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# Kansas State College Bulletin

## General Catalogue



Kansas State College  
of Agriculture and Applied Science  
Manhattan, Kansas

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# KANSAS STATE COLLEGE BULLETIN



## GENERAL CATALOGUE 1955-1956

AUGUST 1, 1955

KANSAS STATE COLLEGE  
OF AGRICULTURE AND APPLIED SCIENCE  
MANHATTAN, KANSAS

KANSAS STATE COLLEGE BULLETIN

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VOL. XXXIX

AUGUST 1, 1955

No. 8

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## THE BOARD OF REGENTS

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## Administrative Officers of the College

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College Historian .....	C. M. CORRELL
Superintendent of Maintenance .....	R. F. GINGRICH
Alumni Secretary .....	KENNEY L. FORD

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## Business Directions

General information about the College is obtainable from the President.

Prospective students should communicate with the Director of Admissions.

The experiment stations and the various departments are always ready to respond to requests for information in their special fields. Those who need scientific and practical information should write to the head of the department concerned with the work under consideration.

Requests for publications of the Agricultural Experiment Station or the Engineering Experiment Station should be made to the director of the station.



# ACADEMIC AND FINANCIAL CALENDAR

## FIRST SEMESTER, 1955-56

### *Date, Time, Days*

Sept. 1, Thurs. ....	Beginning of pay period for 9-month staff.
Sept. 5, Mon. ....	Holiday—Labor Day (Deans' offices and administrative offices will remain open).
Sept. 11, 3:00 p.m., Sun. ....	Convocation for new students and their parents.
Sept. 12-14, Mon.-Wed. ....	Registration for all students including physical examinations, testing, and orientation for new students.
Sept. 15, 8:00 a.m., Thurs. ....	Classes begin. Late enrollment fee, \$2.50.
Sept. 17, Noon, Sat. ....	Regular registration closes for college staff, and for elementary and secondary school teachers. End of first week. Late enrollment fee, \$5.00 for subsequent enrollment.
Oct. 8, Sat. ....	Examinations to remove conditions (4th week). Last day to enroll with full assignment.
Oct. 24, 5:00 p.m., Mon. ....	Deficiency reports due in deans' offices (5th week).
Oct. 29, Noon, Sat. ....	Last day for dropping courses without a Wd or failure being recorded (7th week).
Nov. 12, Noon, Sat. ....	Mid-semester deficiency reports due in deans' offices (9th week).
Nov. 22, 10:00 p.m., Tues. ....	Thanksgiving vacation begins.
Nov. 28, 8:00 a.m., Mon. ....	Classes resume.
Dec. 21, 10:00 p.m., Wed. ....	Christmas vacation begins.
Dec. 21, 4:00 p.m., Wed. ....	Applications for degrees must be made on or before this date.
Jan. 5, 8:00 a.m., Thurs. ....	Classes resume.
Jan. 13, 4:00 p.m., Fri. ....	Last day subject may be dropped before end of semester.
Jan. 21, Noon, Sat. ....	Grades to registrar for candidates for degrees and low grades to the deans and student concerned.
Jan. 23-27, Mon.-Fri. ....	Semester examinations.
Jan. 25, 4:00 p.m., Wed. ....	Senate meeting to approve candidates for degrees.
Jan. 27, 5:00 p.m., Fri. ....	Deficiency reports due in deans' offices.
Jan. 28, 10:00 a.m., Sat. ....	Commencement.
Jan. 28, Noon, Sat. ....	Grade reports to registrar.

## SECOND SEMESTER, 1955-56

### *Date, Time, Days*

Jan. 30-Feb. 1, Mon.-Wed. ....	Registration for all students including physical examinations, testing, and orientation for new students.
Feb. 2, 8:00 a.m., Thurs. ....	Classes begin. Late enrollment fee, \$2.50.
Feb. 4, Noon, Sat. ....	Regular registration closes for college staff, and for elementary and secondary school teachers. End of first week. Late enrollment fee, \$5.00 for subsequent enrollment.
Feb. 25, Sat. ....	Examinations to remove conditions (4th week). Last day to enroll with full assignment.
March 3, Noon, Sat. ....	Deficiency reports due in deans' offices (5th week).
March 17, Noon, Sat. ....	Last day for reassignment before mid-semester (7th week). Last day for dropping courses without Wd or failure being recorded.
March 31, Noon, Sat. ....	Mid-semester deficiency reports due in deans' offices (9th week).
March 29, 10:00 p.m., Thurs. ....	Easter vacation begins.
April 3, 8:00 a.m., Tues. ....	Classes resume.
April 27, 3:00 p.m., Fri. ....	Applications for degrees must be made on or before this date.
May 12, Noon, Sat. ....	Last day a subject may be dropped before end of semester.
May 21-25, Mon.-Fri. ....	Semester examinations.
May 21, Noon, Mon. ....	Grades to registrar for all candidates for degrees, and low grades to deans and student concerned.
May 24, 11:00 a.m., Thurs. ....	Senate meeting to approve candidates for degrees.
May 27, Sun. ....	Commencement.
May 28, 5:00 p.m., Mon. ....	Deficiency reports due in deans' offices. Grades to registrar.
May 30, Wed. ....	Holiday—Memorial Day.

# ACADEMIC AND FINANCIAL CALENDAR

## (Continued)

### SUMMER SESSIONS, 1956

#### 9-WEEK SUMMER SESSION

*Date, Time, Days*

June 4, 8:00 a.m., Mon. ....	Registration. Testing, orientation, and physical examinations for freshmen and transfer students.
June 5, 7:30 a.m., Tues. ....	Classes begin. Late enrollment fee, \$2.50.
June 9, Noon, Sat. ....	Regular registration closes for college staff, and for elementary and secondary school teachers. End of first week. Late enrollment fee, \$5.00 for subsequent enrollment.
June 16, Noon, Sat. ....	Last day to enroll with full assignment.
June 30, Noon, Sat. ....	Last day for reassignment before midsession. Last day for dropping courses without a Wd or failure being recorded.
July 4, Wed. ....	Holiday—Independence Day.
July 5, 3:00 p.m., Thurs. ....	Applications for degrees must be made on or before this date.
July 6, 5:00 p.m., Fri. ....	Deficiency reports due in deans' offices.
July 30, 5:00 p.m., Mon. ....	Grades to registrar for all candidates for degrees, and low grades to deans and student concerned.
July 31, 4:00 p.m., Tues. ....	Last day subject may be dropped before end of session.
Aug. 1, 4:00 p.m., Wed. ....	Senate meeting to approve candidates for degrees.
Aug. 3, 5:00 p.m., Fri. ....	Last day for examinations.
Aug. 3, 5:00 p.m., Fri. ....	Deficiency reports due in deans' offices.
Aug. 4, 10:00 a.m., Sat. ....	Commencement.
Aug. 6, Noon, Mon. ....	Grades to registrar.

#### FIRST 3-WEEK SESSION

June 4, 8:00 a.m., Mon. ....	Registration.
June 5, 7:30 a.m., Tues. ....	Classes begin.
June 7, 5:00 p.m., Thurs. ....	No enrollment after this date.
June 22, 5:00 p.m., Fri. ....	End of session.

#### SECOND 3-WEEK SESSION

June 25, 8:00 a.m., Mon. ....	Registration.
June 25, 1:00 p.m., Mon. ....	Classes begin.
June 27, 5:00 p.m., Wed. ....	No enrollment after this date.
July 4, Wed. ....	Holiday—Independence Day.
July 13, 5:00 p.m., Fri. ....	End of session.

#### THIRD 3-WEEK SESSION

July 16, 8:00 a.m., Mon. ....	Registration.
July 16, 1:00 p.m., Mon. ....	Classes begin.
July 18, 5:00 p.m., Wed. ....	No enrollment after this date.
Aug. 3, 5:00 p.m., Fri. ....	End of session.



**Tentative**  
**ACADEMIC AND FINANCIAL CALENDAR**  
**FIRST SEMESTER, 1956-57**

<i>Date, Time, Days</i>	<i>Academic Calendar</i>	<i>Financial Calendar</i>
Sept. 1, Sat. ....	Beginning of pay period for 9-month staff.	
Sept. 3, Mon. ....	Holiday—Labor Day (Deans' offices and administrative offices will remain open).	
Sept. 9, 3:00 p.m., Sun. ....	Convocation for new students and their parents.	
Sept. 10-12, Mon.-Wed. ....	Registration for all students including physical examinations, testing, and orientation for new students.	
Sept. 13, 8:00 a.m., Thurs. ....	Classes begin. Late enrollment fee, \$2.50.	
Sept. 15, Noon, Sat. ....	Regular registration closes for college staff, and for elementary and secondary school teachers. End of first week. Late enrollment fee, \$5.00 for subsequent enrollment.	
Oct. 6, Sat. ....	Examinations to remove conditions (4th week). Last day to enroll with full assignment.	
Oct. 13, Noon, Sat. ....	Deficiency reports due in deans' offices (5th week).	
Oct. 27, Noon, Sat. ....	Last day for dropping courses without a Wd or failure being recorded (7th week).	
Nov. 10, Noon, Sat. ....	Mid-semester deficiency reports due in deans' offices (9th week).	
Nov. 20, 10:00 a.m., Tues. ....	Thanksgiving vacation begins.	
Nov. 26, 8:00 a.m., Mon. ....	Classes resume.	
Dec. 22, Noon, Sat. ....	Christmas vacation begins.	
Dec. 22, Noon, Sat. ....	Applications for degrees must be made on or before this date.	
Jan. 7, 8:00 a.m., Mon. ....	Classes resume.	
Jan. 11, 4:00 p.m., Fri. ....	Last day subject may be dropped before end of semester.	
Jan. 19, Noon, Sat. ....	Grades to registrar for candidates for degrees and low grades to the deans and student concerned.	
Jan. 21-25, Mon.-Fri. ....	Semester examinations.	
Jan. 23, 4:00 p.m., Wed. ....	Senate meeting to approve candidates for degrees.	
Jan. 25, 5:00 p.m., Fri. ....	Deficiency reports due in deans' offices.	
Jan. 26, 10:00 a.m., Sat. ....	Commencement.	
Jan. 26, Noon, Sat. ....	Grade reports to registrar.	

**SECOND SEMESTER, 1956-57**

Jan. 28-30, Mon.-Wed. ....	Registration for all students including physical examinations, testing, and orientation for new students.
Jan. 31, 8:00 a.m., Thurs. ....	Classes begin. Late enrollment fee, \$2.50.
Feb. 2, Noon, Sat. ....	Regular registration closes for college staff, and for elementary and secondary school teachers. End of first week. Late enrollment fee, \$5.00 for subsequent enrollment.
Feb. 23, Sat. ....	Examinations to remove conditions (4th week). Last day to enroll with full assignment.
Mar. 2, Noon, Sat. ....	Deficiency reports due in deans' offices (5th week).
Mar. 16, Noon, Sat. ....	Last day for dropping courses without a Wd or failure being recorded (7th week).
Mar. 30, Noon, Sat. ....	Mid-semester deficiency reports due in deans' offices (9th week).
April 18, 10:00 p.m., Thurs. ....	Easter vacation begins.
April 23, 8:00 a.m., Tues. ....	Classes resume.
April 26, 3:00 p.m., Fri. ....	Applications for degrees must be made on or before this date.
May 11, Noon, Sat. ....	Last day a subject may be dropped before end of semester.
May 20, Noon, Mon. ....	Grades to registrar for all candidates for degrees, and low grades to deans and student concerned.
May 20-24, Mon.-Fri. ....	Semester examinations.
May 23, 11:00 a.m., Thurs. ....	Senate meeting to approve candidates for degrees.
May 26, 2:30 p.m., Sun. ....	Commencement.
May 27, 5:00 p.m., Mon. ....	Deficiency reports due in deans' offices. Grades to registrar.
May 30, Thurs. ....	Holiday—Memorial Day.

## The College

The College, founded on February 16, 1863, was established under the Morrill Act, under which land-grant colleges came into being. According to the law of its establishment, the object of the College is—

“Without excluding other scientific and classical studies and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the legislatures of the states may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life.”

At first the College was located on the grounds of the old Bluemont Central College, chartered in 1858, but in 1875 most of the work of the College was moved to the present site. The campus is at the northwest corner of the city of Manhattan, convenient to both business and residential sections. The campus itself consists of 153 acres carefully landscaped, while beyond the campus there are 2,850 acres of land belonging to the College, used for experimental work in agriculture. In addition there are 5 branches of the Agricultural Experiment Station located at Hays, Colby, Garden City, Mound Valley, and Tribune, totaling 4,485 acres plus a number of outlying experimental fields.

Most of the College buildings are constructed of native limestone. They are so placed as to give maximum effect to the landscaping of the campus.

### Objectives of the Educational Program at Kansas State College

The objectives of the educational program at Kansas State College are to develop an individual capable of applying an enlightened judgment in his professional, his personal, and his social life. To that end the College program is designed:

- I. To provide full and efficient counseling and guidance to the student while in college. Specifically, this means to:
  1. Learn and make known to the student before he enrolls all that is possible and useful about his interests, aptitudes, and abilities.
  2. Apply that knowledge to the students' choice of courses and curriculums as fully as possible without encroaching harmfully on his initiative and feeling of self-responsibility.
  3. Provide continuing guidance for the student according to his needs.
- II. To prepare the student adequately in a technical sense for an occupation or a profession which includes an organized body of information and theory, and educe his creative potentialities in the field of his choice. More specifically this means that the student should acquire:
  1. The ability to recognize and master fundamental principles in his field of specialization.
  2. The knowledge basic to his special field of study.
  3. The ability to reason critically from facts and recognized assumptions to useful technical conclusions.
  4. The basic skills associated with his field of study.
  5. A professional attitude in his chosen work.
- III. To provide all students with an opportunity to gain the knowledge and abilities which members of a democratic society, relative to their capacities, need to possess in common, whatever occupation or profession they expect to enter. Specifically, this means that through its total program the College undertakes to help the student to:
  1. Develop his communications skills.
  2. Develop the ability to apply critical and creative thinking to the solution of theoretical and practical problems.
  3. Understand the basic concepts of the natural sciences, the interrelations of the natural and social sciences, and the impact of science on society.



4. Comprehend and evaluate the processes and institutions in society at home and abroad, and develop a dynamic sense of his personal responsibilities as an effective citizen in a democratic society.
  5. Develop habits of self-evaluation, responsibility, and enterprise which will increase the effectiveness of the educative process in college, and provide the basis for continued self-improvement.
  6. Develop a well adjusted personality, good character traits, and a sound philosophy of life.
  7. Prepare for effective participation in family life.
  8. Utilize actively and fully his capacity for esthetic appreciation and enjoyment.
  9. Promote high standards of personal and community health.
- IV. To stimulate the faculty and students to extend the boundaries of knowledge through critical and creative thinking and experimentation.
- V. To provide the facilities for extending education outside the boundaries of the campus to the members of the community which the institution serves.

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## Admission

All correspondence about admission should be addressed to the Director of Admissions.

### High School Graduates

A graduate of any Kansas high school or academy accredited by the State Board of Education will be admitted to the freshman class. A graduate of an accredited high school or academy in another state will be considered for admission to the freshman class if his records indicate that he is capable of doing successful college work.

Anyone interested in attending Kansas State College should write to the Director of Admissions, who will be glad to send the appropriate application form. The student should complete the form, indicate the curriculum in which he plans to enroll and return it to the Director of Admissions.

If the applicant is a high school graduate when the application for admission is received, the Director of Admissions will request a high school transcript immediately from the high school principal. Upon receipt of the transcript, the Director of Admissions will send the student a notice of acceptance for admission and advise the student whether he has any deficiencies for the curriculum in which he wishes to enroll. He will also advise the student of the date, hour, and place that he should be present to begin the semester or summer session.

Students in high school are encouraged to apply for admission during their senior year. Upon receipt of an application for admission from a senior in high school, the Director of Admissions will send the student a provisional acceptance immediately. Near the close of the student's senior year, the Director of Admissions will request a transcript from the high school principal. As soon as a satisfactory transcript is received the student will be notified of his admission and other details as indicated in the paragraph above.

Students who have not received notice of admission must meet with the Committee on Admissions before registering. Students without complete or satisfactory transcripts may be enrolled provisionally at the option of the Committee on Admissions.

Students who are high school graduates are not required to take entrance examinations.

Entrance examinations will be given to eligible students who are deficient in high school units. Applications for such examinations must be made in advance to the Director of Admissions.

### FIXED ADMISSION REQUIREMENTS

There are certain fixed admission requirements for all curriculums. Although a high school graduate will be admitted to the College if he lacks some of these requirements, he must make up the deficiencies by enrolling in classes on the campus or by taking the courses by correspondence study.

- (A) For the curriculums listed below which are preceded by the letter (A), the fixed admission requirements are three units\* of English, one unit of algebra, one unit of plane geometry, and one unit of general science, biological science, or physical science.
- (B) For the curriculums listed below which are preceded by the letter (B), the fixed admission requirements are three units of English, one unit of algebra, one unit of general science, biological science or physical science, and one unit of plane geometry, general mathematics, applied mathematics, business arithmetic, or bookkeeping.
- (C) For the curriculums listed below which are preceded by the letter (C), the fixed admission requirements are three units of English, one and one-half units of algebra, one unit of plane geometry, one-half unit of solid geometry, and one unit of general science, biological science, or physical science.
- (D) For the curriculums listed below which are preceded by the letter (D), the fixed admission requirements are three units of English, one and one-half units of algebra, one unit of plane geometry, and one unit of general science, biological science, or physical science.
- (E) For the curriculums listed below which are preceded by the letter (E), the fixed admission requirements are three units of English, one unit of mathematics, business arithmetic, or bookkeeping, and one unit of general science, biological science, or physical science.
- (F) For the curriculums listed below which are preceded by the letter (F), the fixed admission requirements are three units of English, one unit of algebra, and one unit of general science, biological science, or physical science.
- (G) For the curriculums listed below which are preceded by the letter (G), the fixed admission requirements are three units of English, one and one-half units of algebra, one unit of plane geometry, one additional half-unit of either algebra, trigonometry, or solid geometry, and one unit of general science, biological science, or physical science.

#### Curriculums in the School of Agriculture

- (A) Agriculture, page 64.
- (A) Agricultural Administration, page 66.
- (A) Agricultural Education, page 67.
- (A) Agricultural Journalism, page 68.
- (A) Dairy Manufacturing, page 69.
- (D) Feed Technology, page 75.
- (A) Horticulture, page 70.
- (D) Landscape Design, page 72.
- (C) Milling Technology, page 73.
- (D) Technical Agronomy, page 77.

#### Curriculums in the School of Arts and Sciences

- (E) Art, see Humanities, art adaptation, page 113.
- (D) Biological Science, majors in Bacteriology and Entomology, page 108.
- (E) Biological Science, majors in Botany and Zoology, page 108.
- (E) Biological Science, Medical Technician, page 109.
- (D) Biological Science, Premedical, page 110.
- (F) Business Administration, page 117.
- (F) Business Administration, major in Accounting, page 118.
- (D) Chemistry, page 119.
- (E) Elementary Education, page 120.
- (E) Secondary Education, page 121.

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\* A unit represents five recitation periods a week for a full school year.



- (D) Geology, page 111.
- (E) Humanities, page 112.
- (E) Music, Applied, Instrument Major, page 123.
- (E) Music, Applied, Voice Major, page 124.
- (E) Music Education, Instrument Major, page 125.
- (E) Music Education, Voice Major, page 126.
- (E) Physical Education (Men), page 127.
- (E) Physical Education (Women), page 128.
- (D) Physics, page 129.
- (D) Physical Science, page 114.
- (A) Preveterinary, page 131.
- (F) Social Science, majors in Economics, Sociology, and preprofessional Psychology, page 116.
- (E) Social Science, majors in History, Government, Prelaw, Philosophy, and General Psychology, page 116.
- (A) Technical Journalism, page 130.

#### **Curriculums in the School of Engineering and Architecture**

- (G) Agricultural Engineering, page 219.
- (G) Architectural Engineering, page 220.
- (G) Architecture (five years), page 221.
- (G) Chemical Engineering, page 222.
- (G) Civil Engineering, page 223.
- (G) Electrical Engineering, page 224.
- (G) Industrial Education, page 226.
- (G) Industrial Engineering, page 227.
- (G) Mechanical Engineering, pages 230, 231.
- (G) Nuclear Engineering, page 232.

#### **Curriculums in the School of Home Economics**

- (B) Home Economics General Curriculum, page 267.
- (B) Home Economics with Provision for Specialization, page 269.
- (B) Dietetics and Institutional Management, page 271.
- (B) Restaurant Management, page 272.
- (B) Home Economics and Journalism, page 273.
- (B) Home Economics and Nursing, page 274.

