PHYSIOLOGY (3). f.

440 BIOENERGETICS (3) (same as Nutrition 440). alt. w. odd yrs.



445 ADVANCED DAIRY PRODUCTION (2). Prerequisite: 310 or equivalent. w.

450 RESEARCH (cr. arr.)

490 RESEARCH (cr. arr.) Continuation of 450.

ENTOMOLOGY

101 INSECTS IN THE ENVIRONMENT (3). f.

181 PESTICIDE CHEMICALS (3) (same as Agriculture 181). Prerequisite: Biochemistry 110 or a course in organic chemistry. w.

201 GENERAL ENTOMOLOGY (3) (same as Biological Sciences 201). Prerequisite: 10 hours biological science, including Biological Sciences 1 & 11 or equivalent. No credit for students receiving credit for Entomology 101. w.

210 FOREST ENTOMOLOGY (3) (same as Forestry, Fisheries & Wildlife 210). w.

300 PROBLEMS (cr. arr.) Prerequisite: 10 hours entomology & biological sciences.

301 COMPARATIVE MORPHOLOGY OF INSECTS (4). Prerequisite: 101 or 201 or 10 hours biological sciences. f.

304 SYSTEMATIC ENTOMOLOGY (3) (same as Biological Sciences 304). Prerequisite: 101 or 201 or 10 hours biological sciences. f.

306 AQUATIC ENTOMOLOGY (3). Prerequisite: 101 or 201 & Biological Sciences 11, & 304 or equivalent. alt. w.

311 FIELD CROP INSECTS (3). Prerequisite: 101 or 201 or equivalent. w.

312 BIONOMICS OF INSECT PESTS (3) (2 hrs. lecture, 2 hrs. lab). Prerequisite: 101 or 201 or 210. w.

315 MEDICAL AND VETERINARY ENTOMOLOGY (3). Prerequisite: 101 or 201 & 304 or instructor's consent. alt. f. even yrs.

316 PRINCIPLES OF INSECT PHYSIOLOGY (4) (same as Biological Sciences 316) (3 hrs. lecture, 2 hrs. lab). Prerequisite: 201 & 301 or equivalent. w.

319 INSECT ECOLOGY (3). Prerequisite: 101 or 201 & 304. f. or w.

321 ENTOMOLOGICAL LITERATURE AND HISTORY OF ENTOMOLOGY (2). Prerequisite: 10 hours entomology. alt. f. odd yrs.

322 BIOLOGICAL CONTROL OF INSECTS (3). Prerequisite: 319 & 304 or instructor's consent. f. or w.

350 SPECIAL READINGS (cr. arr.)

361 INSECTS IN RELATION TO PLANT DISEASES (3) (same as Plant Pathology 361). Prerequisite: 101 or 201 & Plant Pathology 301 or instructor's consent. alt. w. odd yrs.

400 PROBLEMS (cr. arr.)

405 TAXONOMY OF IMMATURE INSECTS (3). Prerequisite: 304 or equivalent. f.

410 SEMINAR (1). Prerequisite: 10 hours entomology. f,w.

414 RESEARCH TECHNIQUES IN ENTOMOLOGY (3). Prerequisite: 10 hours entomology. w.

418 ACAROLGY—MITES AND TICKS (3). Prerequisite: 101 or 201 & 304 & 3 hours biological systematics. alt. w. even yrs.

420 INSECT TOXICOLOGY (3). Prerequisite: 10 hours entomology or instructor's consent. f.

422 ADVANCED SYSTEMATIC ENTOMOLOGY (3). Prerequisite: 301 & 304 & 321 or 6 hours systematics in biological science exclusive of 304. w.

425 topics in entomology (cr. arr.) Prerequisite: graduate standing & instructor's consent.