#### **Curriculum in the School of Veterinary Medicine**

- 、 Veterinary Medicine (must be preceded by two-year preveterinary curriculum in the School of Arts and Sciences, page 131), page 294.

A student who wishes to enter Kansas State College can determine whether he has satisfied all of the fixed admission requirements by checking the appropriate paragraphs above. For example, if the letter (A) appears before the curriculum which he plans to take, the paragraph with the letter (A) at the left gives the fixed admission requirements for that curriculum. If a student has had all the subjects which are listed in paragraph (A), he has satisfied the admission requirements and has no deficiencies.

If a student lacks one or more of the subjects listed in the fixed admission requirements, he is deficient in those subjects. Few students are deficient in any subjects other than in the field of mathematics.

A student who is deficient one unit of algebra and/or one unit of plane geometry when he enters Kansas State College must make up the deficiencies as soon as possible. This may be done by enrolling in a class during the semester or by correspondence study. The student that lacks both of them will normally take algebra the first semester and plane geometry the second semester. A student who lacks one-half unit of advanced high school algebra will enroll in intermediate algebra before enrolling in college algebra. The student does not earn college credit in the subjects taken to make up deficiencies in mathematics.

For those curriculums in the School of Agriculture in which college algebra appears as an alternate to mathematics in agriculture, students desiring to take the college algebra will be required to have one and one-half units of credit in high school algebra.

A student who enters without one unit of algebra or one unit of plane geometry will be enrolled as a special student if he wishes to enter any of the curriculums in Engineering and Architecture. As soon as the fixed requirements in mathematics are completed, he will be transferred to regular status without loss of credit.

No student lacking required units in algebra and plane geometry will be advanced in classification.

A student lacking one-half or one required unit of biological or physical science will be held for two or four hours of college science in addition to the science required in his curriculum. For these hours he may be given elective credit toward graduation, except in curriculums in the School of Engineering and Architecture.

### **Advanced Credit by Special Examination**

Advanced credit may be granted to entering freshmen and other students in any subject if a satisfactory examination or test is passed.

In general, permission to take examinations is given by the student's dean after consultation with the head of the department in which the course is given, and a small fee is charged. A special examination may be given only to a matriculated student. (See page 18.)

However, a first semester freshman at Kansas State College may take a test to receive credit in Written Communications I, Engineering Drawing, College Algebra and/or Trigonometry without expense to himself. In only exceptional cases should a student without at least two units of high school credit in algebra attempt the test in algebra. A student attempting the test in trigonometry should have at least one-half unit of high school credit in trigonometry. Only first semester freshmen who have met the standard set by the Department of English in the English placement examination (page 15) are eligible for the examination in Written Communications I.

Failure in these free examinations will not be entered on the student's permanent record. Grades received on all other special examinations will be recorded on the student's permanent record.

### **High School Nongraduates**

A student who is not a graduate of an accredited high school or academy may enter the freshman class if he has completed fifteen acceptable units of high school work, including the fixed requirements. One who offers fourteen such units will be admitted, but will be conditioned in one unit. The deficiency must be made up during the first year of attendance. In addition to the fixed requirements of the particular curriculum the student wishes to enter, he must offer the remainder of the units in subjects acceptable to the Director of Admissions. For details, nongraduates should write to the Director of Admissions.

### **Students with Advanced Credit**

Students presenting transcripts of record of work done in other accredited institutions of collegiate level are allowed hour-for-hour credit on courses in this College insofar as the credits can be accepted in the student's curriculum. A student who cannot furnish an acceptable transcript of record of work for which he has advanced credit may be examined in subjects that he has studied under competent instructors.

On the information blank furnished by the Committee on Admissions a student with advanced credit must not only state the curriculum he plans to follow, but also list all other institutions in which he has been enrolled. He must ask these institutions to send an official and complete transcript of his record to the Director of Admissions. A separate transcript must be furnished from each college previously attended. If fees are charged for such transcripts, the applicant must make necessary arrangements with his former institutions.



When the transcripts have been evaluated, the committee will send the student a copy of the evaluation. Students without an approved evaluation of credits must meet with the committee before registering. If their records are not completely satisfactory, they may be enrolled provisionally at the option of the committee.

The committee cannot act on transcripts received later than one week before the date of registration.

Transcripts of record must be sent to the Director of Admissions directly from the institutions issuing them. Others will not be accepted.

In general, no student will be admitted to the College unless he is eligible to return to the institution last attended.

#### **Extension and Correspondence Credit**

College level credit earned through accredited extension divisions may be applied toward credit requirements for a degree at this institution. The credit must be applicable to the curriculum chosen and the amount of such credit which can be used is limited. In the School of Arts and Sciences a total of 30 semester hours of acceptable correspondence and/or extension work may be applied toward a degree.

#### **Special Students**

A special student is one not regularly enrolled to work for a degree. He may, however, on completing entrance requirements and with the consent of his dean, become a regular student.

A student who satisfies entrance requirements may be admitted as a special student for such work as is approved by the dean of the school in which he enrolls.

A student who satisfies requirements for entrance to the College, but lacks fixed requirements for admission to certain curriculums (See page 9.) may, with the approval of the dean, be admitted as a special student to the school in which he wishes to enroll. When the fixed requirements have been completed, he may, with the consent of the dean, become a regular student without loss of credit.

Because experience and maturity often compensate for lack of scholastic attainment, the College admits as special students men and women over twenty-one years of age who cannot meet the regular entrance requirements. The age limit does not apply to special students in music.

Special students must give evidence of satisfactory preparation for the courses they wish to take, and most special students must present transcripts of record of their preliminary education. In some cases a special student may present a statement of good standing from another college in lieu of a transcript of record.

Special students are subject to regulations for regular students, payment of all fees, regular attendance at classes, maintenance of satisfactory standing, and as a rule assignment to physical education and military training.

The College will give special consideration to students who apply for admission as special students on the basis of experience gained in service in the Armed Forces. (See "Veterans of the Armed Forces," page 16.)

#### **Late Admission**

A student who seeks to enter the College later than ten calendar days after the day classes begin for a semester is admitted only by special permission of his dean. Those who enroll after the regular registration period and prior to the end of the first week pay a late enrollment fee of \$2.50. College staff members, including graduate assistants and graduate research assistants and teachers employed in elementary and secondary schools, do not pay this fee. However, anyone enrolling after the first week must pay a late enrollment fee of \$5.00. (See the College Calendar.)

#### **Orientation Testing and Pre-enrollment**

Each applicant for admission to the College is required to take orientation testing to measure aptitude and achievement traits of prospective students. The tests do not affect an applicant's admission status but are

used to obtain information that is helpful in advising matriculated students. These tests are given to freshmen enrolling in Kansas State College for the first time during the freshman orientation period. Opportunity is provided also for prospective students to take aptitude and other required freshman tests at selected high schools throughout the state during the spring semester or at the Manhattan campus by appointment during the summer prior to their beginning college in September. These high schools are selected to serve their surrounding areas and the tests are administered by visiting College staff members. Students who take these tests are not required to repeat them during their enrollment period. The students who take the tests in the spring at a high school testing center come to the College campus during the summer to confer with College staff members concerning the results of the tests and the choice of a curriculum. All parts of the enrollment may be completed in advance so that only the fee remains to be paid when the student appears on the campus in the fall. Pre-enrolling students taking the tests in the summer on the campus must return at a later date (by appointment) for the actual preregistration and advisement and for any counseling needed regarding their academic and vocational planning. This opportunity to complete testing in advance does not mean that a student cannot be admitted and take his tests at the regularly scheduled time in the fall. It is simply an opportunity to provide an additional service to those students who wish to avail themselves of it.

### **Orientation for Freshmen and New Students**

A welcome period and an orientation program is provided for all freshmen and new students during the first few days of college. This program is designed to ease the change from high school to college. Its purpose is to provide a time for enrolling in classes for those students who have not pre-enrolled, to have students learn about college life, to make freshmen feel at home and have a good time.

All new students are required to participate in this orientation program. Freshmen who have completed their testing program in the high schools under the direction of Kansas State College staff members are enrolled with that group and are given a different program of orientation from students who take their testing program after reaching the campus in the fall. All students are given the opportunity to become acquainted with the College, meeting faculty members and classmates, getting information and other help from advisers, and attending social functions. Each entering freshman receives a program during the summer containing a complete schedule of orientation week activities. It is important that all freshmen arrive on time, follow the schedule closely and attend all functions. No one may register as an undergraduate unless he has completed the required physical examination and required aptitude tests.

The opening convocation for freshmen and new students is traditionally held on Sunday afternoon preceding the enrollment period. This convocation is designed especially for all new students and their parents, and they are cordially invited to attend.

### **Freshman Advising Program**

Each freshman is assigned a faculty adviser at the beginning of the school year. This faculty adviser is available to him any time during the year when he needs help. Faculty advisers assist students in defining goals to be reached in college, give information regarding appropriate curriculums and courses, and discuss any personal problems that the students may have, especially problems related to the student's progress and plans for subsequent work.

### **Required Physical Examinations**

All new students are required to take a physical examination at the time of matriculation. This is to know their health status and to properly classify them for physical education and ROTC participation. The Board of Regents and the College require a chest examination to rule out tuberculosis. The examination benefits the student by ascertaining the status



of his health on admission and helps him to plan his scholastic and outside activities.

It is recommended that all seniors take a physical examination and chest X-ray prior to graduation.

Students who have been out of school one semester or longer are required to have a chest X-ray upon return.

### Mathematics Proficiency Tests

In all curriculums in which college algebra is required, students will take a proficiency test in algebra within the first two weeks of their enrollment in any course in algebra. The results of this test will be used to determine whether a student shall be required to take the course in intermediate algebra to qualify for college algebra.

### English Requirement

Each freshman entering the College for the first time will be required to take an English placement test consisting of a theme and a written examination on the mechanics of writing. Students who meet a standard set by the Department of English in the placement examination may elect to take Written Communications II and to substitute another English course for Written Communications I. They are also automatically eligible to take a special examination which, if passed satisfactorily, will permit them to receive credit in Written Communications I. Students having low scores in the placement test will be required to take Written Communications IA.

### Junior Colleges

There is excellent cooperation between the junior colleges of Kansas and Kansas State College. A student who plans to begin his work in junior college and complete it in Kansas State College may arrange his program so as to proceed without loss of time. Different curriculums require different subjects, but the College will give all possible credit for work done in junior colleges. Hour-for-hour credit is given where junior college work can be accepted to satisfy curricular requirements.

The College will gladly furnish to junior college students a list of recommendations for any curriculum, so that a student may begin his work in junior college with an assignment acceptable to this institution, and later transfer without loss of credit. A junior college student who has followed the advice of the College can usually complete his work for the bachelor's degree from Kansas State in two years.

The curriculums printed in this catalogue give full information as to courses required in each, but the College will be glad to hear from students as to specific problems.

The following Kansas junior colleges are accredited by the State Board of Education.

### PUBLIC

Arkansas City Junior College, Arkansas City  
Chanute Junior College, Chanute  
Coffeyville College of Arts, Sciences, and Vocations, Coffeyville  
Dodge City Junior College, Dodge City  
El Dorado Junior College, El Dorado  
Fort Scott Junior College, Fort Scott  
Garden City Junior College, Garden City  
Highland Junior College, Highland  
Hutchinson Junior College, Hutchinson  
Independence Junior College, Independence  
Iola Junior College, Iola  
Kansas City Junior College, Kansas City  
Parsons Junior College, Parsons  
Pratt Junior College, Pratt

### PRIVATE

Central Academy and College, McPherson  
Ursuline College of Paola, Paola  
Hesston College, Hesston  
Sacred Heart, Wichita  
Saint John's College, Winfield  
Tabor Academy and College, Hillsboro

### Veterans of the Armed Forces

All men and women honorably discharged from the armed forces of the United States will be considered for admission to Kansas State College.

The College will consider the individual needs of each student whose education was interrupted by a call into the armed forces. Those who lack high school graduation or a full list of high school prerequisites will be given an opportunity to prove equivalent ability and knowledge by taking entrance examinations, or other means. For certain technical curriculums, high school prerequisites, especially in mathematics, must be made up.

In general the College follows the recommendations given in "A Guide to the Evaluation of Educational Experiences in the Armed Services," published by the American Council on Education.

Correspondence courses taken from accredited institutions through the United States Armed Forces Institute will be accepted from veterans, subject to the regular rules covering the acceptance of advanced credit by correspondence.

Correspondence courses and others given by the United States Armed Forces Institute, in-service courses, and other courses taken by men and women while in service in the armed forces are accepted for entrance credit or advanced credit if applicable toward the student's curriculum. No credit is given for General Educational Development Tests, College Level.

### Services for Veterans

Each veteran attending Kansas State College under the Federal educational benefits program must have V.A. authorization. Applications for benefits under Public Law 346 or Public Law 550 are available in the College Veterans Service Office or any Veterans Administration Center. To obtain benefits under Public Law 16 or Public Law 894, contact the Veterans Administration Center at Wichita 8, Kansas.

The Office of Admissions, Housing Office, Business Office, the Counseling Center, and other College-wide service offices are located in Anderson Hall. Correspondence concerning veterans' educational benefits should be addressed to the Veterans Service Office, Anderson Hall, Kansas State College.

### State Vocational Rehabilitation Training

The College cooperates with the State Board for Vocational Education in providing rehabilitation training for physically handicapped persons who need financial assistance. Correspondence should be addressed to the Vocational Rehabilitation Division of the State Board for Vocational Education, Topeka, Kansas.

### Fees

**Fees Subject to Change.** All fees are subject to change at any time without notice by the Board of Regents. The various customary enrollment fees are listed under the recapitulation below on this page.

**Payment of Fees.** The incidental fee, the student health fee, the student activities fee, the student union building fee must be paid in full during registration at the beginning of each semester or summer session. Checks on out-of-town or local banks are accepted to the amount of the fees.

**Tuition.** There is no tuition fee. Fees are charged for individual lessons in music but not for class instruction. (See Personal Service Fees.)

**Incidental Fee.** The incidental fee is designed to assist in defraying costs of laboratory supplies, plant operation and maintenance, nonacademic



and administrative personnel, library books and personnel, equipment and other nonteaching activities not particularized. The incidental fee is not tuition, nor a fee in lieu of tuition, but represents the student's contribution to the costs of nonteaching aspects of the total instructional program.

**Student Health Fee.** For a description of the Department of Student Health, see page 28.

**Student Union (building fund) Fee.** In accordance with a vote of the student body and with Kansas Laws, each student pays a student union (building fund) fee. The fund so collected is used to retire the student union building revenue bonds.

**Student Activities Fee.** The Student Activities Fee is used for student recreational activities (including intercollegiate athletics); student publications; Union operations; student judging teams; and other student organizations (musical etc.).

**Recapitulation.** To make clear the amount of fees due at the opening of each semester of the College year, the following tabular statement is given and applies to both graduate and undergraduate students:

FOR RESIDENTS OF KANSAS OR STAFF MEMBERS

Paid for each semester (sixteen weeks or more, if enrolled in more than six hours).

	<i>Veterinary Medicine Students</i>		<i>All Other Students</i>	
	<i>Kansas residents or staff members</i>	<i>Non- residents</i>	<i>Kansas residents or staff members</i>	<i>Non- residents</i>
Incidental .....	\$ 66.00	\$141.00	\$56.00	\$131.00
Student Health .....	10.00	10.00	10.00	10.00
Student Union (building fund) .....	7.50	7.50	7.50	7.50
Student Activities .....	16.50	16.50	16.50	16.50
Totals .....	\$100.00	\$175.00	\$90.00	\$165.00

(If enrolling in six semester hours or less, see paragraph regarding pro rata fees.)

**Definition of Resident.** The residence of students entering Kansas State College is determined by an act of the legislature (Sec. 76-2701 G.S. 1949), which reads as follows:

"Persons entering the state educational institutions who if adults have not been, or if minors, whose parents have not been residents of the state of Kansas for six months prior to matriculation in the state educational institutions, are nonresidents for the purpose of the payment of matriculation and incidental fees: *Provided further*, That no person shall be deemed to have gained a residence in this state for the aforesaid purpose while or during the elapse of time attending such institution as a student, nor while a student of any seminary of learning, unless, in the case of a minor, his parents shall have become actual residents in good faith of the state of Kansas during such period, or unless, in the case of a minor, he has neither lived with nor been supported by his parents or either of them for three years or more prior to enrollment and during said years has been a resident in good faith of the state of Kansas."

**Summer Sessions.** In general the fees for the regular summer session are approximately one-half the fees as outlined for regular semesters, and are subject to the refund policy outlined below. The following schedule of fees will be charged for summer sessions of more than six and less than thirteen weeks.

	<i>Veterinary Medicine Students</i>		<i>All Other Students</i>	
	<i>Kansas residents or staff members</i>	<i>Non- residents</i>	<i>Kansas residents or staff members</i>	<i>Non- residents</i>
Incidental .....	\$37.50	\$77.50	\$32.50	\$72.50
Student Health .....	5.00	5.00	5.00	5.00
Student Union (building fund) .....	3.00	3.00	3.00	3.00
Student Activities .....	5.00	5.00	5.00	5.00
Totals .....	\$50.50	\$90.50	\$45.50	\$85.50

(If enrolling in three semester hours or less, see paragraph regarding pro rata fees.)

**Pro Rata Fees.** Fees for students enrolled initially in six semester hours or less for a regular semester or three semester hours or less for a summer session are as follows, and are subject to the refund policy outlined below. These

fees are based on the original enrollment and refunds are not made for reduction in load, but only for complete withdrawal from college.

	Kansas residents or staff members	Non- residents
Incidental (regular semester or summer session)		
All except Veterinary Medicine Students, a semester hour .....	\$4.00	\$9.00
Veterinary Medicine Students, a semester hour .....	5.00	10.00
Student Health (regular semester or summer session) .....	not eligible	not eligible
Student Union (building fund)		
Regular semester .....	5.00	5.00
Summer term .....	2.00	2.00
Student Activities		
Regular semester .....	2.00	2.00
Summer term .....	1.00	1.00

**College Proper Refund Policy.** (Applicable only to refundable fees, viz. incidental, health, union, activities, and personal service, if any) Refunds will not be made until sufficient time has elapsed to insure that student checks have been honored—usually 15 days after students enroll. If an enrollee withdraws and returns his identification card during a school term, the following schedule of refunds shall apply:

	Amount of Refund	
	Regular Semester	Summer Session
During first week of semester or session .....	100%	100%
To the end of the second week .....	90%	75%
To the end of the third week .....	80%	50%
To the end of the fourth week .....	70%	no refund
To the end of the fifth week .....	60%	no refund
To the end of the sixth week .....	50%	no refund
After sixth week .....	no refund	no refund

**Graduate Research Work in absentia.** The fee for graduate research work *in absentia* is \$2.50 a semester hour for both residents and non-residents. Resident staff members may not enroll *in absentia* while regular college sessions are in progress. This fee is not subject to refund.

**Special Examination.** Any student granted permission to take a special examination for possible college credit (in lieu of attending classes) shall be assessed a fee of \$2 a semester hour in which examined if a Kansas resident or a staff member; or \$6 a semester hour in which examined if a nonresident. This fee must be paid before taking the examination and is not subject to refund; this service is available only to enrolled students. Permission to take a special examination is issued by the student's dean after consultation with the head of the department in which the course is given.

**Late Enrollment, Including Re-enrollment After Withdrawal.** A late enrollment fee of \$2.50 shall be assessed and collected from each person enrolling after the regularly scheduled enrollment period. A larger late enrollment fee of \$5 shall be assessed and collected from each person enrolling, re-enrolling or paying his fees after the first week of a school term. However, only one or the other of these fees shall be collected for each late enrollment or re-enrollment. Late enrollment fees shall not be subject to refund and payment thereof shall be considered a part of the enrollment process.

**Laboratory Fees and Course Charges or Deposits.** No laboratory fee or course charge is assessed against or collected from persons enrolled in any regular semester or summer session at Kansas State College, except for Geology field trips and excessive usage or breakage or losses due to personal negligence on the part of the student, and then only for actual fair value of supplies so used or lost and subject to the approval of the appropriate dean or the President.

**Personal Service Fees.** Charges for private music lessons or for other individual instruction are in addition to the fees outlined above; such fees,



however, are subject to the refund policy set forth above. The schedule for private music lessons is as follows:

	<i>Students paying full semester incidental fee*</i>	<i>Students not paying full semester incidental fee</i>
Two lessons a week for 16 to 18 weeks .....	\$35.00	\$42.00
One lesson a week for 16 to 18 weeks .....	17.50	23.00
Two lessons a week for 8 to 10 weeks .....	17.50	23.00
One lesson a week for 8 to 10 weeks .....	8.75	11.50
Separate individual lessons, each .....	1.50	2.00

Charges for individual training in flight instruction are based upon actual costs to the College. A deposit to cover these costs is required at the time of enrollment. All unused deposits are refunded when the course is completed. Any excess in costs over the deposit will be appropriately collected before the student concerned may be graduated.