450 RESEARCH (cr. arr.)

490 RESEARCH (cr. arr.) Reading knowledge of French, German, desirable. Prerequisite: 20 hours entomology.

EXTENSION EDUCATION

150 PROBLEMS (cr. arr.)

160 SEMINAR (1-2). May be repeated three times.

210 FUNDAMENTALS OF COMMUNICATIONS (3). Prerequisite: junior standing. f,w.

400 PROBLEMS (cr. arr.)

403 PROGRAM DEVELOPMENT AND EVALUATION (3). Prerequisite: instructor's consent. w.

405 EXTENSION ORGANIZATION AND ADMINISTRATION (3). Prerequisite: instructor's consent. f.

406 FUNDAMENTALS OF EXTENSION TEACHING OF ADULTS (3). Prerequisite: instructor's consent.

408 PREPARING MANUSCRIPTS FOR SCIENTIFIC JOURNALS (1). Prerequisite: instructor's consent.

410 SEMINAR (1). f,w.

411 TOPICS IN EXTENSION EDUCATION (cr. arr.) Prerequisite: departmental consent required.

450 RESEARCH (cr. arr.)

FOOD SCIENCE AND NUTRITION

20 LIVESTOCK AND MEAT SCIENCE (5) (same as Animal Husbandry 20). f,w.

30 FOOD SCIENCE AND NUTRITION (5). f,w.

40 FUNDAMENTALS OF THE FOOD SERVICE AND LODGING INDUSTRY (3).

75 ATTRIBUTES OF FOOD QUALITY (3). w.

121 PRINCIPLES OF FOOD PREPARATION (5) (same as Human Nutrition, Foods & Food Systems Man-

agement 121). Prerequisite: Chemistry 1 or Chemistry 11 or equivalent.

135 PRODUCTION TECHNOLOGY FOR FOOD-SERVICES (5). Prerequisite: 30 & Chemistry 1 or Chemistry 11 or equivalent. f.

145 FOOD AND BEVERAGE MANAGEMENT (3). f,w.

150 FOOD SERVICE AND LODGING INDUSTRY OPERATIONAL MAINTENANCE (3). Prerequisite: Math 10. f.

200 PROBLEMS (cr. arr.)

204 ADVANCED MEATS (3) (same as Animal Husbandry 204). Prerequisite: 20. w.

214 MEAT CLASSIFICATION, GRADING, JUDGING (2) (same as Animal Husbandry 214). Prerequisite: 20. f.

224 MEAT SELECTION AND IDENTIFICATION (3) (same as Human Nutrition, Foods & Food Systems Management 224). Prerequisite: Human Nutrition, Foods & Food Systems Management 121 or instructor's consent. f.

228 PRINCIPLES OF FOOD SYSTEMS MANAGEMENT (3 or 4) (same as Human Nutrition, Foods & Food Systems Management 228). Prerequisite: Human Nutrition, Foods & Food Systems Management 121, Biological Sciences 212 or Microbiology 205.

240 OPERATIONAL MANAGEMENT IN FOOD SERVICE (3). Prerequisite: 121, and/or instructor's consent. f.

250 PHYSICAL PRINCIPLES FOR FOOD PROCESSING (3) (same as Agricultural Engineering 250). Prerequisite: Math 10 & Physics 11.

255 MANAGEMENT AND TRAINING OF FOOD SERVICE PERSONNEL (3). Prerequisite: introductory course in psychology, sociology, food service management, and/or instructor's consent. w.

275 FOOD, LODGING AND TRAVEL SERVICES MARKETING (3). Prerequisite: Marketing 204, Agricultural Economics 220, or equivalent.

300 PROBLEMS (cr. arr.)

301 TOPICS IN FOOD SCIENCE AND NUTRITION (cr. arr.)

304 MEAT TECHNOLOGY (5). Prerequisite: Biochemistry 193 & Biochemistry 195 or equivalent. w.

305 FOOD ANALYSIS (3). Prerequisite: analytical chemistry & biochemistry. f.

306 POULTRY MEAT TECHNOLOGY (3). Prerequisite: general bacteriology. w.

307 EGG TECHNOLOGY (3) (same as Poultry Husbandry 307). Prerequisite: one course each in biochemistry & microbiology. w.

309 FOOD CHEMISTRY I (5). Prerequisite: 12 hours chemistry, including biochemistry. f.

326 DEVELOPMENT, UTILIZATION AND MAINTENANCE OF PHYSICAL RESOURCES (2 or 4) (same as Human Nutrition, Foods & Food Systems Management 326). Prerequisite: Human Nutrition, Foods & Food Systems Management 325.

- 327 OPERATIONS ANALYSIS IN FOOD SYSTEMS (2 or 4) (same as Human Nutrition, Foods & Food Systems Management 327). Prerequisite: 228, Computer Science 203.
- 330 FOOD PROCESSING (5). Prerequisite: 250 & one course each in biochemistry & microbiology.
- 335 DAIRY TECHNOLOGY I (3).
- 336 DAIRY TECHNOLOGY II (3). Prerequisite: 335. f. odd yrs.
- 340 CASE STUDIES AND RESEARCH IN FOOD SERVICE MANAGEMENT (3). Prerequisite: 240, 255, or instructor's consent. w.
- 345 ADVANCED FOOD PRODUCTION TECHNOLOGY FOR FOODSERVICES (3). Prerequisite: 135, 240, or instructor's consent.
- 360 FOOD QUALITY AND SANITATION (3). Prerequisite: general microbiology. w.
- 372 FOOD MICROBIOLOGY (3). Prerequisite: bacteriology & organic chemistry. w.
- 373 FOOD MICROBIOLOGY LABORATORY (2). Prerequisite: 372 or concurrently. w.
- 374 THE BACTERIAL SPORE (2). Prerequisite: advanced microbiology and/or food microbiology & courses in biochemistry.
- 375 SENSORY ANALYSIS OF FOOD (3) (same as Human Nutrition, Foods & Food Systems Management 375). Recommended: a statistics course.
- 376 MICROWAVE HEATING OF FOOD (2) (same as Human Nutrition, Foods & Food Systems Management 376). Prerequisite: 30 or 121, & 250 and/or instructor's consent; upperclass or graduate standing. f.
- 390 FIELD TRAINING (cr. arr.) Prerequisite: 70 hours & instructor's consent.
- 400 PROBLEMS (cr. arr.)
- 401 TOPICS IN FOOD SCIENCE AND NUTRITION (cr. arr.) Prerequisite: instructor's consent & graduate standing.
- 404 MEAT INVESTIGATIONS (3). Prerequisite: 304 & 309.
- 405 ADVANCED MICROBIOLOGY OF FOODS (4). Prerequisite: 372. f.
- 409 FOOD CHEMISTRY II (4). Prerequisite: 309. w.
- 410 SEMINAR (1). f,w.
- 417 FOOD AND INDUSTRIAL FERMENTATION (3). Prerequisite: 6 hours microbiology & 5 hours organic chemistry or biological chemistry. alt. w. odd yrs.
- 450 RESEARCH (cr. arr.)
- 470 ADVANCED STUDIES IN THE SCIENCE AND TECHNOLOGY OF FOOD PRESERVATION (4). Prerequisite: 309, 330, 372 or instructor's consent. alt. w. even yrs.
- 490 RESEARCH (cr. arr.)
- HORTICULTURE**
- 10 LANDSCAPE APPRECIATION (3). f,w.
- 20 BASIC HOME HORTICULTURE (3). f,w.
- 30 PLANT SCIENCE (5) (same as Agronomy 30). Recommended; a college course in a biological science. f,w.
- 60 FLOWER ARRANGING (2). f,w.
- 150 MICRO-ENVIRONMENTAL DESIGN (3). f,w.
- 151 PLANTS FOR INTERIOR DESIGN (2). f.
- 160 GARDEN FLOWERS (3). w.
- 201 ORNAMENTAL WOODY PLANTS I (3). Prerequisite: 30 or Biological Sciences 1, 12 or 21. f.
- 202 ORNAMENTAL WOODY PLANTS II (3). Prerequisite: 30 or Biological Sciences 1, 12 or 21. w.
- 203 PLANT PROPAGATION (3). Prerequisite: 30 or Biological Sciences 12. f,w.
- 204 PLANT ENVIRONMENTS (3). f.
- 205 PLANT NUTRITION (3). Prerequisite: Agronomy 30 & Chemistry 1, 5 or 11. w.
- 206 PLANT PROTECTION (3). Prerequisite: 30 & Entomology 101, or instructor's consent. w.
- 207 PLANT ORIGIN AND DEVELOPMENT (3). Prerequisite: 30 or Biological Sciences 12. w.
- 250 LANDSCAPE GRAPHICS (3). f,w.
- 252 PLANTING DESIGN I (3). Prerequisite: 201, 202 & 250. w.
- 254 LANDSCAPE DESIGN (3). Prerequisite: sophomore standing. f,w.
- 255 LANDFORMS (3). Prerequisite: Geology 1 or 2. f.
- 257 CONSTRUCTION MATERIALS (3). Prerequisite: 250 & Mechanical & Aerospace Engineering 20. f.
- 266 PLANT FORCING STRUCTURES (2). alt. f. odd yrs.
- 268 FLORAL DESIGN (3) (Commercial Floristry). Prerequisite: 60 & Art 2 or Atr 55, or instructor's consent. f. even yrs.
- 269 FLOWER STORE MANAGEMENT (3). Prerequisite: 268 & Marketing 204. w.
- 272 PLANTING DESIGN II (3). Prerequisite: 250 & 252. f.
- 300 PROBLEMS (cr. arr.) Prerequisite: consent card required.
- 301 POST-HARVEST PHYSIOLOGY (3). Prerequisite: 204. f. even yrs.
- 330 FRUIT PRODUCTION (5). Prerequisite: 203, 204 & 205, or instructor's consent. f. odd yrs.
- 344 COMMERCIAL VEGETABLE AND TRUCK CROP GROWING (5). Prerequisite: 204 & 205 & 206, or instructor's consent. f.
- 345 VEGETABLE FORCING (3). Prerequisite: 204 & 205 & 206, or instructor's consent. w. odd yrs.
- 350 LANDSCAPE GRAPHICS COMMUNICATION (3). Prerequisite: 254 & 272; instructor's consent. w.
- 352 PLANTING DESIGN III (4). Prerequisite: 250, 254 & 272. w.
- 354 ADVANCED LANDSCAPE DESIGN (4). Prerequisite: 352 & instructor's consent. f.