**Audition Fee.** An auditor who is neither an enrollee paying full semester fee nor a staff member shall be assessed \$1 a semester hour for courses audited. Laboratory courses may not be audited. These fees shall not be subject to refund.

**Home Study Fees.** For a complete listing of fees charged for work offered through the Department of Home Study and Community Services, Division of College Extension, see page 310.

**Military Uniforms.** Every student who takes military training (except Veterinary) must have a uniform. For the basic courses the uniform is furnished by the Government. The money value of any missing articles will be collected when the uniform is returned. Failure to return or pay for missing articles of the uniform may result in withholding of credit and in extreme cases may cause the College to refuse a transcript or to graduate the student concerned. A uniform is purchased for each advanced course student which becomes his personal possession upon completion of the course. All or nearly all of the cost of this uniform is paid by the federal government.

**Charges to Governmental or Private Agencies.** The fees collected under federal contracts or arrangements with other governmental or private agencies follow in general the fees outlined above and in all cases the charges are equal to or greater than the fees stated herein.

#### Other Expenses

**Textbooks.** The cost of textbooks varies considerably from semester to semester and according to the curriculum chosen. A freshman may reckon with an expenditure of about \$30 for new textbooks during his first semester, and of about \$20 during his second semester. Certain curriculums require books costing slightly more than these figures; most curriculums require books costing slightly less. For many courses second-hand books are satisfactory.

**Drawing Instruments.** In several curriculums, especially in architecture and engineering, drawing instruments are necessary. These range in price from \$18 to \$30 a set.

**Gymnasium Suits.** Every woman taking physical education must have an approved gymnasium suit costing \$4 to \$5. In the major course the suit costs \$5 to \$7. The gymnasium suit for a man costs about \$5. In the major course the suit costs \$10.

#### Classification of Students

A student who is a high school graduate, or offers fifteen acceptable units of high school work, is classed as a freshman. He is advanced to a higher class when he has credit in hours to meet the requirements for advancement in the various schools as listed below:

#### Classification of Students

A student who is a high school graduate, or offers fifteen acceptable units of high school work, is classed as a freshman. He is advanced

\* There is no additional charge for equipment used by students paying incidental fees, except that the number using the organ may be limited by the music department.

to a higher class when he has credit in hours to meet the requirements for advancement in the various schools as listed below:

<i>School</i>	<i>Sophomore class</i>	<i>Junior class</i>	<i>Senior class</i>
Agriculture .....	23	56	88
Arts and Sciences .....	23	55	86
Engineering and Architecture* .....	25	61	97
Home Economics .....	23	54	81

Students enrolled in the professional curriculum in the School of Veterinary Medicine are classified as First Year, Second Year, Third Year, and Fourth Year students. The First Year students are so classified following admission and assignment to the School, after completion of the two-year Preveterinary curriculum (68 hours). To advance to a higher classification, a student must complete satisfactorily the requirements as listed in the professional curriculum for the previous year or years. Exceptions are granted only in meritorious cases by the Dean of the School of Veterinary Medicine and shall not exceed nine credit hours of deficiencies. No student lacking required units in elementary algebra and plane geometry will be advanced in classification.

### Assignments

A student is responsible for fulfilling all the requirements of the curriculum in which he is enrolled. His assigner and his dean will help him plan his work, but do not assume responsibility for his mistakes. A student should be familiar with the catalogue statements about assignments and curriculums, because the catalogue is the official source of information.

Catalogues are maintained for student use in the Admissions office, the Dean's office, the Library, and all departmental offices.

No student may be enrolled in classes or for private lessons in music or other subjects before getting an assignment. No assignment is complete until all fees and charges are paid.

Registration and assignment to courses take place September 12 to 14. Later assignments are made during regular office hours by a student's dean or assigner, but must be checked by the Registrar as to availability of classes, which are closed when the limit as to number is reached.

A student may not enroll later than ten days after the beginning of a semester or summer session except by permission of his dean.

Penalties are provided for failure to enroll during the regularly scheduled registration periods or failure to complete registration by payment of fees before the dates set for that purpose. See the Calendar, or the section on Fees, page 16, for these penalties.

A student who wants to take work at other than scheduled times must have the written consent of his dean, the head of the department in which the work is to be done, and the dean of the school in which the department belongs.

Every student must take a full assignment unless excused by his dean. Students whose grades averaged B or better during the preceding semester, and who did not receive a deficiency of any kind during the preceding semester, may apply to their deans for permission to take excess hours, but not to exceed twenty-one, including correspondence work. Other students may not normally take excess hours. Exceptions to this policy are reported to the President by the dean granting the exception.

An enrolled student may not carry correspondence work except by permission from his dean.

If a student makes special requests about assignments or asks permission to make up deficiencies by study under an approved tutor his dean will decide after conferring with the heads of the departments concerned.

### Changes in Assignments

Deans will not drop subjects from a student's assignment during the last two weeks of a period covered by final scholarship deficiency reports.

\* Students enrolled in the five-year Curriculum in Architecture are classified according to the following requirements in hours and points: Second Year, 22; Third Year, 55; Fourth Year, 87; Fifth Year, 119.



No student may drop a course or change an assignment except by a formal reassignment, which can be made only by his dean.

If an instructor recommends a reassignment, a student should confer with his dean.

A student who drops out of class without a reassignment is reported absent.

### Withdrawal from College

A student who withdraws from College must have an official withdrawal permit from his dean. If a student withdraws from college not later than the seventh week of the semester, no mark shall be reported to the registrar. If he withdraws after the seventh week, a mark of Wd is reported in all courses in which he is passing, and F is reported for courses in which he is not doing satisfactory work.

### Auditing Classes

An auditor is one who attends a class regularly without participating in class work and without getting credit. Permission to audit a class is granted by the dean of the School in which the class is offered. The fee for those not connected with the College is \$1 a semester hour. A student or employee of the College who wants to audit a class must first get the consent of his dean. Laboratory classes cannot be audited.

### Grades

The College uses the following grades:

- A, for distinguished work
- B, for superior work
- C, for average work
- D, for merely passing work
- F, for failure
- Cr, for credit in required courses for which no letter grade is given.

The equivalent percentage grade for passing is 70. For purposes of translating percentage grades into letter grades, the following schedule shall be used when 70 is the minimum passing grade:

- 94-100 A
- 86- 93 B
- 78- 85 C
- 70- 77 D

The report Cn, conditioned, is used for unsatisfactory work on which an examination may be taken. If the examination is passed, the Cn becomes D; otherwise it becomes F. The examination must be taken in the first subsequent semester of enrollment. The report Inc, incomplete, is used when a student may have further time to complete the required work. It, too, must be removed within the first subsequent semester of attendance or the report becomes an F, unless the Inc was reported for a course designated in the catalogue as "research."

### Report of Grades

As shown on the academic calendar, deficiency reports of unsatisfactory work are sent to the students concerned and the deans. The reports of the fifth and ninth week are in percentages on a scale of seventy for passing. The reports at the end of the semester are on the letter system.

Students desiring reports of grades must supply instructors with properly filled official cards after the fifth or the ninth Saturday of the semester or with their final examination papers. Instructors will send reports so requested to the students or will send them to student organizations.

The instructor reports semester grades based on the examination and class work to the Registrar for record as shown in the calendar.

If a student drops a subject before the end of the seventh week, no mark shall be reported to the Registrar. An official drop slip from the student's dean shall constitute the record of performance.

If a student drops a subject after the seventh week, either a mark of Wd or a full semester grade of failure shall be reported, depending on

whether the student was passing or failing, respectively, at the time of dropping the subject except that no course may be dropped after a date marking the close of this privilege and shown on the academic calendar. Regardless of the time of withdrawal, however, a final grade shall be reported and designated as such, if all the required work of the course has been completed.

In case of absence from a final examination, no semester grade is reported until the reason for such absence has been learned; the instructor reports to the Registrar a mark of Inc. If the student's absence is not excused by his dean, a semester grade is reported on the basis of zero for the final examination; but if the absence is excused, a reasonable time, usually not over one month, is allowed within which the examination may be taken.

The result of an examination to remove a condition is reported in quadruplicate to the dean of the student, who transmits copies to the Registrar, the student, and the student's assigner. Special procedures are followed in reporting a grade to replace Inc and in reporting corrections of grades.

Instructors are to leave all class books on file in the proper department when semester grade cards have been made out. The head of the department is to keep all grade books as a permanent file of the department.

### Points

For each semester hour of work a student gets points, according to the grades he makes, as follows: A, 3; B, 2; C, 1; D, 0; F, -1. For students entering after June 1, 1954, the graduation requirement is .7 as many points as credit hours in which the student has received a grade of A, B, C, D, or F in resident work.

### Scholarship Deficiencies

#### PROBATION

If a student in either semester of his first year at Kansas State College gets F or Cn in one-third of his work he is put on probation for a semester, and his parent or guardian is informed of the fact. Any other student is put on probation for a semester if he gets F or Cn in one-fourth of his work. A third such probation results in dismissal from the College.

#### DISMISSAL

If a student in either semester of his first year at Kansas State College gets F or Cn in one-half of his work, he is dismissed from the College, and his parent or guardian is informed of the fact. Any other student is dismissed if he gets F or Cn or an Inc (F) in two-fifths of his work. After two probations, one probation and one dismissal, or two dismissals, any subsequent probation involves dismissal.

#### REINSTATEMENT

Students dismissed at the end of the first semester are excluded until the beginning of the next summer session. Those dismissed at the end of the second semester are excluded until the end of the next fall semester. During this period they may not habitually appear on the campus or enter any classes. Any student dismissed for scholarship deficiencies may petition in writing, on a form provided by the College, for immediate reinstatement. The Committee on Reinstatement considers and acts upon such petitions.

#### CREDITS WHILE ON PROBATION AND DISMISSAL

Credits earned by a student in residence at another college during a period in which he is ineligible to attend Kansas State College or the other college will not be accepted by Kansas State College.

#### Absence

Each student is expected to attend all meetings of the classes to which he is assigned.



### REPORTING ABSENCES

Each instructor shall report at least weekly all absences from his classes to the student's dean. This is to be done whether or not the student has the optional attendance privilege.

### EXCUSING ABSENCES

Absences may be excused only by the student's dean. A student who misses classes while under the care of Student Health will be issued an excuse from those classes by his dean on recommendation by the Director of Student Health. It is desirable, where possible, that excuses be obtained in advance of the absence. The student's dean will notify the instructor of excused absences. The student is permitted to make up work missed during excused absences.

### ABSENCES FOR ACTIVITIES PARTICIPATION

Each student who will be absent to participate in out-of-town or other scheduled activity must submit to his coach or sponsor of the event a completed form for each of his classes (Excuse Absence Notification to Instructors, obtained at the College Post Office). The coach or sponsor will compile a list of students authorized to make the trip on a separate sheet (Absence Notification to Deans) and present a copy of it and the Absence Notification to Instructors to the respective offices of the academic deans concerned at least twenty-four hours in advance of departure.

### ABSENCE THE DAY BEFORE OR THE DAY AFTER A HOLIDAY

A dean's excuse will be granted only in case of emergency. Instructors will not grant excuses.

### EXCESSIVE ABSENCES

A student may be withdrawn from a course by his dean for excessive absences. After due warning to both student and parents, the dean may report persistent absences to the President with recommendation for suspension from the College.

### OPTIONAL ATTENDANCE

Seniors have optional attendance. Juniors with a 2.0 grade point average the precedent semester have optional attendance. Summer School does not enter into the calculation. Instructors are not required to allow students to make up class work missed as a result of the exercise of this privilege. Abuse of the optional attendance privilege may result in loss of the privilege upon the recommendation of the instructor and at the discretion of the student's dean.

### Examinations

Final examinations are given to all students who are not candidates for degrees, only during a scheduled examination period at the end of each regular semester when no regular classes meet. There is no specially scheduled period for final examinations in the summer session. Candidates for degrees may or may not be required to take examinations at the option of the instructor. If required, the examinations must be given early and not during regular class periods. Candidates for degrees will attend regular class sessions up to the beginning of the scheduled final examination period for other students. Each instructor shall determine the manner in which his students who are candidates for degrees shall complete their work in his course in accordance with policies of the department.

A student whose semester grade in any subject is A may be excused from the final examination in that subject.

Examinations to remove conditions are held on the fourth Saturday of each semester. A student with a mark of Cn may take such an examination if he makes arrangements with his instructor or department head not later than the previous Tuesday.

Permission for special examination in subjects not taken in class, or for advanced credit, or to make up failures, must be obtained, on recommendation of the head of the department in which the course is given, from the dean of the school in which the student is assigned. Such permission

is granted only if the student has prepared for the examination under an approved tutor. The examination must be taken under the immediate supervision of the head of the department in which the course is given. A special examination may be given *only* to an *enrolled* student. The charge for such examination is \$2 a credit hour.

### Honors

Honors are computed on all work completed in residence. To be considered for "sophomore honors," one must be in the upper five per cent of his class, have completed a minimum of 45 hours in residence, and be eligible to enter the junior class or the School of Veterinary Medicine. Students in the School of Veterinary Medicine are not eligible.

Graduating seniors who rank in the top 10 per cent of their class and who have completed a minimum of 60 semester hours of work in residence are considered for "senior honors." The Honors Committee may select a maximum of three per cent of the top ranking seniors to receive diplomas inscribed "With High Honors." The remaining honor students receive diplomas inscribed "With Honors."

### Credits for Extracurricular Work

Students may earn credit toward graduation by satisfactory participation in certain extracurricular activities. These activities, and the maximum of semester hours of credit allowed, are as follows:

<i>Subject</i>	<i>Semester</i>	<i>Total</i>
Orchestra .....	1	4
Band .....	1	4
A Cappella Choir .....	1	4
Men's Glee Club .....	1	4
Women's Glee Club .....	1	4
Debate .....	2	4
Oratorical Contest .....	2	4
<i>Kansas State Collegian</i> journalism .....	1	4
<i>Agricultural Student</i> journalism .....	1	4
<i>Kansas State Engineer</i> journalism .....	1	4
<i>K Book</i> journalism (if not paid) .....	2	2
<i>Royal Purple</i> journalism .....	1	4

Credits may be counted as electives in the student's curriculum. A student may have not more than eight semester hours in these subjects, and not more than two in a semester.

A student is regularly assigned to these activities, but only on the written recommendations of the instructor in charge of the work. A student enrolling in one or more of these activities must be enrolled for credit even though the credits exceed the maximum usable for graduation.

### Religion

Study in religion is an elective for which no more than four semester hours of credit may be approved toward requirements for a degree. If work is completed while in residence at this College, instructors must have College approval. The Department of History, Government, and Philosophy supervises the work and certifies the credit.

### Classes

By order of the Board of Regents classes for freshmen are limited to a minimum of 15. Classes for other than freshmen are limited to a minimum of 10, except that certain advanced technical and laboratory classes may have a minimum of 7.

### Assemblies

About eight times a semester, as announced, regular classes of the morning will be shortened to permit insertion of an hour at 9:30 for an all-College assembly. In these College-wide programs of general education, nationally famous speakers will address the students and faculty on problems of critical importance. At other times the program will be musical or literary in nature. When suitable for broadcasting, the assemblies are carried direct over the 5,000 watt College owned and operated radio station KSAC.



### Course Numbers

The numbering of courses at Kansas State College is as follows:

1. Courses which do not carry college credit carry numbers between 0 and 99.
2. Courses for undergraduate credit only carry numbers from 100 to 399.
3. Courses for graduate and undergraduate credit carry numbers from 400 to 799.
4. Courses for graduate credit only carry numbers from 800 to 999.

### The College Library

The general College Library consists of all books belonging to the College, including the library of the Agricultural Experiment Station, which is incorporated with it. The Library contains 189,581 bound volumes, besides much unbound material. It receives currently about 5,203 serial publications. As a depository the Library receives the documents and other publications of the United States government, as well as publications of all state experiment stations, extension services, and state departments of agriculture.

*Reading Rooms.* Three reading rooms are maintained in connection with the Library: The general reference room, containing encyclopedias, dictionaries, atlases, bibliographies, and general reference books; the special reference room, containing books reserved for classes; and the periodical room, containing current magazines and important daily and weekly Kansas newspapers.

### College Publications

*The Kansas State Collegian*, a newspaper published five days a week during the College year, and *The Royal Purple*, a student yearbook, are published by Student Publications, Inc.

*The Kansas Agricultural Student* is issued quarterly by the Agricultural Association of the School of Agriculture. *The Kansas State Engineer* is published by students in the School of Engineering and Architecture.

### College Postal Center

The College operates a postal center, which is not a part of the United States postal service, but at which students and faculty may deliver and receive their mail. Mail arrives from and is delivered to the Manhattan city post office twice a day. The College postal center sells stamps, but not money orders, and insures and registers mail. It also facilitates intercommunication of College departments and communications of faculty with students. Federal postal regulations prevent the handling of personal mail or mail which is not officially College mail through the College postal center without postage. Students are urged to rent boxes for 50 cents a semester.

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## Student Personnel Services

Kansas State College has developed a program of student personnel services in the belief that true education involves experiences that supplement his classroom training. This philosophy considers the importance of providing students with a variety of opportunities and services aimed at developing well-rounded individuals—his intellectual development; his vocational interests, aptitudes, and skills; his emotional balance; his social relationships; his moral and religious values; his physical health; his aesthetic appreciations.

### Office of the Dean of Students

The Dean of Students has the general responsibility for administration and coordination of the various divisions of the student personnel program in the carrying out of their responsibilities for the many phases of student life outside the classroom. He is responsible for maintaining a close relationship with the academic and administrative staffs in helping to interpret student needs. The following student services are designed to meet these needs.

### Office of the Dean of Women

The Dean of Women is responsible for the welfare of the women students on the campus. She also has the responsibility for the women's residence-living program. This responsibility consists of developing the social, educational, and vocational phases of resident living in coordination with other student personnel services and the academic departments. The residence hall counseling program is designed to assist each student in developing academic proficiency and the social education program provides students with valuable experience in group living and democratic self-government. This office is also responsible for extending counseling services to students living in sororities and off campus. Living standards for off-campus students and approval of off-campus housing for women also fall within the province of this office. This office is available to assist staff and students of any group in problems of program and administration.

Part-time employment for women students is handled by the Dean of Women in cooperation with the Placement Bureau.

### Office of Director of Housing

#### HOUSING

Rooming establishments accommodating male College students are regularly visited, and the establishments approved are issued certificates of approval by the Director of Housing.

#### FOR WOMEN

The Dean of Women has responsibility for the housing of women students. All unmarried undergraduate women students at Kansas State College are required to live in houses approved by the College.

Since the fall semester of 1951, all freshman girls live in College operated Residence Halls for the entire year unless excused by the College Administration. The basis for excuse is (a) to live at home with parents, (b) to live with close relatives in Manhattan, (c) to commute from nearby communities (It is understood that if the weather or other circumstances at any time during the freshman year make it necessary or desirable for a girl to live in Manhattan, she will move into a Residence Hall, unless again given permission to live outside.), (d) marriage, (e) financial need. If a student needs to be excused from living in a Residence Hall for any of these reasons, she should present a formal request in writing with a statement signed by her parents that it is necessary for her to do this.

Upperclass women and transfer students who have had two semesters in an accredited college may live in College Residence Halls, off-campus houses approved by the College, or sorority houses.

Kansas State College has four College operated Residence Halls with accommodations for approximately 650 women students. They are Northwest Hall, capacity 210; Southeast Hall, capacity 210; Van Zile Hall, capacity 150; and Waltheim Hall, capacity 78. Two halls are used for freshmen and two for upperclass women.

Contracts signed by both student and parent or guardian are required. The contract in all Residence Halls is for both room and board and is for a college year of nine months. The College reserves the right to change room and board rates as food costs and operating expenses change. At the present time, the rates for room and board in all Residence Halls are \$275 per semester if paid in advance at the beginning of the semester or \$280 if paid in three installments at stated intervals: \$120 at the beginning of the semester, \$80 at the beginning of the second six-week period, and \$80 at the beginning of the third six-week period. A notice is sent to the resident by the Housing Office at the beginning of each period, and payments are made at the Cashier's Office. Those wishing to pay for a full semester may do so.

Anyone wishing to make application for a room in one of the Residence Halls for women or in an off-campus house should write to the Office of Dean of Women, Kansas State College, where a list of all current vacancies is maintained.



### FOR MEN AND FAMILIES

All unmarried undergraduate men students at Kansas State College are required to live in houses approved by the College.

The College provides accommodations in East Stadium Hall and West Stadium Hall for 175 men. The rent is \$64 a semester. It may be paid in advance or in three installments. The first installment is \$32, the second and third installments, \$16 each, subject to no refunds. All rates are subject to change. Contracts for rooms are made for one school year.

Several organized houses are privately operated off-campus for unmarried men students. Other unmarried men live in private homes which have been approved by the College. All off-campus rooms are contracted for one semester. Rent for off-campus accommodations ranges from approximately \$10 to \$25 a month.

For married students, the College operates 288 (one bedroom, two bedroom) apartments and 31 spaces to park privately owned trailers. A new trailer parking lot for 52 modern trailers is available on the Lind tract west of the campus. Two bedroom apartments rent for \$28 a month; one bedroom apartments rent for \$24 a month; trailer space rents for \$12 a month and \$20 a month. All rates are subject to change.

Apartments in private homes or apartments off-campus provide additional housing for married students. Rent for off-campus apartments ranges from approximately \$45 to \$75 a month, depending on the size of the apartment and the location in Manhattan.

Lists of available rooms for single men and apartments for married students are kept up to date and may be used by those who wish to call at the Housing Office, Room 121, Anderson Hall.

Inquiries should be addressed to the Director of Housing.

### Meals

A College cafeteria is operated for the convenience of students, faculty, and campus visitors. A selection of moderately priced food is available during the school year.

### K-State Union

The new K-State Union is the "campus community center." Here are found extensive facilities for the social, recreational, and cultural life of the campus. The three and a half story structure includes a Cafeteria, a Snack Bar, a beautiful ballroom, twenty-five meeting areas, banquet and party rooms, games facilities (bowling, billiards, table tennis, etc.), a little theater, and the Student Activities Center. In addition there are three lounges, a browsing library, two music listening rooms, and a craft shop.

The 150 student organizations will find comfortable headquarters and qualified staff assistance for carrying on their activities; everything from typing minutes to planning a school carnival.

The Union Governing Board is responsible for the Union policies and program. There are over 100 students working on the eight committees which provide an extensive program of interesting activities. These activities are coordinated by the Program Council. The Union Committees are: Dance, Promotion, Movies, Games, Photography and Crafts, Hospitality, Music Library and Art and Special Events. All students are invited to apply for membership on one of these committees.

### Student Counseling Center

The Counseling Center is a student service agency designed to help students to help themselves in living and learning more effectively. A staff of counselors with specialized psychological training is available to talk over with students their plans for the future, ability to study effectively, appropriateness of vocational goals and degree of satisfaction with their personal lives. Many times students will be aided in solving their problems by taking tests which enable them to obtain objective comparisons of their college skills, aptitudes, vocational interests and personality characteristics with those of other students. Students who have not acquired efficient reading and study habits may be helped through their voluntary participation in special groups organized for this purpose. The Counseling

Center maintains a library of occupational information for students who wish to explore a number of alternate vocational opportunities.

### **Placement Bureau**

The Placement Bureau assists Kansas State College prospective freshmen, undergraduates, graduating seniors, graduate students, and alumni with employment. The bureau functions in the areas of business and industrial placement, teacher placement, alumni placement, and summer and part-time employment. All students are invited to register with this office and make use of these available placement services.

The service is designed to coordinate placement work of all the schools and departments of the College and brings together students, faculty members and representatives of organizations seeking college educated personnel for permanent jobs. Employment trends and opportunities in business and industry and in the field of education are recorded, and several hundred employers are contacted both on and off the campus. In the field of education, current information is filed on positions open and the qualifications required in elementary, secondary and college level work, including administration. Assistance is given students in finding part-time employment in the Manhattan community and on the campus. Information and opportunities for summer employment in camps, resorts, public agencies, agriculture and industry are made available. Extensive information on the world of work is available, and qualified counselors help students with employment problems. This service is designed to help students and alumni do a better job of meeting and communicating with employers.

### **Responsible Citizenship**

Students coming to K.S.C. have an opportunity to participate in student government, hall government, independent student association, the student planning conferences, and many other groups. Through these organizations the student has a share in formulating many of the policies under which he lives and as a result learns to live in a democratic manner, accepting responsibility and participating in the affairs of the college community. Developing responsible citizenship is one of the primary purposes of Kansas State College.

### **Conduct**

Students are expected to conduct themselves in a way becoming to any good citizen. Students who violate standards of good citizenship are subject to disciplinary action. A more detailed statement about college rules and regulations, including standards of behavior, is printed in the back of the student directory which is published each fall and given to all students.

### **Student Health**

The Student Health Service is supported by the student health fees. Full-time physicians are always on duty with an adequate medical supporting staff to care for the College students. The College Hospital has a capacity of 57 beds.

The Student Health Service is located directly west of the Library in the center of the campus. The clinic is open to students each day from 8:00 a.m. until 11:50 a.m. and from 1:00 p.m. until 5:00 p.m. with the exception of Saturday, when the clinic closes at 11:50 a.m. The emergency room is open 24 hours each day to receive any student needing attention for sudden illness or injury. Students who become ill at home may be taken directly to the emergency room at any hour.

Those who are able to walk should go to the clinic unless there is a possibility that they have a contagious disease, in which event they should present themselves to the hospital at once. The physicians of the Student Health Service make no private calls to students' rooms.

Any student may be admitted to the College Hospital by a staff physician. Two days of hospitalization are provided for each student without



charge in each regular semester, and one day per summer session. In the event that the period of hospitalization exceeds two days, \$3 a day extra will be charged, this rate to be in effect for only twenty-one days of hospitalization. All days in excess of twenty-one will then be charged for at current Blue Cross rates. The student-health fee fund is supplemented by small charges, made while the student is under care, for special expensive medicines and laboratory procedures. These charges are, for the most part, the actual cost price of the extra service rendered and are consistently far lower than prevailing commercial rates. Many laboratory procedures are provided free of charge.

The College Hospital may be closed during the summer session, but provision will be made for the clinic to be open at the regular clinic hours and for a physician to be on call at all times other than regular clinic hours. Cases needing hospitalization will be cared for at the city hospitals under the same provision as at the College Hospital. For the summer session only one free day will be permitted, with a limit of ten days assistance while hospitalized.

In the event of the necessity of major surgery, the patient will elect his own surgeons and be transported at his own expense to one of the Manhattan hospitals. After surgery and whenever advisable, the student may be returned to the College Hospital for convalescence. The days of free hospitalization are not applicable to the Manhattan hospitals except during the summer term when the College Hospital is closed. Any services rendered by other physicians and any medicines given while there will be at the student's own expense. Naturally, Blue Cross or other commercial health and accident insurance carried by the student will be expected to pay for a student's hospitalization, either here or at any Manhattan hospital.

The Health Service gives a physical examination to all students entering the College for the first time. Periodic physical examinations, although optional, are recommended by the Service. Seniors especially are advised to have at least a chest X-ray several months prior to graduation. Physical examinations such as for life insurance, C.A.A., and civil service, or any other which the student may need, will be given without extra charge to the student if time permits and it does not interfere with care of ill or injured students. It is the policy of the Student Health Service to extend unlimited diagnostic and therapeutic facilities to all students regardless of the time or onset of illness.

### Foreign Students

The Assistant Dean of Students serves as foreign student adviser and is responsible for the reception, orientation, and personal counseling of foreign students. His office helps to promote contacts between foreign students and American student groups, faculty and community. Contacts are maintained with national and governmental agencies having to do with the exchange of students between countries. He is also concerned with providing information to American students about opportunities for studying abroad and with helping them to make the necessary arrangements.

### Religious Life at the College

Opportunities for worship in Manhattan are ample: Seventh Day Adventist, College Baptist, First Baptist, Pilgrim Baptist, Seven Dolors Catholic Church, Church of Christ, Christian, Christian Science, Congregational, St. Paul's Episcopal, Assembly of God, Church of God, Church of God in Christ, Hillel services, Jehovah's Witnesses, First Lutheran, St. Luke's Lutheran (Missouri Synod), Bethel African Methodist, First Methodist, Shepherd's Chapel Methodist, Wesleyan Methodist, Church of Nazarene, First Presbyterian, and United Presbyterian. Many of these groups have active student programs which are described on page 31. There is a Y.M.C.A. and a Y.W.C.A. each with a full-time director and offices on the campus. Their program is described in the section on student organizations. The small Danforth Chapel on the campus is for the use of individuals and all groups who wish to worship there.

### **Registration of Motor Vehicles**

All students, faculty and staff of the College are required to register their motor vehicles to be eligible for campus driving and parking.

Students will register their vehicles during College Registration and at that time will be given identification stickers for the vehicles. The faculty and staff will register their vehicles at the Cashier's Office and will receive an identification sticker for a nominal sum. An identification sticker entitles the owner to operate and park a motor vehicle in accordance with the Regulations for Motor Vehicle Parking and Operation on the Campus. A copy of the regulations will be available at the time of registering the vehicle or at the Dean of Students Office.

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## **College Organizations**

### **The Student Governing Association**

Every undergraduate student who has paid the activity fee is a member of the Student Governing Association, which is charged with the responsibility of student government.

The Student Council comprises the legislative branch of the association and is composed of a student representative for each 300 students in each academic school. In addition to the All-College Student Council, each academic school has its own school council. The executive branch of student government consists of the student body president, elected directly by all the students; the vice-president, who is chosen by and who serves as Chairman of the Student Council; and various administrative officers appointed by the President. The President is responsible for the execution of legislation passed by the Council. He has veto power but may be overruled by a two-thirds vote of the Council.

The judicial branch of student government is the Tribunal. This body consists of six student justices and three faculty justices. The chancellor of the Tribunal is appointed by the president from among the student justices. The Tribunal is concerned with student discipline cases, including traffic violations.

Student government representatives, both elective and appointive, are responsible to the student body and to the President of the College. The Student Governing Association, through its representatives, coordinates the activities of other student organizations and cooperates with other organizations in the promotion of interest and participation in student activities. It participates in the administration of funds from student activity fees.

The Student Governing Association acts in the belief that student government contributes to a keener sense of cooperation and responsibility among students as members of the college community.

### **Religious Organizations**

#### **THE YOUNG MEN'S CHRISTIAN ASSOCIATION**

All men students are welcome as members of the College Y.M.C.A. The work of the organization is carried on by a student cabinet composed of the officers and the chairmen of the standing committees. The Y.M.C.A. program seeks to show, through worship, study and action and through an inclusive non-sectarian fellowship, the place and need for religion in all areas of life. The Y.M.C.A. Secretary welcomes inquiries from all students as to the nature and purpose of the Y.M.C.A. student government.

#### **THE YOUNG WOMEN'S CHRISTIAN ASSOCIATION**

All women students are invited to become members of the College Y.W.C.A., which offers an excellent opportunity for leadership, fun, and fellowship through its active participation in campus and community affairs. The Y.W.C.A. program, based on faith in action, includes study groups, service projects, worship services, social affairs, and joint activi-



ties with the Y.M.C.A. This program is a flexible one, developed from the needs and interests of the members and carried out by a student cabinet and committees. A full-time director and an advisory board, composed of faculty and town women, give support and guidance to the work of the Association. The Y.W.C.A. Director is glad to correspond with prospective students.

#### THE NEWMAN CLUB

The national organization of Newman Clubs for secular colleges and universities is represented by a local unit of the Catholic students in Kansas State College. The Newman Club is an organization of Catholic culture and Catholic fellowship which fosters the spiritual, intellectual, and social interests of the Catholic students of Kansas State College, under the direction of the Newman Club Chaplain. There are regular monthly educational meetings, including a communion breakfast and a social program.

#### THE HILLEL COUNSELORSHIP

The B'nai B'rith Foundation sponsors a counselorship for Jewish students. One of the faculty members serves as part-time director of the program. In addition to sponsoring religious services, the Hillel program includes group discussions of broad social and cultural interests, as well as social and recreational events.

#### PROTESTANT GROUPS

The following student groups meet either at student centers located adjacent to the campus, or in the local churches which sponsor them. Many of them have full-time directors. Activities of these student religious groups include worship services, study groups, social and recreational programs which seek to encourage the Christian growth of students.

Canterbury Association is a fellowship of Episcopalian students, the activities of which center in St. Paul's Episcopal church in Manhattan.

Christian Science Organization meets weekly with a program for students of that faith.

Church of Jesus Christ of Latter Day Saints has a student organization on campus which meets weekly.

Disciple Student Foundation of the Christian Church has a student center and sponsors Kappa Beta sorority girls.

Kansas State Christian Fellowship, associated with the Inter-varsity Christian Fellowship, is open to students of any denomination.

Gamma Delta is an organization for Lutheran students sponsored by Lutherans of the Synodical Conference.

Lutheran Student Association is an organization for Lutheran students sponsored by the First Lutheran Church (United).

United Presbyterian Youth Fellowship is for students of the United Presbyterian Church.

College Baptist Student Fellowship is the student group of the College Baptist Church.

Roger Williams Fellowship is an affiliate of the American Baptist Convention, and also sponsors Theta Epsilon, a service sorority for Baptist girls.

Wesley Foundation student center is sponsored by the Methodist Church. In addition, the group sponsors Kappa Phi and Sigma Theta Epsilon.

Westminster Foundation is the student program for Presbyterian students. Phi Alpha, a service organization for men, is sponsored by this group.

United Student Fellowship is sponsored primarily for those students of the Congregational and Evangelical and Reformed denominations. Sigma Eta Chi is offered for college women.

#### RELIGIOUS COORDINATING COUNCIL

The Religious Coordinating Council of Kansas State College, a committee of the Student Governing Association, is composed of representatives of the College Y. M. C. A., Y. W. C. A., and all church student groups that wish to cooperate. Each year the Council sponsors the Religious

Emphasis Week, when outstanding religious leaders are brought to the campus. This council is responsible for initiating, directing, coordinating and evaluating all campus-wide religious programs.

All-College Honor Societies

*Phi Kappa Phi.* A national fraternity. Membership is open to honor students in all departments, on the basis of scholarship. The Kansas State chapter was installed in 1915.

*Sigma Xi.* A national fraternity. Members of the faculty and graduate students are eligible for election to active membership on the basis of achievement in original scientific investigation; seniors who have shown excellence in two departments of science are eligible for election to associate membership. The Kansas State chapter was installed in 1928.

All-College Organizations

Alpha Phi Omega .....	Scouting Fraternity
Arab Student Club .....	
Chaparajos Club .....	Rodeo and Riding Club
Collegiate 4-H Club .....	
Dames Club .....	Student Wives and Married Women Students
Hui O Hawaii .....	Hawaiian Students
Kansas State Amateur Radio Club .....	
Kansas State Circle Burners Model Club .....	Model Airplanes
Kansas State Collegiate Republicans .....	
Kansas State Conservation Club .....	
Kansas State Masonic Club .....	
Kansas State Players .....	Drama
Phi Sigma Chi (Purple Pepsters) .....	Women's Pep Club
Pi Epsilon Pi (Wampus Cats) .....	Men's Pep Club
Promenaders .....	Square Dance Club
Whi-Purs .....	Freshman Women Pep Club
Wildcat Fencing Club .....	
Women's Athletic Association .....	
Young Democrats of Kansas State College .....	

Departmental Organizations

Agricultural Association .....	
Agricultural Economics Club .....	
Alpha Alpha Gamma .....	Women in Architecture and Allied Arts
American Guild of Organists .....	
Arnold Air Society .....	
Block and Bridle Club .....	Animal Husbandry Students
Business Students' Association .....	
Chancery Club .....	Prelaw Students
Dairy Club .....	
Engineering Association .....	
Entomological Club .....	
Extension Club .....	
Frog Club .....	Swimming
Future Teachers of America .....	
Kansas State College Chapter of Student Affiliates of the American Chemical Society .....	
Kansas State College Entomological Club .....	
Kansas State College Student Branch of the Insti- tute of the Aeronautical Sciences .....	
Kansas State College Student Chapter of American Institute of Architects .....	
Kansas State College Student Section of the Ameri- can Institute of Physics .....	
Kansas State Horticulture Club .....	
Kansas State Student Chapter of the American Veterinary Medical Association .....	
Klod and Kernel Klub .....	Agronomy
Margaret Justin Home Economics Club .....	
Mathematics Club .....	
Milling Industry Association .....	
Phems .....	Women's Physical Education
Phi Alpha Theta .....	History
Flow and Pen Club .....	Agricultural Journalists
Political Science Club .....	
Poultry Science Club .....	
Student Branch of American Institute of Chemical Engineers .....	
Student Branch of American Institute of Electrical Engineers .....	
Student Branch of American Society of Mechanical Engineers .....	



Student Branch of American Society of Agricultural Engineers .....
Student Chapter of American Society of Civil Engineers .....
Student Industrial Arts Association .....
Student Section of the American Welding Society ..
Women's Auxiliary to the Kansas State Student Chapter of American Veterinary Medical Association .....

### Honorary Organizations

Alpha Delta Theta .....	Medical Technicians
Alpha Epsilon Rho .....	Radio Guild
Alpha Kappa Psi .....	Business Administration
Blue Key .....	National Honorary Fraternity
Chimes .....	Junior Women Honorary
Club Cervantes .....	Spanish Club
Delta Sigma Rho .....	Forensic Honorary
K-Fraternity .....	Athletic Lettermen
Miniwanca Club .....	American Youth Foundation
Mortar Board .....	Senior Women Honorary
Mu Phi Epsilon .....	Music
Orchesis .....	Modern and Creative Dance
Pershing Rifles .....	Military
Phi Delta Kappa .....	Education
Phi Epsilon Kappa .....	Men's Physical Education
Phi Lambda Upsilon .....	Chemists
Pi Epsilon Delta .....	Collegiate Players
Scabbard and Blade .....	Cadet Officers ROTC
Sigma Delta Chi .....	Men's Journalism
Steel Ring .....	Engineering

### Honorary Scholastic Organizations

Alpha Mu .....	Milling
Alpha Zeta .....	Agriculture
Delta Phi Delta .....	Student Art
Eta Kappa Nu .....	Electrical Engineering
Gamma Sigma Delta .....	Seniors in Agriculture, Agricultural Engineering, and Veterinary Medicine
Omicron Nu .....	Home Economics
Phi Alpha Mu .....	Junior and Senior Women in Arts and Sciences
Pi Mu Epsilon .....	Mathematics
Pi Tau Sigma .....	Mechanical Engineering
Sigma Gamma Epsilon .....	Geology
Sigma Tau .....	Engineering
Tau Sigma Delta .....	Architecture
Theta Sigma Phi .....	Women Journalists

### RELIGIOUS COORDINATING COUNCIL

There are twenty-two Greek letter fraternities for men at Kansas State College and nine national sororities for women. Sororities and fraternities offer excellent living accommodations and a social program to their members. Membership in all of these organizations is by invitation.

Booklets describing social sororities and fraternities and setting forth the provisions regulating the selection of new members are sent to all prospective students by the Interfraternity Council and the Panhellenic Council. Additional information about sororities may be obtained from the Faculty Adviser of Sororities and about fraternities from the Faculty Adviser of Fraternities.

### SORORITIES

Alpha Chi Omega, Alpha Delta Pi, Alpha Xi Delta, Chi Omega, Clovia, Delta Delta Delta, Kappa Delta, Kappa Kappa Gamma, Pi Beta Phi.

### FRATERNITIES

Acacia, Alpha Gamma Rho, Alpha Kappa Lambda, Alpha Tau Omega, Beta Sigma Psi, Beta Theta Pi, Delta Sigma Phi, Delta Tau Delta, Farm House, Kappa Alpha Psi, Kappa Sigma, Lambda Chi Alpha, Phi Delta Theta, Phi Kappa, Phi Kappa Tau, Pi Kappa Alpha, Sigma Alpha Epsilon, Sigma Chi, Sigma Nu, Sigma Phi Epsilon, Tau Kappa Epsilon, Theta Xi.



### **Independent Student Association**

The Independent Student Association is a social and service organization open to all students not actively affiliated with a social fraternity or sorority. The executive council of I.S.A. is composed of the elective officers, standing committee chairmen, and representatives of the dormitories and independent organized houses.

### **The Graduate Students Association**

All students enrolled in the Graduate School are members of the Graduate Students Association. Objectives of the organization are to promote acquaintance and fellowship among those enrolled in graduate work, to have representatives elected and authorized to speak and act for graduate students and to carry out the requirements of the Student Governing Association constitution. Graduate students are represented by a member of the all-College Student Council.

### **Agricultural Societies**

The Agricultural Association meets regularly once a month. All students enrolled in the School of Agriculture are members. The objectives of the association are to encourage and support agricultural activities, to correlate the work of various clubs and other organizations of students within the School; and, in general, to have leaders elected and authorized to speak for the student body of the school at all times.

Departmental clubs of the School are the Agricultural Economics Club, Agricultural Education Club, Block and Bridle Club (animal husbandry), Dairy Club, Horticultural Club, Klod and Kernel Klub (agronomy), Milling Industry Association, Plow and Pen Club (agricultural journalism), and the Poultry Club. Membership in these clubs is open to students and faculty of the School who are especially interested in the fields represented by the respective clubs.