355 TURF (3). Prerequisite: 204 & 205 or instructor's consent. w.

357 NURSERY CROP PRODUCTION AND MANAGEMENT (4). Prerequisite: 203 & 204. f.

361 FALL GREENHOUSE CROPS (4). Prerequisite: 203 & 204 & 205 or instructor's consent. f.

362 SPRING GREENHOUSE CROPS (4). w.

402 TOPICS IN HORTICULTURE (cr. arr.) Prerequisite: graduate standing & consent card required.

406 PLANT GROWTH REGULATING SUBSTANCES (3). Prerequisite: Biological Sciences 313 & 6 hours organic chemistry. w.

407 BREEDING OF HORTICULTURAL PLANTS (cr. arr.) Prerequisite: graduate standing; Agronomy 179 or Biological Sciences 202 & 341, instructor's consent. f, w.

408 NUTRITION OF HORTICULTURAL PLANTS (3). Prerequisite: 205 or equivalent. f. odd yrs.

410 SEMINAR (1). f, w.

415 METHODS OF HORTICULTURAL RESEARCH (3). alt. f. even yrs.

444 ADVANCED OLERICULTURE (3). Prerequisite: graduate standing, 344, 345. w.

450 NON-THESIS RESEARCH (cr. arr.) Prerequisite: consent card required.

490 RESEARCH (cr. arr.)

PLANT PATHOLOGY

301 INTRODUCTION TO PLANT PATHOLOGY (3) (same as Forestry, Fisheries & Wildlife 301).

307 MYCOLOGY (4) (same as Biological Sciences 307). Prerequisite: Biological Sciences 202 or instructor's consent. f. even yrs.

361 INSECTS IN RELATION TO PLANT DISEASES (3) (same as Entomology 361). Prerequisite: 301 & Entomology 101 or Entomology 201 or instructor's consent. alt. w. odd yrs.

369 GENETICS OF PLANT DISEASE DEVELOPMENT (3) (same as Biological Sciences 369). Prerequisite: 301 & Biological Sciences 202. w.

391-392-393 CLINICAL PLANT PATHOLOGY (2) s; (1) f; (1) w.

400 PROBLEMS (cr. arr.) f, w, s.

403 DISEASES OF FIELD CROPS (3). Prerequisite: 301 or 307. alt. w. even yrs.

405 DISEASES OF PLANTS (VIRAL) (2). First 7 weeks. f.

406 DISEASES OF PLANTS (BACTERIAL) (2). Second 8 weeks f.

407 DISEASES OF PLANTS (FUNGATE) (3). First 9 weeks. w.

408 DISEASES OF PLANTS (NEMATODE) (2). Second 6 weeks. w. Prerequisite: 301.

410 SEMINAR (1). f, w.

411 BIOCHEMISTRY AND PHYSIOLOGY OF PLANT DISEASES (3). Prerequisite: 301, Biological Sciences 313, & Chemistry 210. alt. f. odd yrs.

426 FUNGUS PHYSIOLOGY (4). Prerequisite: bacteriology or microbiology, 8 hours organic chemistry & a course in biochemistry or instructor's consent. alt. w. odd yrs.