The Popenoe Entomological Club meets twice a month. The object of the club is to promote interest in entomological work at the College. Membership is open to students and faculty members interested in insects. Entomological topics are discussed by members of the Club and outside speakers.

The object of the clubs is to expand the interest and familiarity of the students in the fields and industries most closely related to the department in which they are majoring. Meetings and social affairs further the acquaintance of faculty and students. Student officers preside at the meetings and plan the programs, many of which are presented by students, though frequently faculty members or other speakers participate. Usually a student belongs to the club representing the department in which he is majoring, while many belong to more than one.

### **Engineering Societies**

All students enrolled in the School of Engineering and Architecture are members of the Engineering Association. The students in agricultural, chemical, civil, electrical, industrial, and mechanical engineering are organized as student branches of the American Society of Agricultural Engineers, American Institute of Chemical Engineers, the American Society of Civil Engineers, the American Institute of Electrical Engineers or the Institution of Radio Engineers, Society for Advancement of Management, and the American Society of Mechanical Engineers, respectively. Students in architecture and architectural engineering are organized as a student branch of the American Institute of Architects.

The purpose of these various societies is to acquaint the students with the latest developments in engineering and architecture, to give them more definite ideas as to the opportunities and the requirements for success in their professions, to promote acquaintance and fellowship among the students, and to further the interests of the School of Engineering and Architecture in the College and in the state.

### **Societies in the School of Arts and Sciences**

The Kansas State College section of the American Chemical Society arranges during the school year for monthly meetings which are usually addressed by visiting chemists.

The Kansas State College chapter of the Student Affiliates of the American Chemical Society affords an opportunity for undergraduate students to actively participate in various projects in the field of Chemistry and to consider problems of general professional interest. Regular monthly meetings are held during the school year.

The Business Students Association gives the students in business administration an opportunity to get first-hand information on the problems and the opportunities in the business world by providing for speeches by specialists in business subjects and representative businessmen.

The Chancery Club holds regular meetings which frequently are addressed by men of the law profession. Prelaw students who are interested in learning about the opportunities and responsibilities in the field of law are eligible for membership.

The English Club meets monthly to listen to talks of interest to students preparing to teach English.

The Geology Club builds up a professional spirit among the students majoring in Geology.

The Medical Technicians Club meets twice a month and is frequently addressed by men of the medical profession and practicing medical technicians. The club members learn about the opportunities and responsibilities in this field.

The Mathematics Club meets monthly to listen to talks of mathematical interest.

All students who are interested in the field of physics are eligible for membership in the Kansas State College Student section of the American Institute of Physics. This organization meets monthly to discuss recent trends, new areas of research, and other topics of general interest to physicists.

### **Cosmopolitan Club**

There is in the College a chapter of the Association of Cosmopolitan Clubs in Universities and Colleges of America. The active membership consists of foreign and American students, both men and women. The objective of the club is to promote international understanding through friendship among students of various nationalities.

### **Home Economics Club**

Membership in the Margaret Justin Home Economics Club is open to all students in the School of Home Economics. Its purpose is to promote professional interest by means of contacts and activities of many types. The Club is affiliated with the American Home Economics Association and leads to continued membership in that organization after graduation.

### **Veterinary Medical Association**

The Junior Chapter of the American Veterinary Medical Association is a student organization in affiliation with the American Veterinary Medical Association. The object of the chapter is to promote interest and knowledge in veterinary science. The organization meets on the first and third Tuesdays of each month; students present papers, and members of the faculty and outside speakers also appear on the program.

### **Collegiate 4-H Club**

Former 4-H Club members now in College make up the membership of the Collegiate 4-H Club, one of the largest service and social organizations at Kansas State College. The group participates actively in worthwhile College activities; sponsors a radio program; publishes the *Who's Whoot*, Kansas 4-H Club annual; maintains a loan fund; assists at Round-up and Rural Life Conference; and has contributed to the building of the State 4-H Club Camp and the Student Union.



Normal membership of more than 500 former 4-H boys and girls enables the Collegiate 4-H Club to maintain a strong and effective service program, train and develop leadership and promote the good of the 4-H boys and girls and the entire Extension program. The value of this group is not confined to the Kansas State College campus; the contacts of this active group have caused many more former club members to seek a college education.

### **Extension Club**

Membership in the Extension Club is primarily for those who wish to become county agents, home demonstration agents, or club agents. Any boy or girl interested in extension may join. The club is not restricted to students enrolled in any particular curriculum.

The objectives of the club are to become better acquainted with Kansas State's Extension Division personnel, to learn extension methods and policies, and to become better acquainted with the club's members.

In addition to learning more about extension programs, the club helps promote the extension work through its own radio program.

### **The College Bands**

The three College bands, the Concert Band, the Varsity Band, and the Football Band, are student organizations, membership in which is voluntary. The Football Band includes all qualified players from both Concert and Varsity bands. The Concert and Varsity bands do not function until the end of the football season, when the Football Band is divided into two units. The Football Band plays for all home games and rallies, and takes one trip each year for an important conference game. The Concert Band plays frequent public concerts and provides music for other formal campus ceremonies. The Varsity Band plays for home basketball games and rallies.

Membership in the bands is determined by competitive tryout. Students may enroll in the Football Band, Varsity Band, or Concert Band for one semester hour of credit.

### **The College Orchestra**

The Orchestra is an all-College organization under the direction of a member of the music department. Membership is on a voluntary basis and is open to all musically qualified students, college staff, and others interested. The Orchestra library is adequately stocked with standard symphonic works and lighter classics, and each season's repertoire is selected to fit the capabilities of the ensemble.

The Orchestra plays one or more formal concerts each season, appears informally both on and off the campus, and accompanies the vocal ensembles in the presentation of traditional Christmas and Easter music.

### **The College Choral Organizations**

The A Cappella Choir is an all-College organization. Membership is voluntary and is open to graduate and undergraduate students. The choir meets three times a week. The best in the unaccompanied choral literature, both sacred and secular music, is sung by the choir. Several performances a year including special Christmas and Easter Vespers are given by this organization. Off-campus concerts are also planned. Credit of one hour a semester is given to students.

It is advised that students who have not had considerable training in high school choral groups enroll in the College Mixed Chorus. This is an all-College organization conducted by a member of the music staff. Membership is voluntary. This group meets twice a week. Credit of one hour a semester is given to students. In addition to performing at college functions throughout the year this organization presents a concert once a year. At various times during the college year the chorus and the A Cappella Choir are joined to present one extended choral work with orchestral accompaniment.

The Men's and Women's Glee Clubs are all-College organizations conducted by members of the music staff. Membership is voluntary. These



groups meet twice a week. Credit of one hour a semester is given to students. In addition to performing at college functions throughout the year each organization presents a combined concert once a year. At various times during the college year the glee clubs and the A Cappella Choir are joined to present one extended choral work with orchestral accompaniment.

### Kansas State Players

Membership in the Kansas State Players is open to all students, both men and women, through tryouts and participation. The object of the Players is to afford its members an opportunity to become acquainted with good drama and to take part in various activities connected with the producing of plays. Regular meetings are held the second Tuesday of each month.

The presentation of several plays a season as part of the drama program of the Department of Speech gives the members of the Players opportunity in practical training and interesting experience in the various phases of dramatic production. When a player reaches his junior year, he is eligible to try for membership in Pi Epsilon Delta, the national dramatic honorary fraternity.

### The Speech Clinic

Those students who have speech problems may receive attention and aid through the College Speech Clinic, maintained under the direction of the Department of Speech. Trained speech specialists make an examination, give a diagnosis, plan a remedial program and carry out the retraining. The clinic has the active cooperation of the student health service and the counseling service in giving fullest possible aid. Students are urged to make use of this service.

### Intercollegiate Debate

The Kansas State Debate Squad is open to all students, regardless of the particular school in which enrolled. Here the student participates in formal debate, and, when qualified, in tournament competition.

The record of the school debate teams has been bettered each year. The ability of KSC debaters is favorably known in many places in the United States in which contests are held.

Qualified upperclass debaters can become members of Delta Sigma Rho, national forensics honorary fraternity.

### Athletics

Kansas State College is a member in good standing of the Missouri Valley Intercollegiate Athletic Association—otherwise known as the Big Seven Conference. The other members are University of Colorado, Iowa State College, University of Kansas, University of Missouri, University of Nebraska and University of Oklahoma.

Kansas State participates in all intercollegiate sports on the Conference program. Varsity competition is open to all male students and supervised by a staff of coaches who are specialists.

Intercollegiate athletics are conducted at Kansas State College to provide:

- (1) A recreational and physical education program for approximately four hundred students trying out for the various teams;
- (2) Laboratory work for those specializing in physical education;
- (3) Recreation for nonparticipating students, faculty, and alumni;
- (4) A stimulus to the intramural and other physical education programs;
- (5) An educational experience which, to both participants and non-participants, is not duplicated in other lines of collegiate endeavor. Included in this experience are: (a) Sacrificing personal pleasure to the general welfare, as participants undergo the strict self-discipline and training necessary to attain the physical fitness required for success in these competitive activities. (b) Developing a spirit of self-reliance from

competition in such team sports as football, baseball and basketball, and in participation in sports such as track, tennis, wrestling and golf, in which the player must rely principally upon himself. (c) Engendering his spirit of loyalty to coaches and fellow players that is exemplified in "teamwork." (d) Developing a devotion to the College as a whole, greater than that to any group within it. (e) Providing opportunities to both participants and nonparticipants, to develop a spirit of sportsmanship. (f) Promoting in players a sense of responsibility to the entire college which is judged by their conduct on or off the athletic court or field.

The Department of Physical Education sponsors a broad program of intramural athletics, supplementing intercollegiate athletics. Fraternities and independent clubs play full schedules to decide the championship in the various sports. Appropriate medals, plaques, and sweater awards are presented individual and team winners.

Under the auspices of the Women's Athletic Association, the women students of the College take part in a full intramural athletic program, with competent instruction by the faculty of the Department of Physical Education.

### Radio and Television Workshops

The radio workshop consists of a regularly licensed FM station, KSDB-FM, operated and programmed entirely by students. Through a complete program schedule of music, news, special events, interviews, sports, drama and women's programs, the station gives practical experience in all aspects of radio broadcasting. The television workshop consists of studio, control room, projection room and classroom, tied together in closed circuit operation. It is equipped for three camera-chain and projection unit programming.

KSDB-FM and the TV workshop are open to all students enrolled at Kansas State; participation is available on either a curricular or extra-curricular basis. Qualified upperclass students can become members of Alpha Epsilon Rho, national honorary radio-television fraternity.

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## Loan Funds

The College and the Alumni Association student loan activities are coordinated in the office of the executive secretary of the Alumni Association of Kansas State College, Anderson Hall. A student wishing to apply for a loan from either of these funds should address his request to Kenney L. Ford, Executive Secretary, K.S.C. Alumni Association. Both of these funds are administered by a committee appointed by the President of the College.

The State Board of Regents has established rules governing the administration of student loan funds. These rules include the following:

1. A student loan is made only when a note is signed by the borrower and one other responsible person, preferably the borrower's parents or guardian. This endorser must be recommended by his bank as of good financial standing and otherwise satisfactory as an endorser.

2. Any student at Kansas State College is eligible to apply for a loan. His scholarship average and reputation as evidenced by letters of recommendation shall be major factors in guiding the committee's action.

The amount for which a student loan will be approved will ordinarily be not more than \$500 but special cases may be considered up to a maximum of \$1,000. Interest is charged at the rate of 3 per cent a year until the loan is due and at 6 per cent on past-due loans. Usually loans are due within two years after graduation.

The College Student Loan Fund of approximately \$132,000 consists of memorial units, bequests and other gifts. It contains an "emergency" unit maintained for short time loans in amounts of usually not more than \$50. These loans are made by the chairman of the Loan Fund Committee, M. A. Durland, Dean of the School of Engineering and Architecture, and require no endorser and no interest charges.



The Alumni Loan Fund of approximately \$177,000 has been created from payments of life memberships in the association prior to 1948, memorial units honoring individuals and organizations, and other gifts and bequests. All of these units are administered under the general rules stated above. However, the Dr. R. R. Dykstra unit available for students in the School of Veterinary Medicine does not require an endorser, and the Dr. Arthur D. Weber unit available for students in Animal Husbandry and members of Animal Husbandry Judging Teams charges no interest until the student is graduated or leaves college.

Other student loan funds are available which are not administered by the College. For women, some funds are provided by the American Association of University Women, the State Federation of Women's Clubs, the Women's Panhellenic, and P.E.O. Applicants for loans from these funds should address the organization from which they wish to borrow.

For juniors and seniors, the Knights Templar Commandery has established a loan fund. Application should be made through a commandery where the applicant is known. The Order of the Eastern Star has a fund for juniors and seniors who are members or children of members. Applications should be sent to the Grand Secretary, the Order of the Eastern Star, National Reserve Building, Topeka, Kansas.

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## Gifts, Memorials, and Bequests

The Kansas State College Endowment Association is incorporated under the laws of Kansas to accept and administer gifts and bequests to the College. Anyone wishing information about the Association may write to the Secretary of the Association, A. R. Jones, Kansas State College, who will be happy to send a booklet of information and to answer any specific questions that may be asked.

The booklet outlines some of the principal needs of the College, and explains fully how friends of the College may perpetuate their interest in Kansas State by sharing in the activities of the Association.

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## Scholarships

### AGRICULTURE

MARTIN K. EBY CONSTRUCTION COMPANY. Six awards of \$250 will be made annually to freshmen entering the School of Agriculture. The awards are based on scholastic ability, leadership and need. Applications are to be made with the Secretary of the General Scholarship Committee.

BORDEN. The Borden Agricultural Scholarship will be awarded annually by the Borden Company Foundation, Inc., under normal conditions, and the amount of each annual award will be \$300. The scholarship will be presented to the senior in the School of Agriculture who, upon entering his senior year, has achieved the highest average grade of all similarly eligible students in all preceding college work, and who has completed two or more dairy subjects as a part of his college work. The scholarship is administered by the Head of the Department of Dairy Husbandry.

CARL RAYMOND GRAY. In honor of the late president of the Union Pacific Railroad, who initiated the award in 1921, scholarships of \$100 are awarded each year by the Union Pacific Railroad Company to one student in vocational agriculture and one member of a 4-H Club in each of the thirty-six counties in Kansas served by the railroad. Awards are made by a local committee in each county, and are based on quality and quantity of project work, records kept, character, interest, and scholastic standing. The scholarship may be used to enroll for a full-year course in agriculture, home economics, preveterinary medicine, or agricultural engineering.

FEED TECHNOLOGY. These scholarships are available through contributions provided by Nutrena Mills, Inc., Superior Feed Mills, Staley Milling



Company, and the Ralston-Purina Company. Undergraduates of exceptional promise who major in the feed technology curriculum may apply. The scholarships provide a stipend of \$400 per year and may be renewed provided that the scholar maintains a satisfactory record of achievement. Applications are made through the Secretary of the General Scholarship Committee.

**FORNEY FOUNDATION.** This scholarship is available to a male freshman in either the School of Agriculture or the School of Engineering and Architecture who is selected on the basis of his special interest in the development and use of mechanical equipment on the farm as well as the creative ingenuity which he has demonstrated in the design and construction of farm machinery innovations. Emphasis is also placed on the applicant's participation in religious activities, his degree of economic need, and his record of academic achievement. The award carries a stipend of \$250 for one year, and is administered by the General Scholarship Committee.

**FRIBOURG FOUNDATION.** Two annual awards of \$500 to junior, senior, or graduate students whose study is in some field related to agriculture. The award also is based on high academic achievement; need for aid. Applications should be made through the Secretary of the General Scholarship Committee.

**FULTON BAG AND COTTON MILLS.** This scholarship is available to freshmen entering upon curriculums in the Department of Flour and Feed Milling Industries. An award of \$250 will be made to the most promising freshman entering the department. He must be a citizen of the United States. If the student continues to maintain a high scholastic rating and shows evidence of leadership ability and extracurricular interests, the scholarship will be available to him throughout his college career and he will receive awards of \$250 during each of his sophomore, junior, and senior years. A new freshman award will be made each successive fall.

**INTERNATIONAL MILLING COMPANY.** Made possible by the International Milling Company, this award of \$250 is presented each year, without application, to a deserving sophomore in the Department of Flour and Feed Milling Industries. The scholarship is available for use during the junior year and may, under certain circumstances, be renewed for the senior year. The scholarship is administered by the head of that department.

**INTERNATIONAL SOCIETY OF MILLING TECHNOLOGISTS.** Two scholarships, one of \$400 and one of \$200, have been established by the International Society of Milling Technologists and are administered by the Department of Flour and Feed Milling Industries. Freshmen may make application to the head of the department.

**KANSAS SEED DEALERS.** An annual scholarship award of \$100 is presented by the Kansas Seed Dealers Association to a student during his senior year for outstanding work in farm crops. This scholarship is administered by the Department of Agronomy, and students are selected without application.

**KROGER.** Four scholarships of \$200 each are offered annually by the Kroger Company to boys and girls who are high school graduates and who have distinguished themselves in 4-H Clubs, vocational agriculture, or home economics. Two scholarships are available to boys and two to girls who expect to earn a degree either in agriculture or in home economics at Kansas State College. Application is made through the county agent, home demonstration agent, or teacher of vocational agriculture.

**SEARS, ROEBUCK.** Scholarships of \$150 are the annual gifts of Sears, Roebuck and Company to leading high school graduates who have distinguished themselves in 4-H Clubs or vocational agriculture, and who demonstrate need for financial assistance. Winners of these scholarships must enroll in the School of Agriculture. Application is made through the County Agent, and the Dean of the School of Agriculture administers the scholarship.

**STANDARD MILLING COMPANY.** An annual scholarship award of \$300 is presented by the Standard Milling Company of Kansas City, Missouri, to a student during his senior year for outstanding work in the field of cereal crop improvement. This scholarship is administered by the Department of Agronomy, and students are selected without application.

## ARCHITECTURE

**CHARLES W. SHAVER SCHOLARSHIP FUND IN ARCHITECTURE.** This fund shall be used and expended in such manner as selected and determined by the Head of the Department of Architecture to assist one or more students enrolled in the curriculum in architecture to pursue any suitable project which will contribute towards greater proficiency and interest in the professional aspects of architecture.

## BUSINESS ADMINISTRATION

**BOEING AIRPLANE COMPANY.** Juniors and seniors in business administration may apply for this scholarship of \$400 which is awarded on the bases of an outstanding record of achievement, promise for the future, and need for financial assistance. Applications may be made through the Secretary of the General Scholarship Committee.

**FIRST NATIONAL BANK, MANHATTAN.** A number of scholarships have been made possible by the First National Bank of Manhattan. These scholarships are granted to freshman and sophomore students in business administration who evidence high academic ability and need for assistance. The number and value of these scholarships may vary somewhat, but in general about five scholarships of \$200 each will be awarded. Applications may be submitted to the Secretary of the General Scholarship Committee.

## CHEMISTRY

**H. H. KING.** Scholarships of \$250 each were established in 1951 for two senior industrial chemistry majors who show promise in their chosen profession. Dr. J. H. Young, president, H. H. Robertson Company, Pittsburgh, Pa., is personally financing these scholarships in honor of his former chemistry professor, Dr. H. H. King. The scholarships are administered by the Department of Chemistry. Applications should be submitted to the Head of the Department of Chemistry.

**RICHARD JAMES VAN WINKLE MEMORIAL.** In honor of Richard James Van Winkle, who was killed in France in 1945 while serving as a T/4 Technician with the 781st Tank Battalion of the United States Army, an indefinite number of scholarships are offered to students of superior record and promise in the chemistry curriculum. These scholarships are administered by the Head of the Department of Chemistry.

## DRAMA

**FINE ARTS.** Fine Arts Scholarships in Drama are awarded to incoming freshmen whose quality of work in drama and general scholarship is superior. Normally five scholarships of \$100 per year are awarded. Applications are made to the Director of Drama, Kansas State College.

## EDUCATION

**EDWIN LEE HOLTON.** Established in honor of Edwin Lee Holton, former Dean of the Summer School and Head of the Department of Education, this scholarship provides for an annual award of \$100 to a graduating senior who is entering a career in education. The scholarship is administered by a committee within the Department of Education and is awarded without application on the bases of academic scholarship, leadership, and promise.

## ENGINEERING

**BOEING AIRPLANE COMPANY.** A number of scholarships have been made possible by the Boeing Airplane Company through an annual gift of \$2,000, which is awarded, in various amounts, to juniors and seniors in aeronautical, mechanical, civil, and electrical engineering. Awards are based upon high academic achievement, financial need, and exemplary personal characteristics. These scholarships are administered by a committee on scholarships in the School of Engineering and Architecture.