430 COMPARATIVE PATHOLOGY (3) (same as Veterinary Pathology 430, Pathology 430).

450 RESEARCH (cr. arr.)

451 ELECTRON MICROSCOPY (1). Prerequisite: graduate status & instructor's consent. s.

452 ELECTRON MICROSCOPY LABORATORY (4). Prerequisite: graduate status, 451 & instructor's consent. s.

490 RESEARCH (cr. arr.)

POULTRY HUSBANDRY

12 ANIMAL SCIENCE (5) (same as Agriculture 12, Animal Husbandry 12, Dairy Husbandry 12). f, w.

101 POULTRY SCIENCE (3). Prerequisite: 12 or instructor's consent. w.

202 SELECTION, GRADING AND JUDGING POULTRY AND POULTRY PRODUCTS (2). Prerequisite: 101 or equivalent or instructor's consent. f, w.

292 MARKETING FARM COMMODITIES: POULTRY PRODUCTS (1) (same as Agricultural Economics 292). Prerequisite: Agricultural Economics 290. w. middle 1/3 semester.

300 PROBLEMS (cr. arr.) f, w, s.

302 POULTRY FARM MANAGEMENT (3). Prerequisite: 101 or 101 concurrently, & Agricultural Economics 50 or instructor's consent. w.

303 POULTRY BREEDING AND INCUBATION (3). Prerequisite: 101 or instructor's consent. w.

304 TURKEY PRODUCTION AND MANAGEMENT (3). w.

307 EGG TECHNOLOGY (3) (same as Food Science & Nutrition 307). Prerequisite: one course each in biochemistry & microbiology. w.

308 POULTRY FEEDING AND NUTRITION (3) (same as Nutrition 308). Prerequisite: Animal Husbandry 202. Recommended: Biochemistry 193. w.

309 AVIAN PHYSIOLOGY (3). Prerequisite: Biological Sciences 1 & 2. alt. f. odd yrs.

390 FIELD TRAINING IN POULTRY HUSBANDRY (cr. arr.) Enrollment by permission only. Prerequisite: 101 or one or more of following—302, 304, 307, 309. s.

391 FIELD INSTRUCTION IN ANIMAL SCIENCE (1-3) (same as Animal Husbandry 391, Dairy Husbandry 391). Prerequisite: junior standing, at least two advanced courses in animal sciences or equivalent, & instructor's consent.

400 PROBLEMS (cr. arr.) f, w, s.

410 SEMINAR (1). w.

423 GENETICS OF POPULATIONS (4) (same as Animal Husbandry 423, Biological Sciences 423). Prerequisite: 3 hours genetics & 3 hours statistics.

450 RESEARCH (cr. arr.) f, w, s.

490 RESEARCH (cr. arr.) f, w, s.

RURAL SOCIOLOGY*

*For additional courses in Rural Sociology, see Sociology.

1 RURAL SOCIOLOGY (3).

150 THE AMISH COMMUNITY (3). (same as Sociology 150). Prerequisite: 1 or Sociology 1 or Anthropology 1.

155 AGRICULTURE IN COMMUNAL SETTINGS (3). Prerequisite: 1 or Sociology 1.

170 SOCIOLOGICAL ASPECTS OF POVERTY (3). (same as Sociology 170). Prerequisite: 1 or Sociology 1 or instructor's consent.

175 CORPORATE FARMS VS FAMILY FARMS (3). Prerequisite: introductory rural sociology or sociology.

180 SOCIAL RESEARCH (3) (same as Sociology 180).

181 SOCIAL RESEARCH II (3) (same as Sociology 181).

182 SENIOR SEMINAR (3) (same as Sociology 182). Senior sociology majors only.

184 SOCIAL IMPACT ANALYSIS (3).

185 CONTEMPORARY SOCIAL PROBLEMS (3) (same as Sociology 185). Prerequisite: 1 or Sociology 1.

201 ORGANIZATION AND LEADERSHIP IN MODERN SOCIETY (3) (same as Sociology 201). Prerequisite: 1 or Sociology 1.

214 THE FAMILY (3) (same as Sociology 214). Prerequisite: Sociology 1.

220 POPULATION AND ECOLOGY (3) (same as Sociology 220). Prerequisite: 1 or Sociology 1.

225 SOCIAL PROCESSES OF COMMUNICATION AND DIFFUSION (3) (same as Sociology 225). Prerequisite: 1 or Sociology 1.

290 PRACTICUM (cr. arr.) (same as Sociology 290).

299 RECENT THEORIES IN SOCIOLOGY (3) (same as Sociology 299). Prerequisite: 12 hours sociology.

300 PROBLEMS (cr. arr.)

301 TOPICS IN RURAL SOCIOLOGY (2-3). May be repeated with departmental consent. Prerequisite: 1 or Sociology 1 & junior or senior standing.