**CARL RAYMOND GRAY.** (See *Carl Raymond Gray* under *Agriculture*.)

**COLEMAN COMPANY.** This scholarship of \$300 is presented annually to a student in the School of Engineering for use in his senior year and is awarded



on the bases of scholarship and financial need. The scholarship is administered by the committee on scholarships in the School of Engineering and Architecture on behalf of the Coleman Company.

**DOW CHEMICAL COMPANY.** A number of undergraduate scholarships for freshmen and upperclassmen majoring in chemical engineering have been established by the Dow Chemical Company. These scholarships are granted on the bases of high academic ability, interest in and promise for the profession, and need for financial assistance. Normally, about five scholarships of approximately \$300 each will be offered to incoming freshmen. Four or five scholarships of \$200 to \$250 will be reserved for upperclassmen. These scholarships are administered by the Department of Chemical Engineering, and applications should be directed to the Head of that department.

**J. B. EHRSAM & SONS MANUFACTURING COMPANY.** This scholarship of \$750 is available to a male Kansas resident enrolling as a freshman in engineering who has high scholastic standing, academic promise, and financial need. The scholarship is renewable. Applications are made through the Secretary of the General Scholarship Committee.

**FORNEY FOUNDATION.** (See *Forney Foundation* under *Agriculture*.)

**FOSTER A. HINSHAW MEMORIAL.** Undergraduate students in engineering are eligible for assistance through this scholarship which is administered by the Dean of the School of Engineering and Architecture. High scholarship and need for assistance are criteria for selection. The number and amount of awards are variable from year to year.

**GENERAL ELECTRIC PROFESSORS CONFERENCE ASSOCIATION.** This is an annual award of \$500 to a student of high scholastic achievement, character, and potential, entering his senior year in electrical, industrial, aeronautical, chemical, or mechanical engineering. The award is granted through a committee of the General Electric Professors Association in cooperation with the General Electric Company.

**KANSAS CHAPTER NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION.** Two awards are made annually to freshmen and two to sophomores enrolling in electrical engineering. Applicants must be residents of Kansas. The awards, renewable for freshmen, are based on potential for success, need, activity and interest in extracurricular affairs. Application should be made to the head of the Department of Electrical Engineering.

**MAGNOLIA PETROLEUM COMPANY.** An annual award of \$750 is given by the Magnolia Petroleum Company to a student in electrical engineering for high achievement in scholarship and leadership. Any student of electrical engineering entering his senior year is eligible for this grant, and the recipient will be selected jointly by the School of Engineering and the Magnolia Petroleum Company.

**WESTINGHOUSE ACHIEVEMENT SCHOLARSHIP IN ELECTRICAL ENGINEERING.** An annual award of \$500 is given by Westinghouse to a junior student for use in the senior year on the bases of high academic achievement and leadership. The scholarship is administered by a committee in the office of the Dean of the School of Engineering and Architecture.

#### FINE ARTS

**FINE ARTS.** Fine Arts Scholarships in Painting amounting to \$100 each are available to students in the art curriculum in the School of Arts and Sciences. These scholarships are awarded on the bases of art ability as demonstrated by work in high school and general scholastic record. Three scholarships are designated for incoming freshmen and one for an upperclassman. Scholarship payments will be made in amounts of \$50 each at the time of fall enrollment and at the spring semester enrollment. Application should be made to the Head of the Department of Art, or the head of the work in painting in the Department of Architecture and Allied Arts.

**FIRST NATIONAL BANK.** Annual awards of \$100 each to graduates of Manhattan High School and Luckey High School. Application should be made to the Fine Arts Scholarship Committee.



## HOME ECONOMICS

**BORDEN.** An award of \$300 is presented annually by the Borden Company Foundation, Inc., to the senior student who has taken advanced courses in foods and nutrition and has maintained the highest scholastic rating. Selection is made without application by the committee on scholarships, School of Home Economics, on the records of students.

**CARL RAYMOND GRAY.** (See *Carl Raymond Gray* under *Agriculture*.)

**HOME DEMONSTRATION AGENTS ASSOCIATION.** This scholarship of \$50 per semester is presented to a girl from a farm home who displays the necessary qualities of ability and need and plans to become a Home Demonstration Agent. Application may be made through the Dean of the School of Home Economics.

**KANSAS HOME DEMONSTRATION COUNCIL.** A number of scholarship awards of \$200 are granted each year by the Kansas Home Demonstration Council to junior and senior women preparing for careers as Home Demonstration Agents. Awards are made on the bases of academic scholarship, financial need, and extracurricular participation, and are administered by the scholarship committee of the School of Home Economics. Information concerning the scholarships may be obtained from the State Home Demonstration Leader, Kansas State College.

**KANSAS RESTAURANT ASSOCIATION SCHOLARSHIP.** Students above the freshman year who are enrolled in or who are enrolling in the Restaurant Management curriculum are eligible for this \$200 scholarship made possible by the Kansas Restaurant Association. Demonstrated academic ability, need for financial assistance, and continuance in the curriculum are determining factors in the award. Applications may be initiated through the Dean of the School of Home Economics or the Kansas Restaurant Association, Topeka.

**KROGER.** (See *Kroger* under *Agriculture*.) Applications for Kroger Scholarships in Home Economics are made through the Dean of the School of Home Economics.

**MARGARET BURTIS MEMORIAL.** Sponsored by Manhattan Soroptimist, one or more awards are presented annually to girls in the School of Home Economics who have been in residence for at least two semesters, have a good academic record, and are in need of financial assistance as demonstrated by the fact that they do self-help work. Ordinarily these awards are in the amount of \$100 and are administered by the scholarship committee in the School of Home Economics.

**MARGARET JUSTIN HOME ECONOMICS CLUB.** This scholarship is awarded without application to the senior girl in Home Economics who best exemplifies the qualities of scholarship, activity participation, and need for assistance. The amount of the award varies from \$50 to \$150 per year, as funds permit.

**MARTHA S. PITTMAN.** This scholarship is awarded without application by the Department of Foods and Nutrition to an upperclassman majoring in home economics who has demonstrated potentialities for success, has an outstanding record, and is in need of assistance. The amount of the award is \$200.

**SEARS, ROEBUCK.** Approximately eight scholarships of \$100 each are the annual gifts of the Sears, Roebuck Foundation to leading high school graduates who have distinguished themselves in their high school work and in community services, and whose attendance in college is dependent on such an award. Winners of these scholarships must enroll in the School of Home Economics. Application is made to the Dean, School of Home Economics, and is to be sustained by the recommendation from Home Economics teachers and Home Demonstration Agents. Application blanks may be obtained from the Dean, School of Home Economics.

**SHAWNEE COUNTY RESTAURANT MANAGEMENT.** Sponsored by the Shawnee County Restaurant Association, this renewable scholarship of \$300 per year is designated for a high school graduate who is a resident of Shawnee County, Kansas, who has a good high school record, and who selects the curriculum in restaurant management. The scholarship may be renewed for three additional years provided that a satisfactory record is maintained. Selections are

determined by a joint committee. Information concerning the scholarships may be obtained from the Dean of the School of Home Economics. Applications may be made directly to the Shawnee County Restaurant Association, Topeka.

#### MUSIC

**FINE ARTS.** Fine Arts Scholarships of \$100 each are available to students majoring in the Department of Music. The awards are made on the basis of exceptional musical ability. Auditions are held during the spring semester to select the recipients of the awards, and application should be made to the Head of the Department of Music.

**FRIENDS OF MUSIC.** Several scholarships covering lesson fees have been made possible by the Friends of Music for students majoring in a music curriculum and demonstrating scholastic and musical aptitude. Two of the awards are designated for students from Manhattan provided other qualifications are met. These awards are administered by the Head of the Department of Music.

**MUSIC DEPARTMENT.** Several scholarships are given annually to students who major in music. Awards are made on the basis of scholastic and musical aptitude. Applications should be made to the Head of the Department of Music.

**PRESSER FOUNDATION.** These are scholarships for outstanding students enrolled in a curriculum in music. They are administered by the Department of Music.

#### PREVETERINARY MEDICINE

**CARL RAYMOND GRAY.** (See *Carl Raymond Gray* under *Agriculture*.)

#### TECHNICAL JOURNALISM

**FAY N. SEATON.** A scholarship or scholarships, totaling not more than \$150 annually, are available each year to undergraduate or graduate students in the Department of Technical Journalism, from funds presented by the late Fay N. Seaton, former Manhattan publisher. Winners of these "working" scholarships must perform appropriate service for the department in return for the scholarships. Applications are accepted by the Head of the Department of Technical Journalism.

**FAY N. SEATON MEMORIAL SCHOLARSHIP.** This scholarship is available to any carrier or former carrier of the Manhattan Mercury or Mercury-Chronicle whose record shows two consecutive years of excellent work. The amount of the scholarship varies according to financial need of the individual recipient. Selection is based on academic ability and evidence of financial need. The award is renewable. Preference is given to entering students. Applications should be made through the Secretary of the General Scholarship Committee.

**KANSAS CITY PRESS CLUB.** An annual scholarship of \$200 is awarded to a journalism student. To be eligible the student must be a member of the junior class, rank in the top half of his class in scholarship, be unable to continue in College through his senior year without working to augment his income, and must show promise of a successful career in newspaper or radio journalism. Nominations for the award shall be made before April 1 each year by the Head of the Department of Technical Journalism or the chapter adviser of the undergraduate chapter of Sigma Delta Chi.

#### VETERINARY MEDICINE

**BORDEN.** A scholarship of \$300 a year is awarded by the Borden Company Foundation, Inc., to a student who has completed the third year of the four-year professional Curriculum in Veterinary Medicine with the highest grades in courses of the first, second, and third years. The award is administered by the School of Veterinary Medicine and is made without application.

**LEDERLE VETERINARY MEDICAL STUDENT SCHOLARSHIP.** Lederle Laboratories Division of the American Cyanamid Company has established a \$1,000 scholarship available to senior students involved in research and to graduate students in Veterinary Medicine. This scholarship is administered by the Scholarship Committee of the School of Veterinary Medicine and applications may be made through the Dean.



**O. M. FRANKLIN.** A scholarship of \$100 annually is awarded in the fall to a senior student in the School of Veterinary Medicine from funds presented by Dr. O. M. Franklin, former professor and biological manufacturer. The scholarship is administered by the Committee of Veterinary Scholarships, Prizes, and Awards.

#### 4-H

**CAPPER.** Two Arthur Capper scholarships of \$150 each are given annually to a boy and a girl standing high in leadership and general 4-H Club achievement in Kansas.

**FRIBOURG FOUNDATION.** (See *Agriculture*.)

**CARL RAYMOND GRAY.** (See *Carl Raymond Gray* under *Agriculture*.)

**KROGER.** (See *Kroger* under *Agriculture*.)

**SEARS, ROEBUCK.** (See *Sears, Roebuck* under *Agriculture* and *Home Economics*.)

**SPENCER CHEMICAL COMPANY.** Ten scholarships of \$200 each are awarded annually by the Spencer Chemical Company to the 4-H Club members outstanding in soil conservation work. Winners are selected on the bases of general 4-H record, plan for preventing loss of soil and soil fertility, and soil conservation practices performed.

**OTHER AWARDS.** Certain other scholarships are available to persons who have been outstanding in 4-H Club work. Recipients of these awards may attend Kansas State College or other approved institutions. Information may be obtained from the State 4-H Club Leader, Kansas State College.

#### GENERAL SCHOLARSHIPS

**ATHLETIC.** Athletic scholarships are granted primarily on the basis of athletic proficiency. High school graduates must rank in the upper two-thirds of their class, and undergraduate applicants must be eligible for athletic competition. Applicants must demonstrate commendable personal characteristics and an ability to profit from a college education. The amount of the award is variable. Information may be obtained from the coach of the sport concerned or the Director of Athletics. The General Scholarship Committee is administratively responsible for the award of these scholarships.

**BERRY.** This scholarship is in honor of Edward A. and Flora A. Berry who were pioneers in Marshall County. The annual award of \$100 is made to some boy from Marshall County and is based on economic need and on all-around human qualities, including background, character, leadership, personality, and scholarship. The scholarship is administered by the General Scholarship Committee.

**BLUE KEY.** This scholarship is made possible by the Blue Key chapter at Kansas State College. The award of \$200 is for one year only to a sophomore (for his junior year) based on high academic achievement, leadership potential and financial need. Applications should be made to the Secretary of the General Scholarship Committee.

**DELTA DELTA DELTA.** One or two scholarships per year totaling \$200 are sponsored by Delta Delta Delta sorority. Preference is given to upperclass girls who have demonstrated superior scholarship and need for financial assistance. Application for this award may be made through the Dean of Women.

**DR. J. E. MCMANIS MEMORIAL.** These scholarships were established by Dr. J. E. McManis, a former physician in the Havensville community. Normally, one new award of \$150 is granted each year to a needy and worthy student from the Havensville community. This scholarship is renewable provided that the scholar maintains a satisfactory record of achievement. Applications may be obtained from the Secretary of the General Scholarship Committee.

**FIRST NATIONAL BANK OF MANHATTAN FINE ARTS FUND.** This fund has been established for various purposes including some scholarships for majors in art, drama, and music. Further information concerning awards from this fund may be obtained from the Secretary of the General Scholarship Committee.



**FRIBOURG FOUNDATION.** (See *Agriculture*.)

**GENERAL SCHOLARSHIPS.** A number of scholarships of varying amounts are awarded to incoming freshmen and undergraduates on the bases of high academic ability and achievement and financial need without regard to major curriculum, place of residence, or similar restrictions. These scholarships are administered by the General Scholarship Committee, and further information may be obtained from the secretary of that group.

**HENRY J. PUTNAM MEMORIAL.** These scholarships have been established by Dr. L. Irene Putnam in memory of her husband, Henry J. Putnam. Putnam Scholarships are intended to stimulate the realization and fulfillment of exceptional talent and promise whenever they may be found. Awards are granted competitively on the bases of superior scholarly promise and exemplary personal characteristics. Both men and women may apply, and there are no restrictions as to major field or place of residence. The extent of financial need will determine the amount of the award. Scholarships may be renewed provided that the scholar maintains a superior record of accomplishment. Applications may be obtained from the Secretary of the General Scholarship Committee.

**LA VERNE NOYES.** About twenty scholarships annually, each covering resident fees, from funds from the estate of La Verne Noyes are awarded to deserving and necessitous students who served in the Army or Navy of the United States between April 6, 1917, and November 11, 1918, or are descended by blood from someone who so served. Enlistments must have been previous to May 11, 1918, unless active overseas, prearmistice service was rendered. The General Scholarship Committee administers these scholarships.

**MORTAR BOARD.** Sponsored by the Kansas State College chapter of Mortar Board, this scholarship is designated for a freshman girl for use in her sophomore year and is based upon outstanding scholarship and need for assistance. Application for this \$100 award may be made through the Dean of Women.

**ORDER OF EASTERN STAR.** The Grand Chapter of Kansas, Order of the Eastern Star, has made available a scholarship of \$100, to be given on merit only to a junior for use in the senior year. The winner is selected by the General Scholarship Committee and approved by the Scholarship Board of the Grand Chapter. Those eligible are Masons, members of the Order of the Eastern Star, children of Masons of Kansas, and children of members of the Order of the Eastern Star of Kansas.

**PANHELLENIC COUNCIL.** The Panhellenic Council of Kansas State College presents two scholarships in the amount of resident enrollment fees, one each for use in the freshman and sophomore years, to girls who are residents of Kansas. The awards are based upon high scholarship and financial need. These scholarships are administered by the General Scholarship Committee.

**PI BETA PHI.** A sophomore year scholarship of \$100 has been established by Pi Beta Phi sorority for a freshman girl of high scholastic achievement who is in need of assistance. Applications for the award should be made through the Dean of Women.

**STAUFFER.** Mr. and Mrs. Oscar Stauffer have made available a \$200 scholarship to be awarded each year to a Hope High School graduate who attends Kansas State College. The winner will be selected on the bases of scholarship, character and personality, need, and ability to profit from education and training at Kansas State College. Applications should be submitted to the General Scholarship Committee.

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## Prizes and Medals

### PRIZES

**Department of Mechanical Engineering.** Payment of the first year's dues, Junior Membership, in the American Society of Mechanical Engineers, for the senior mechanical engineering student of outstanding scholastic and extracurricular attainments.

**American Institute of Chemical Engineers.** A certificate of merit to the sophomore in chemical engineering ranking highest in his freshman year.

**American Society of Civil Engineers.** Payment of the initiation fee into the American Society of Civil Engineers; to the civil engineer ranking highest during his senior year.

**American Society of Mechanical Engineers.** An award for outstanding leadership in the activities of the Student Branch of the Society.

**Pi Tau Sigma.** An award to the mechanical engineering sophomore who has done the most outstanding work in his freshman year.

**American Society of Mechanical Engineers.** A member of the student branch has the privilege of competing for four awards: (1) The Charles T. Main award of \$150 and a certificate made each year for the best undergraduate student paper on a topic selected by the society; (2) an annual award of \$25 and a certificate for each of two best papers, the one by an undergraduate student, the other by a graduate student; (3) one of the five \$10 to \$50 prizes offered at the annual regional student conference; and (4) an annual award by the Kansas City section of the society.

**Omicron Nu Scholarship Award.** \$10 to the highest ranking freshman in the School of Home Economics.

**Chi Omega.** By the Kappa Alpha Chapter; \$25 to the woman ranking highest in sociology at the end of the first semester.

**Klod and Kernel Klub.** Cash prizes, trophies, merchandise, and subscriptions to farm papers; for grain judging.

**Phi Beta Kappa.** \$10 to the highest ranking eight-semester senior in the Curriculum of Arts and Sciences.

**Journalism Memorial Fund.** Each year two or more awards of \$25 each are made by the Journalism Memorial Fund Committee of the Department of Technical Journalism. These awards are made from funds contributed as memorials to graduates and former students of the Department who were casualties in World War II.

**Capper.** The leading student in technical journalism each year has his or her name engraved upon one of the several small shields surrounding a larger shield bearing the words: "Recognition for superior attainments in technical journalism. Presented by Arthur Capper to students in the Department of Technical Journalism, Kansas State College."

**Women's Auxiliary of the American Veterinary Medical Association.** An annual award of \$25 to be made to the fourth year student in veterinary medicine who has made the greatest contribution toward advancing the standing of his school on the college campus.

**Kansas Veterinary Medical Association.** Two gold medals to the outstanding advanced Veterinary ROTC students.

**Kansas Veterinary Medical Association.** A prize awarded to the fourth year students in veterinary medicine who have attained the highest scholastic average during the four years in the professional curriculum. First prize, \$15; second prize, \$10.

**Lorentz Schmidt Prize in Architecture.** An annual prize of \$25 to the student in architecture who makes the best progress during his second year.

**Margaret Russel Scholarship Award.** By Phi Alpha Mu; \$25 to the junior woman enrolled in the School of Arts and Sciences ranking highest at the close of the second semester of her sophomore year. To be eligible a student must have done her sophomore work in the School of Arts and Sciences in Kansas State College.

**Quill Club.** \$15 for the best short story in annual contest. College Poet Laureate award. Both awards open to undergraduate and graduate students.

#### MEDALS

**Alpha Zeta.** A gold medal to the agricultural student ranking highest in scholarship in his freshman year.



**Alpha Kappa Psi.** By the Alpha Omega Chapter; a scholarship medalion to the highest ranking senior man enrolled in the curriculum in business administration.

**Alpha Mu Award.** A bronze plaque to the milling student ranking highest in scholarship in his freshman year.

**Alpha Rho Chi.** A bronze medal to the graduating senior in the School of Agriculture selected for leadership and professional merit.

**American Institute of Architects.** A silver medal is awarded to a graduating senior in recognition of excellence in scholarly standing in the Department of Architecture.

**Block and Bridle Club.** Gold, silver, and two bronze medals; for stock judging.

**Forensics.** By the Missouri Valley Forensic League; cash and medal awards in its annual tournament.

By other forensic groups; awards in their national and district tournaments.

By the Native Sons and Daughters of Kansas; a trophy in the annual Senator Capper Oratorical Contest.

**Poultry Club.** Names of winning students engraved on junior and senior division plaques; cash prizes, merchandise, and subscriptions to farm papers for excellence in judging poultry and poultry products.

**Sigma Tau Scholarship Award.** Gold, silver, and bronze medals to three sophomore engineering students ranking highest in their freshman year.

**Air Force Association Medal.** Awarded to the outstanding first-year Advanced Course Air ROTC student.

**American Legion Medal.** Awarded to the outstanding second-year Advanced Course ROTC student enrolled in Infantry.

**Distinguished Military Student Badge.** Every year the Commandant, with the concurrence of the College president and the deans, may designate certain outstanding ROTC students, Air or Army, as Distinguished Military Students, who are awarded a Distinguished Military Student badge.