304 HUMAN ECOLOGY (3) (same as Sociology 304). Required for M.A. in Sociology. Prerequisite: 1 or Sociology 1. f,w.

310 RURAL SOCIAL ORGANIZATION (3) (same as Sociology 310). Prerequisite: 1 or Sociology 1.

311 APPLIED SOCIOLOGY (3) (same as Sociology 311). Prerequisite: 185 Sociology 1, & Sociology 219.

335 SOCIAL CHANGE AND TRENDS (3) (same as Sociology 335). Prerequisite: 1 or Sociology 1.

340 COMMUNITY SOCIAL STRUCTURE (3) (same as Sociology 340). Prerequisite: 1 or Sociology 1. f,w.

347 THE SOCIOLOGY OF COMMUNITY HEALTH (3) (same as Family & Community Medicine 347, Sociology 347). Prerequisite: 1 & Sociology 1.

355 YOUTH IN CONTEMPORARY SOCIETY (3) (same as Sociology 355). Prerequisite: 1 or Sociology 1.

370 THE SOCIOLOGY OF RELIGION (3) (same as Sociology 370). Prerequisite: 1 or Sociology 1.

375 SOCIAL STATISTICS (3) (same as Sociology 375). Prerequisite: introductory course in statistics.

376 ADVANCED SOCIAL STATISTICS (3) (same as Sociology 376).

400 PROBLEMS (cr. arr.)

422 HUMAN MIGRATION (2) (same as Sociology 422). Prerequisite: 220 or Sociology 305 or instructor's consent.

425 COMMUNICATION AND THE DIFFUSION OF INFORMATION (3) (same as Sociology 425). Prerequisite: graduate standing or instructor's consent.

426 STUDIES IN COMPARATIVE WORLD POPULATION (2) (same as Sociology 426). Prerequisite: 220 or Sociology 305 or instructor's consent.

430 TECHNIQUES OF SOCIAL INVESTIGATION (3) (same as Sociology 430). Two lectures, one hour lab weekly.

432 RESEARCH METHODS IN SOCIOLOGICAL THEORY CONSTRUCTION AND VERIFICATION (3) (same as Sociology 432).

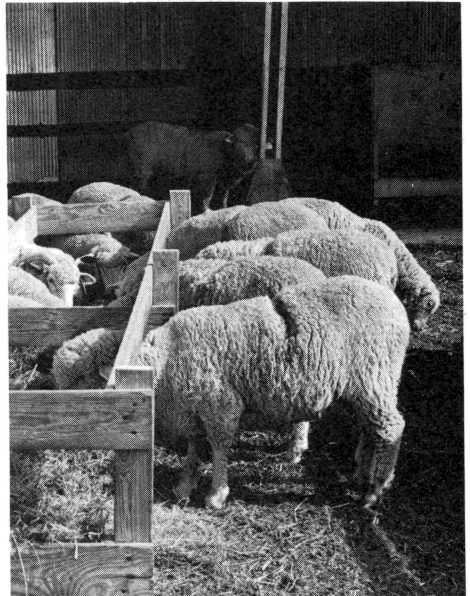
435 ADVANCED GROUP ORGANIZATION AND LEADERSHIP (3). Prerequisite: 201 or instructor's consent.

444 READINGS IN ADVANCED RURAL SOCIOLOGY (cr. arr.)

450 RESEARCH (cr. arr.) Prerequisite: instructor's written consent. f,w,s.

490 RESEARCH (cr. arr.)

491 SEMINAR IN SOCIAL PREDICTION (2) (same as Sociology 491). Prerequisite: 12 hours social science or senior standing.



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____ Vocational Agricultural Education

____ Food Science & Nutrition

____ Food & Lodging Management

____ General Agriculture

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____ Plant Pathology

____ Plant Science

____ Rural Sociology

____ Pre-Veterinary Medicine

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The University is governed by a Board of Curators. The President of the University and his staff coordinate programs of all four campuses. The Chancellors are the chief academic and administrative officers for their respective campuses.

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