**Association of United States Army ROTC Medals.** Awarded to the outstanding Infantry senior and Antiaircraft senior. United States Antiaircraft Association ROTC Medal. Awarded to the outstanding Antiaircraft junior. The United States Veteran Signal Corps Association Medal. Awarded to the outstanding student enrolled in the Signal Corps unit.

**The Armed Forces Communication Association Medals.** A gold medal is awarded to the outstanding Signal Corps senior, a silver medal is awarded to the outstanding Signal Corps junior, and a bronze medal is awarded to the outstanding Signal Corps sophomore.

**Scabbard and Blade Award.** To the outstanding sophomore ROTC student in the Air unit and in the Army unit (two awards).

**Sons of American Revolution Medal.** Awarded for excellence in leadership, military bearing, theoretical and practical ROTC work, Air or Army.

**Student Dairy Club.** Gold, silver, and bronze medals; for dairy judging.

**Virginia Dare Extract Company.** Beginning with 1952, the Virginia Dare prize of \$25 in cash and a plaque are made available to dairy manufacturing students. This prize is awarded to the dairy manufacturing student who has taken a course in ice cream making and judging all dairy products at the Collegiate Student International Contest in Judging Dairy Products.

**James Richard Koefod Memorial Award.** For scholastic excellence, this award is made annually, beginning in 1954-'55, to the K.S.C. varsity athlete who attains the highest scholastic average among major sport varsity lettermen during the regular school year in which his major sport varsity letter is earned. The award is made only to those whose two-semester average exceeds 2.25. Each winner's name will be cast in bronze and placed on the Athletes' Scholastic Honor Roll, a bronze plaque



donated by Dr. and Mrs. Paul E. Koefod. Each winner will receive a letter certifying his achievement.

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## The Summer School

The Summer School is an integral part of the educational program of Kansas State College. It is designed to meet the needs of the following groups:

1. Undergraduate students who wish to accelerate their programs of study toward an early graduation and those who wish to make up courses.
2. Graduate students for whom the Summer School offers an opportunity to make more rapid progress toward a degree.
3. Special interest, nondegree groups including public school, business and industrial personnel.

The Summer School has available all the facilities and services of the College which are available in the regular semesters, including housing, food service, counseling and testing service, Student Health Service, etc. A recreation program is planned for each summer session to provide dances, parties, movies, lectures, music, tennis and other sports.

The teaching staff of the Summer School is formed from the regular instructional staff of the College supplemented by visiting professors and lecturers.

The courses offered in the Summer School are chosen from among those offered in the regular session with the addition of conferences and workshops planned to meet the needs of special groups.

The Summer School consists of a nine-week session in which a student may earn as many as nine semester hours of credit on a regular assignment. An undergraduate student with a B-average in the previous semester may, with the approval of his dean, enroll for ten semester hours of credit. No student may enroll for more than ten semester hours. A student may, if he wishes, take a part-time assignment.

Workshops, short courses, and conferences offered in a series of three-week sessions are designed to accommodate those students who find it inconvenient to attend the nine-week session. The maximum assignment in a three-week session is three semester hours of credit.

The Summer School Bulletin gives detailed information on the Summer School and is available about February 1. A copy may be obtained upon request.

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## Undergraduate Degrees

To graduate, a student must complete a prescribed curriculum. Under special conditions such substitutions are allowed as the interests of the student demand. The total requirement for four-year undergraduate curriculums ranges from 120 to 142 semester hours, according to the curriculum taken. (A semester hour is one hour of recitation or lecture work, or two or three hours of laboratory a week, for one semester. When no ambiguity is involved, the term "hour" is used for "semester hour" in this catalogue.)

To be considered for an undergraduate degree, a student must have completed in residence twenty of his last thirty undergraduate hours, with not fewer than thirty hours of resident undergraduate work at this institution. For the School of Arts and Sciences the residence requirement is increased to twenty-four of the last thirty undergraduate hours, with not fewer than thirty hours of resident undergraduate work at this institution.

Resident work includes all regularly scheduled class or laboratory instruction given by the regular College faculty but excluding extension courses and courses completed by special examination. In special cases, candidates will be considered who have completed three full years of work in this institution and have taken their last year of work in an institution

approved by the faculty. A student's dean is empowered by the faculty to lift the residence requirements for the senior year for a student who completes curricular requirements for a degree on the basis of credits transferred from an accredited school of medicine, dentistry, or law. A student who has advanced credit accepted by this College for the equivalent of three semesters or more must, in order to qualify for the above privilege, maintain a grade point average of 1.75 in the College.

Seniors meeting the graduating requirement in hours but failing to meet it in points must take additional courses approved by the dean of the school in which their major work lies, until the requirement in points is met.

Candidates for degrees must make application to the Registrar at least thirty days before the date of graduation. The candidate is responsible for complying with all requirements.

A candidate for graduation must attend commencement unless granted the degree *in absentia*. Application to graduate *in absentia* must be filed with the candidate's dean who, if convinced that hardship would result if the request were denied, will present the case to be acted upon at the Senate meeting shown in the Academic Calendar for passing on candidates for degrees.

### Degrees

The degrees shown below are conferred on completion of the following four-year curriculums:

#### IN THE SCHOOL OF AGRICULTURE

Agriculture, B. S. in Agriculture, page 64.  
 Agricultural Administration, B. S. in Agriculture, page 66.  
 Agricultural Education, B. S. in Agriculture, page 67.  
 Dairy Manufacturing, B. S. in Agriculture, page 69.  
 Horticulture, B. S. in Agriculture, page 70.  
 Technical Agronomy, B. S. in Agriculture, page 77.  
 Agricultural Journalism, B. S. in Agricultural Journalism, page 68.  
 Landscape Design, B. S. in Landscape Design, page 72.  
 Milling Technology, B. S. in Milling Industry, page 73.  
 Feed Technology, B. S. in Feed Technology, page 75.

#### IN THE SCHOOL OF ARTS AND SCIENCES

Business Administration, B. S. in Business Administration, page 117.  
 (with major in accounting), page 118.  
 Chemistry, B. S. in Chemistry, page 119.  
 Music (Applied), Bachelor of Music, pages 123, 124.  
 Music Education, B. S. in Music Education, pages 125, 126.  
 Physical Education (Men), B. S. in Physical Education, page 127.  
 Physical Education (Women), B. S. in Physical Education, page 128.  
 Technical Journalism, B. S. in Technical Journalism, page 130.  
 Biological Science, B. S., page 108.  
 (with adaptation for premedicine), page 110.  
 (with adaptation for medical technicians), page 109.  
 (in connection with preveterinary curriculum and veterinary curriculum), pages 131, 294.  
 Humanities, B. S., page 112.  
 (with art adaptation), page 113.  
 Physical Science, B. S., page 114.  
 (Geophysics option), page 115.  
 Social Science, B. S., page 116.  
 Elementary Education, B. S. in Elementary Education, page 120.  
 Secondary Education, B. S., page 121.  
 Geology, B. S., page 111.  
 Physics, B. S., page 129.

#### IN THE SCHOOL OF ENGINEERING AND ARCHITECTURE

Agricultural Engineering, B. S. in Agricultural Engineering, page 219.  
 Architectural Engineering, B. S. in Architectural Engineering, page 220.



Architecture (five years), Bachelor of Architecture, page 221.  
Chemical Engineering, B. S. in Chemical Engineering, page 222.  
Civil Engineering, B. S. in Civil Engineering, page 223.  
Electrical Engineering, B. S. in Electrical Engineering, page 224.  
Industrial Education, B. S. in Industrial Education, page 226.  
Industrial Engineering, B. S. in Industrial Engineering, page 227.  
Industrial Technology, B. S. in Industrial Technology, page 228.  
Mechanical Engineering, B. S. in Mechanical Engineering, page 230.  
    (Aeronautical option), page 231.  
    (Industrial option), page 231.  
    (Petroleum Production option), page 231.  
    (Technical option), page 231.  
Nuclear Engineering, B. S. in Nuclear Engineering, page 232.

#### IN THE SCHOOL OF HOME ECONOMICS

Home Economics, B. S. in Home Economics, page 267.  
    (with provision for specialization), page 269.  
Dietetics and Institutional Management, B. S. in Home Economics, page 271.  
Restaurant Management, B. S. in Restaurant Management, page 272.  
Home Economics and Journalism, B. S. in Home Economics and Journalism, page 273.  
Home Economics and Nursing, B. S. in Home Economics and Nursing, page 274.

#### IN THE SCHOOL OF VETERINARY MEDICINE

Veterinary Medicine, D. V. M., page 294.  
    (for completion of six-year combination of preveterinary curriculum and veterinary medicine curriculum)  
    (See School of Arts and Sciences for B. S. degree in connection with School of Veterinary Medicine.)  
**Second degree**—For a second bachelor's degree, an additional year of not fewer than thirty semester hours is required. The work is in charge of the dean who administers the curriculum chosen.

# The Graduate School

HAROLD HOWE, *Dean*

JAMES EDWARD ACKERT, *Dean Emeritus*

## OFFERINGS OF THE GRADUATE SCHOOL

### Major Fields for Master of Science

Major work leading to the degree Master of Science is offered in the following departments or fields:

Accounting	Geology
Agricultural Economics	Government
Agricultural Education	History
Agricultural Engineering	Home Economics Education
Agronomy (Crops and Soils)	Horticulture
Animal Husbandry	Household Economics
Apiculture	Industrial Arts
Applied Mechanics	Industrial Engineering
Architectural Engineering	Institutional Management
Architecture	Landscape Design
Art (Architecture)	Machine Design
Art (Home Economics)	Mathematics
Bacteriology	Mechanical Engineering
Botany and Plant Pathology	Milling Industry
Business Administration	Modern Languages
Chemical Engineering	Music
Chemistry	Parasitology
Civil Engineering	Pathology (Veterinary)
Clothing and Textiles	Physical Education (Men)
Dairy Manufacturing	Physical Science Teaching
Dairy Production	Physics
Economics	Physiology (Veterinary)
Education	Poultry Husbandry
Electrical Engineering	Psychology
English	Sociology
Entomology	Speech
Extension Education	Statistics
Family and Child Development	Surgery and Medicine (Veterinary)
Farm Mechanics	Technical
Foods and Nutrition	Zoology
General Home Economics	

Minor graduate work is offered in each of the above departments or fields and the departments of Physical Education (Women), Anatomy (Veterinary), and Library Economics.

### Major Fields for Doctor of Philosophy

Major work leading to the degree Doctor of Philosophy is offered in the fields of:

Agronomy	Entomology
Animal Nutrition	Foods and Nutrition
Applied Mechanics	Genetics
Bacteriology	Milling Industry
Botany	Parasitology
Chemistry	Physics

Minor work for this degree may be chosen in the departments offering major work for the degree and in supporting fields in other departments offering graduate work.

### Interdepartmental Degree Programs

The Graduate School recognizes the importance of programs of study that extend into two or more recognized fields of learning in such manner that they cannot easily be assigned to any one department. To facilitate study in these areas, the Graduate School has provided committees, representative of the departments involved, to assist the graduate office in planning the students' programs. Coordinating committees have been established for the Doctor of Philosophy in Animal Nutrition, for the Doctor of Philosophy in Genetics, for the Master of Science in Extension Education, and for the Master of Science in Physical Science Teaching.



### Assistantships and Fellowships

To facilitate research work, teaching, and the acquisition of advanced degrees, the College has established *graduate assistantships and research assistantships* in most departments. These assistantships may be on the nine-months-a-year or twelve-months-a-year basis. They may be of either of two types: (1) Half-time appointments, which demand one-half of the time of the student for laboratory or research assistance or teaching during the employment period. The remainder of this time is given to advanced study. No half-time assistant may receive more than ten hours of credit a semester. (2) Two-fifths time appointments, which demand approximately 40 percent of the student's time for laboratory, research, or teaching work. No two-fifths time assistant may receive more than twelve hours of credit a semester. Assistants on the twelve-months basis may receive not more than five hours of credit in a summer session if on half-time basis, nor more than six hours of credit in a summer session if on two-fifths time appointments.

One or more graduate assistantships or research assistantships paying a fixed salary each year are maintained in each of the following fields: Agricultural Economics, Agricultural Engineering, Agronomy, Animal Husbandry, Applied Mechanics, Architecture and Allied Arts, Bacteriology, Botany, Chemical Engineering, Chemistry, Civil Engineering, Clothing and Textiles, Dairy Husbandry, Electrical Engineering, English, Entomology, Family and Child Development, Foods and Nutrition, Genetics, Geology and Geography, Government, History, Horticulture, Household Economics, Institutional Management, Mathematics, Mechanical Engineering, Milling Industry, Music, Parasitology, Physical Education, Physics, Poultry Husbandry, Psychology (Counseling), Speech, and Zoology.

Applications should be made annually before April 1, for the following academic year. Students desiring such appointments may obtain application blanks from the Dean of Graduate School.

A number of *fellowships* are available each year. The stipends of fellowships vary in amount, and the course load which may be carried by a fellow is established in each individual case.

## GENERAL REGULATIONS

### Admissions

**Entrance Requirements.** Admission to graduate study is granted on two bases: (1) Full standing and (2) provisional standing.

For admission to graduate study in *full standing*, the applicant must have been graduated from an institution whose requirements for the bachelor's degree are substantially equivalent to those of Kansas State College; must have an undergraduate average of B or better in the junior and senior years; and must have had undergraduate training substantially equivalent to that given by this College in the specific subject-matter field in which the applicant expects to do graduate work. Moreover, undergraduate training in closely related or supporting subjects must also be adequate to sustain advanced work in the field of the applicant's choice.

The applicant who does not meet all the requirements for admission to full standing in the Graduate School may be admitted to *provisional standing*. Upon receipt of this application, the student will be advised of any deficiencies or other conditions to be met to attain full standing. The student admitted to provisional standing will be admitted to full standing upon completion of at least nine hours of work for graduate credit with a grade of B or better in three-fourths of such graduate work; and upon the removal of any course or subject-matter deficiencies which were specified at the time of his admission to provisional standing in the School.

Correspondence regarding admission to graduate study should be addressed to the Dean of the Graduate School, who will on request supply the required application blanks. Two copies of a transcript from each institution attended must be sent to the Dean of the Graduate School. The application and transcript should be filed with the Graduate Office at least one month before the time the student expects to enroll.

Admission to graduate study does not imply admission to candidacy for an advanced degree. Such candidacy is determined only after the student has demonstrated his ability to do graduate work.

**Registration and Assignment.** Students who have been admitted to the Graduate School register and pay their fees during the regular registration periods. (See the Graduate Calendar.) They obtain their assignments from the Dean of the Graduate School. All new students, including graduate students, are required to take a comprehensive physical examination at the College prior to their initial enrollment.

Not more than sixteen hours, including those obtained from research, may be assigned in a single semester, nor more than nine hours during a summer session. If a part of the assignment is for undergraduate credit, a student may be assigned to seventeen hours during a semester or nine hours during a summer session. Full-time staff members of the College may not be assigned more than five hours in one semester, nor more than three hours in a summer session. (See section on Assistantships and Fellowships for limitations applying to students holding assistantships.)

These limitations apply to classes audited as well as classes for which credit is earned.

No student may drop a course or change his assignment except by formal reassignment, and for this he must apply to the Dean of the Graduate School.

**Fees.\*** Graduate students are subject to the same fees as other students.

**Graduate Study by Seniors.** A senior who has completed so much of his work for the bachelor's degree that his program for the year is not full may, with the consent of his dean and of the Dean of the Graduate School, be assigned one or more courses for graduate credit. In no case may such combination of courses exceed seventeen hours during a semester or nine hours during a summer session. A student may accumulate graduate credit not to exceed twelve semester hours, within a time period of two enrollments, before he receives his bachelor's degree.

### Requirements for Degrees

**Graduate Credit.** Courses numbered 800 to 999 in this *Bulletin* are for graduate credit only. Courses numbered 400 to 799 are open to both graduate and undergraduate students. For graduate credit in such courses, the student shall be required to do work of graduate character. The nature and amount of such graduate work shall be determined by the instructor.

Graduate credit may not be earned by taking a special examination or by correspondence. However, previously matriculated graduate students may be enrolled, on an hourly basis, for a limited amount of research or problem work *in absentia* on the recommendation of the head of the department and with the approval of the Dean of the Graduate School. The fee is \$2.50 a semester hour. Resident faculty members and students are not eligible to pursue work *in absentia* except during periods when school is not regularly in session. One, two, or three semester hours of graduate credit in problem or research work may be earned between the close of the summer school and the beginning of the fall semester, provided permission is secured in advance from the major instructor and from the Dean of the Graduate School.

**Grades.** Graduate students' work is graded in eight classes: A, B, C, D, Condition, Incomplete, F, and Withdrawn. All Conditions and Incompletes except Incompletes resulting from assignments to graduate courses designated in the catalogue as research must be made up within a specified time if they are to be transformed into credited work. A candidate for an advanced degree must make a grade of B or better in three-fourths of the credit hours taken for the degree. For graduate credit the grade in a course must be C or better.

**Major and Minor Subjects.** Approximately two-thirds of the student's time is devoted to his major subject and one-third to one or more minor subjects. An exception may be made for master's candidates who plan to meet the requirement for the school administrator's certificate; such candidates may be permitted to take up to 24 hours of the 30 or 32 required credit hours within their major field. The word "subject" is used



to designate a recognized field of study and is not defined by the limits of a department. For master's candidates, the nature and distribution of majors and minors within the program of study are approved by the Graduate Council, upon recommendation of the major instructor and the head of the major department. For doctor's candidates, the approval is made by the Council upon recommendation of the supervisory committee.

**Master of Science.** Candidates for the degree Master of Science (M. S.) are required to spend one academic year in residence, except under special conditions, when the residence may be reduced to one and one-half semesters, or three summer sessions of full graduate study. Subject to the approval of the major department, the candidate may choose either of the following two plans: (1) 30 semester hours of graduate credit *including a master's thesis* of six to eight semester hours; (2) 32 semester hours of graduate credit without a master's thesis but *including a written master's report* either of research or of problem work on a topic in the major field. For this report two semester hours of credit are given, and upon its completion it is submitted in duplicate to the major instructor for his approval and for that of the head of the major department and the Dean of the Graduate School. (See Graduate Calendar for dates on which thesis or report must be submitted.)

The subject of the master's thesis must be approved by the major instructor, the head of the department, and the Dean of the Graduate School. The completed thesis is submitted in triplicate to the major instructor for his approval and for that of the head of the major department and the Dean of the Graduate School. Detailed specifications for thesis preparation may be obtained from the office of the Dean of the Graduate School. If the student desires to publish all or part of his thesis before the master's degree is conferred he must obtain the permission of the Graduate Council.

A candidate for the master's degree is subject to an *oral examination* covering the major and minor subjects and the thesis or report, by a committee selected from the instructors with whom major and minor work was taken, the head of the major department, the major instructor, and a member of the Graduate Council who serves as committee chairman.

All credits towards the master's degree, whether from Kansas State College or transferred, which have been acquired more than six years prior to the time the candidate receives his degree, require *validation* either by repeating the course or passing an advanced course based on the lapsed credit course, or by a validation examination, with questions and answers filed in the Graduate Office as a part of the record of the candidate until graduation. The method of the validation is to be determined by the department concerned, and the validation is to be completed at least two weeks before the oral examination. A grade of "B" is necessary for restoration of lapsed credits.

**Doctor of Philosophy.** At least three years of two semesters each of graduate study beyond the bachelor's degree, equivalent to about 90 semester hours, including 50 or more hours of course work and a doctor's dissertation, are required of candidates for the degree Doctor of Philosophy (Ph. D.). At least a year of this time must be spent in residence at the College. The candidate must also demonstrate to an authorized representative of the Department of Modern Languages *a reading proficiency in two foreign languages in the literature of his special field*. The choice of these two languages must be approved by the candidate's supervisory committee and by the Graduate Council, and the language requirements must be satisfied before preliminary examinations are taken.

For each student who plans to work toward the degree Doctor of Philosophy, a *supervisory committee* is chosen by the Dean of the Graduate School consisting of not fewer than five members, representing the major and minor fields. This committee aids the student in the preparation of his program of study (which must be approved by the Graduate Council) and has charge of all examinations except those on the language requirements. Before preliminary examinations are arranged, the student should have on file in the office of the Dean of the Graduate School a program of study signed by the supervisory committee.

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\* See section headed fees under General Information.

Ordinarily, at the close of the second year of graduate study and at least seven months before the date on which the student expects to receive his degree, *written preliminary examinations* must be passed by him in both his **major and minor fields**. An oral preliminary examination may be required by a department in addition to the written preliminary examination. When **the student has passed these examinations**, he is recommended by the supervisory committee to the Graduate Council for admission to candidacy for the degree Doctor of Philosophy. On completion of three years of graduate study as prescribed in the program of study and on submission of a **dissertation to the Dean of the Graduate School**, at least one month before commencement, the candidate is given the *final examination*.

Early in the graduate work a *dissertation* subject is chosen in the major field and approved by the supervisory committee. The finished thesis must constitute a contribution to knowledge, either presenting conclusions from new material or reinterpreting previous knowledge, and be worthy of acceptance in a professional publication. Three complete typewritten copies of the dissertation approved by the supervisory committee shall be submitted to the Dean of the Graduate School at least one month before commencement. On completion of all requirements for the degree, two copies shall be placed in the College Library and the third copy filed with the head of the department in which major work is taken.

Before the doctor's degree is conferred, a candidate places on deposit with the Comptroller's Office the sum of \$100 as a guarantee that the dissertation will be published wholly or in part in a manner acceptable to the Dean of the Graduate School and the head of the department in which the work was done. If such publication is made within a period of three years following the granting of the degree, or if a letter of acceptance from the editor of an appropriate publication is received before the expiration of the three-year period, assuring publication at a later date, the \$100 deposit will be returned to the student upon consignment of twenty-five copies of the published dissertation paper or papers to the major department. If publication is not completed or provided for before the expiration of the three-year period, the College retains the \$100 deposit.

If publication of the dissertation, in whole or in part, is made before the degree is conferred, permission must first be obtained from the Graduate Council. When it is published, wholly or in part, either before or after the degree is conferred, the first page must carry as a footnote the appropriate one of the two following statements:

A dissertation presented in partial fulfillment of the requirements for the degree Doctor of Philosophy in \_\_\_\_\_ at Kansas State College.

or

Portion of a dissertation presented in partial fulfillment of the requirements for the degree Doctor of Philosophy in \_\_\_\_\_ at Kansas State College.

## GENERAL INFORMATION

### Graduate Loans

Loans to graduate students may be obtained from loan funds controlled by the College and also from the Alumni Loan Fund. The graduate student should not plan to borrow from these funds until he or she has demonstrated ability to do satisfactory graduate work at this College. Loans are made only when a note is signed by the borrower and one other responsible person, preferably the borrower's parent or guardian. This cosigner must be recommended by his bank as of good financial standing and otherwise satisfactory as a cosigner. Ordinarily the maximum loaned to pay any one student from these funds is \$250. Occasionally loans up to \$500 are made.

The Manhattan Branch of the American Association of University Women maintains a loan fund which is available to graduate women students enrolled in any department of the College. Additional information con-



cerning the AAUW Graduate School Loan Fund may be obtained from the Dean of the Graduate School.

### Graduate Work in the Summer School

All schools of the College offer graduate work in the Summer School. Only in certain departments, however, can a student complete requirements for the master's degree without spending one or two semesters in residence. For information about these cases, one should address the Dean of the Graduate School.

Students who enroll in three-week sessions, scheduled concurrently with the nine-week summer session, may not enroll for courses in the nine-week summer session other than in problems and in research. No combination of three-week and nine-week summer session credit may be in excess of nine credit hours.

Full information concerning the courses offered is contained in the Summer School number of the Kansas State College *Bulletin*, which may be obtained upon application to the Director of Admissions of the College.

### GRADUATE CALENDAR

(Graduate students should refer also to the Academic and Financial Calendar, page 5.)

#### FIRST SEMESTER, 1955-1956

September 12-14, Monday-Wednesday—Physical examinations for all graduate students enrolling for the first time at Kansas State College.  
 September 12-14, 12:45 p.m., Monday-Wednesday—Registration.  
 September 15, 8:00 a.m., Thursday—Classes begin.  
 October 8, Saturday—Last day to enroll with full assignment.  
 October 15, Noon, Saturday—Deficiency reports due in deans' offices (5th week).  
 October 29, Noon, Saturday—Last day for dropping courses without a withdrawal or failure being recorded (7th week).  
 November 12, Noon, Saturday—Midsemester deficiency reports due in deans' offices (9th week).  
 November 22, 10:00 p.m., Tuesday—Thanksgiving vacation begins.  
 November 28, 8:00 a.m., Monday—Classes resume.  
 December 1, Thursday—Tentative copy of doctors' dissertations due in departmental offices.  
 December 8, Thursday—Tentative copy of doctors' dissertations due in graduate dean's office.  
 December 20, Tuesday—Tentative copies of masters' theses and reports due in departmental offices.  
 December 21, 4:00 p.m., Wednesday—Applications for degrees must be made on or before this date.  
 December 21, 10:00 p.m., Wednesday—Christmas vacation begins.  
 January 5, 8:00 a.m., Thursday—Classes resume.  
 January 5, Noon, Thursday—Final copies of doctors' dissertations due in graduate dean's office.  
 January 5, 4:00 p.m., Thursday—Tentative copies of masters' theses and reports due in graduate dean's office.  
 January 13, 4:00 p.m., Friday—Last day subject may be dropped before end of semester.  
 January 21, Noon, Saturday—Grades to registrar for candidates for degrees.  
 January 23-27, Monday-Friday—Semester examinations.  
 January 23, 3:00 p.m., Monday—Final copies of masters' theses and reports due in graduate dean's office. End of period for masters' oral examinations.  
 January 25, 4:00 p.m., Wednesday—Senate meeting to approve candidates for degrees.  
 January 28, 10:00 a.m., Saturday—Commencement.

#### SECOND SEMESTER, 1955-1956

January 30, 8:00 a.m., Monday—Physical examinations for all graduate students enrolling for the first time at Kansas State College.  
 January 30-February 1, 12:45 p.m., Monday-Wednesday—Registration.  
 February 2, 8:00 a.m., Thursday—Classes begin.  
 February 25, Saturday—Last day to enroll with full assignment.  
 March 3, Noon, Saturday—Deficiency reports due in deans' offices (5th week).  
 March 17, Noon, Saturday—Last day for dropping courses without a withdrawal or failure being recorded (7th week).  
 March 29, 10:00 p.m., Thursday—Easter vacation begins.  
 March 31, Noon, Saturday—Midsemester deficiency reports due in deans' offices (9th week).  
 April 3, 8:00 a.m., Tuesday—Classes resume.  
 April 7, Noon, Saturday—Tentative copy of doctors' dissertations due in departmental offices.  
 April 14, Noon, Saturday—Tentative copy of doctors' dissertations due in graduate dean's office.  
 April 23, Noon, Monday—Tentative copies of masters' theses and reports due in departmental offices.  
 April 26, Noon, Thursday—Final copies of doctors' dissertations due in graduate dean's office.  
 April 27, 3:00 p.m., Friday—Applications for degrees must be made on or before this date.  
 April 30, Noon, Monday—Tentative copies of masters' theses and reports due in graduate dean's office.  
 May 12, Noon, Saturday—Last day a subject may be dropped before end of semester.  
 May 21-25, Monday-Friday—Semester examinations.  
 May 21, Noon, Monday—Grades to registrar for all candidates for degrees.  
 May 21, 3:00 p.m., Monday—Final copies of masters' theses and reports due in graduate dean's office. End of period for masters' oral examinations.

May 24, 11:00 a.m., Thursday—Senate meeting to approve candidates for degrees.

May 26, Saturday—Alumni Day.

May 27, Sunday—Commencement.

#### SUMMER SESSION, 1956

June 4, 8:00 a.m., Monday—Registration and enrollment for the nine-week session. Registration and enrollment for the first three-week session. Registration and enrollment for the three-week sessions if taking all three.

NOTE: Students may not take work in both the nine-week session and a three-week session, except problem or research courses.

June 4, 8:00 a.m., Monday—Physical examinations for all graduate students enrolling for the first time at Kansas State College.

June 5, 7:30 a.m., Tuesday—Classes begin for the nine-week session and the first three-week session.

June 16, Noon, Saturday—Last day to enroll with full assignment for the nine-week session.

June 20, Noon, Wednesday—Tentative copy of doctors' dissertations due in departmental offices.

June 22, 5:00 p.m., Friday—Close of the first three-week session.

June 25, 8:00 a.m., Monday—Enrollment for the second three-week session. Classes in the nine-week session as usual.

June 27, Noon, Wednesday—Tentative copy of doctors' dissertations due in graduate dean's office.

June 30, Noon, Saturday—Last day for dropping courses in the nine-week session without a withdrawal or failure being recorded.

July 4, Wednesday—Holiday—Independence Day.

July 5, Noon, Thursday—Final copies of doctors' dissertations due in graduate dean's office.

July 5, 3:00 p.m., Thursday—Applications for degrees must be made on or before this date.

July 6, 5:00 p.m., Friday—Deficiency reports due in deans' offices for the nine-week session.

July 9, Noon, Monday—Tentative copies of masters' theses and reports due in departmental offices.

July 13, 5:00 p.m., Friday—Close of the second three-week session.

July 16, 8:00 a.m., Monday—Enrollment for the third three-week session. Classes in the nine-week session as usual.

July 16, Noon, Monday—Tentative copies of masters' theses and reports due in graduate dean's office.

July 30, 3:00 p.m., Monday—Final copies of masters' theses and reports due in graduate dean's office. End of period for masters' oral examinations.

July 30, 5:00 p.m., Monday—Grades to registrar for all candidates for degrees.

July 31, 4:00 p.m., Tuesday—Last day subject may be dropped before end of the nine-week session.

August 1, 4:00 p.m., Wednesday—Senate meeting to approve candidates for degrees.

August 3, 5:00 p.m., Friday—Last day for examinations.

August 3, 5:00 p.m., Friday—Close of the third three-week session and the nine-week session.

August 4, 10:00 a.m., Saturday—Commencement.



# The School of Agriculture

ARTHUR D. WEBER, *Dean*

RAY IAMS THROCKMORTON, *Dean Emeritus*

LELAND EVERETT CALL, *Dean Emeritus*

CLYDE WILLIAM MULLEN, *Assistant Dean*

HAROLD E. MYERS, *Assistant Dean*

The School of Agriculture prepares students for farming, for the scientific investigations of agricultural problems in state and national institutions, for agricultural extension work, for the teaching of agriculture, for service in industries closely related to agriculture, and for a variety of other public and private services of an agricultural nature.

The College owns 2,784 acres of land which are used for experimental work and instruction, and maintains large and well-equipped laboratories for soil and crop work. There is ample greenhouse space for problems and research work in crops and soil.

The College herds and flocks contain high-class representatives of the important breeds of dairy and beef cattle, poultry, hogs, horses, and sheep. The student becomes familiar with types and breeds by actual work with the stock.

## Degrees Awarded by the School of Agriculture

Six of the four-year curriculums offered in this School lead to the degree Bachelor of Science in Agriculture. Milling Technology and Feed Technology, the two curriculums in Flour and Feed Milling Industries, lead to either the degree, Bachelor of Science in Milling Industry, or Bachelor of Science in Feed Technology.

The four-year Curriculum in Landscape Design leads to the degree Bachelor of Science in Landscape Design.

The Curriculum in Agricultural Journalism leads to the degree Bachelor of Science in Agricultural Journalism.

## Curriculum in Agriculture

Students choosing the Curriculum in Agriculture need not name the department in which they will major before the second semester of the sophomore year. They have their choice of numerous electives in soils, crops, agricultural economics, animal husbandry, dairy husbandry, entomology, horticulture, and poultry husbandry.

All electives in any of the departments must be officially approved by the Dean of the School of Agriculture and the head of the department in which the student majors.

A student may major not only in any department in the School of Agriculture but also in the departments of Botany, Zoology, Bacteriology, Chemistry, or Agricultural Engineering. Substitutions may be made to meet definite objectives. See "Substitutions to Meet Certain Objectives," following the outline of Curriculum in Agriculture.

Any candidate for a degree in Agriculture must have had at least six months of farm experience approved by the Dean of the School of Agriculture. Students in agricultural journalism, dairy manufacturing, landscape design, or horticulture may substitute practical experience in their respective industries for farm experience.

A formal statement outlining farm experience or substitutions therefor must be filed in the dean's office during the last semester of the senior year.

The student who completes the freshman and sophomore years will have had basic studies in soils, farm crops, livestock, dairying, poultry husbandry, horticulture, and agricultural economics, giving him a general knowledge of the whole range of agriculture. More than one-third of his time will have been devoted to strictly agricultural courses.

During his junior and senior years, the student continues his studies of fundamental science and begins to learn to apply science to agriculture.

### Curriculum in Technical Agronomy

The Curriculum in Technical Agronomy is designed to provide training for students interested in professional work in agronomy. Four options are provided. See the curriculum outline.

### Curriculum in Agricultural Education

The Curriculum in Agricultural Education is intended for those students who are interested in becoming teachers of vocational agriculture in Kansas high schools participating in federal Smith-Hughes and George-Barden funds. The areas covered in the field of agriculture include basic courses in agricultural economics, agronomy, animal husbandry, dairying, entomology, horticulture, and poultry husbandry.

The farm mechanics courses embrace the basic skills of a wide range of shop activities: welding, use of concrete, farm carpentry, electricity, tool care, farm power, and general repair and maintenance of farm machinery.

The curriculum, as outlined on another page, meets the requirements for the degree Bachelor of Science in Agriculture and at the same time meets the requirements for the state certificate for teaching vocational agriculture. This curriculum ordinarily may be completed in four years.

### Curriculum in Agricultural Administration

This curriculum trains students for a wide range of positions in agriculture and industries closely allied with agriculture. The flexibility of the training in this curriculum is demonstrated by the present occupations of those who have graduated from this curriculum. A recent tabulation of jobs held by more than 800 graduates in Agricultural Administration shows the following distribution of occupations: (1) farming, 21 percent; (2) county or local community service, such as extension agent, teaching, or governmental action programs, 20 percent; (3) professional economist, 17 percent; (4) sales and sales promotion, 9 percent; (5) agricultural credit and banking, 4 percent; (6) farm management services, 2 percent; (7) cooperatives, 1 percent. Many other occupations are represented among the graduates of past years.

Our nation is becoming increasingly dependent upon specialized commercial farming for the production of food and fibre. Successful farming is dependent upon an application of modern business practice as well as scientific knowledge of plants and animals. In addition, those who serve in agricultural industries need to understand both agricultural science and economics.

The flexibility of the Curriculum in Agricultural Administration permits the student to acquire an effective training in agricultural science as well as economics and business. The curriculum prepares students for a life-work in a wide variety of occupations.

Some specific fields of work for which this curriculum provides training are:

Farming	Farm Management
Market Analysis	Agricultural Sales and Services
Land Economics	Agricultural Credit and Banking
Agricultural Policy	Agricultural Extension
Price Analysis	Agricultural Statistics
Cooperative Marketing	Grain Industries
Production Economics	

Specialization in Agricultural Administration prepares a person for a career in business, agriculture, or public service. The curriculum provides opportunity to integrate specialization in technical fields with training for effective and responsible community leadership.

### County Extension Work

The Curriculum in Agriculture and the Curriculum in Agricultural Administration are the two curriculums that can most readily be adapted for the training of students who desire to go into extension work. Such students should make their intentions known when their electives are being made out in the second semester of their sophomore years.



### **Curriculum in Dairy Manufacturing**

The Curriculum in Dairy Manufacturing is offered to students who wish to specialize in one of the various phases of the dairy products industry.

Students may select by means of properly chosen electives one of three fields of specialization: (a) Dairy plant operator, (b) dairy plant manager, or (c) dairy products technician. Electives selected by the student must be approved in advance by the head of the Department of Dairy Husbandry and the Dean of the School of Agriculture.

### **Curriculum in Agricultural Journalism**

This curriculum is for those who wish to obtain a broad knowledge of agriculture and the ability to disseminate that knowledge to others. Knowledge is power only as it comes into the possession of those who can use it. This curriculum gives training in the techniques of accurate and effective dissemination of information through newspapers, magazines, radio, speech, and other media of communication.

Graduates find attractive opportunities in the information service of the United States Department of Agriculture, state and federal extension services, state departments of agriculture, farm radio departments, agricultural experiment stations, farm organizations, advertising agencies, livestock publications, and many other agencies which employ information writers who know something about agriculture and who know the basic techniques of writing and editing.

By electing twelve additional hours in any department in the School of Agriculture the student can earn a major in that department.

The Curriculum in Agricultural Journalism meets the requirements of the standards of the American Council on Education for Journalism. Students in this curriculum are eligible for professional journalistic organizations.

### **Pretheological Courses**

In cooperation with various theological seminaries, Kansas State College offers an opportunity for students who are preparing for the rural ministry to carry elective courses in the School of Agriculture and in other schools of the College which may be accepted as pretheological courses in a seminary.

Any person desiring to enter the rural ministry should acquaint himself with the requirements of the seminary of his choice. Special attention should be given to any language requirements.

Among the suggested electives that may be taken at Kansas State College would be courses in agricultural economics, economics, English literature, history and government, logic, philosophy, psychology, rural sociology, sociology, citizenship, and public speaking.

Persons desiring to prepare for the field of rural ministry will enter the Curriculum in Agricultural Administration. They should use the name of this curriculum in filling out information blanks in anticipation of enrollment in Kansas State College.

### **Curriculum in Landscape Design**

The Curriculum in Landscape Design is planned for students who wish to be employed by professional landscape firms and various other private and public agencies. Special emphasis is given to plant materials, planting design, and the rendering of landscape plans. Those completing the curriculum are eligible to receive the degree of Bachelor of Science in Landscape Design.

### **Curriculum in Horticulture**

This curriculum is designed to provide training for students interested in the various phases of horticulture, either practical or professional. Students interested in general agriculture with a major in horticulture should enroll in the Curriculum in Agriculture. Students interested in the field of horticulture and intending to qualify for county agent work

will pursue the Curriculum in Agriculture and take a major in horticulture. They should also include the course in Extension Organization and Policy among their electives.

### Curriculums in Flour and Feed Milling Industries

This department offers the Curriculum in Milling Technology with options in (A) Operation; (B) Chemistry; (C) Administration.

It offers also the Curriculum in Feed Technology with options in (A) Operation; (B) Nutrition; (C) Administration.

Students choosing the field of milling industry must so indicate at the time of assignment for the first semester of their sophomore year in order to be assigned to proper chemistry courses.

Students who bring credits to this College from some other college or university, and who choose one of the curriculums in milling, should indicate in which of the curriculums they expect to major.

Any candidate for a degree in milling industry must have had at least three months' experience in a wheat elevator, flour mill, feed mill, bakery, or cereal chemistry laboratory, or the equivalent, before obtaining senior classification.

The Curriculum in Feed Technology is intended to prepare graduates for highly responsible positions in the feed industry. A student may be trained to become a specialist in operation, nutrition, or administration. The feed industry is a new and growing field offering new and unusual opportunities to graduates in this curriculum.

### State Certificates for Teachers of Vocational Agriculture

The Curriculum in Agricultural Education is designed to meet the needs of persons desiring to teach vocational agriculture in federally aided secondary schools. This curriculum leads to the degree Bachelor of Science in Agriculture and meets the requirements for teaching vocational agriculture in Kansas high schools participating in federal Smith-Hughes and George-Barden funds.

A total of eighteen semester hours in the Department of Education is required as follows:

Educ. 100, Educational Psychology I .....	3
Educ. 105, Educational Psychology II .....	3
Educ. 505, Vocational Education .....	3
Educ. 120, Prin. of Secondary Education .....	3
Educ. 255, Methods of Teaching Agriculture .....	3
Educ. 265, Teaching Participation in Agriculture .....	3

A total of seventeen semester hours in the School of Engineering and Architecture is included in order to provide mechanical training necessary for the handling of farm shop problems. The mechanical courses together with semester hours follow:

Ind. Engg. 180, Welding .....	1
Agr. Engg. 110, Farm Mechanics .....	2
Agr. Engg. 120, Farm Power .....	3
Agr. Engg. 115, Farm Machinery Repair .....	3
Agr. Engg. 410, Farm Building Construction .....	3
Agr. Engg. 415, Agricultural Engineering Applications .....	2
Agr. Engg. 405, Farm Mechanics Methods .....	3

Upon completion of the Curriculum in Agricultural Education a person would qualify for the three-year Kansas state teacher's certificate, valid in any high school or other public school in the state. This certificate is valid for three years and may be renewed.

### Agriculture in the Summer School

All departments in the College usually offer courses in the Summer School. Some are basic college courses, but graduate work particularly suited to high school teachers of vocational agriculture is emphasized. The Summer School number of the Kansas State College **Bulletin** may be obtained upon application to the Director of Admissions.



**Home Study in Agriculture**

The Department of Home Study of the Division of College Extension offers a number of college courses in agriculture which can be taken by correspondence. Such courses carry the same credit as resident college courses having the same description. These courses will be found especially advantageous to college students who desire to make up deficiencies or to gain certain credits during the summer vacation season. All courses given by correspondence are listed in the latter part of this catalogue under the title "Home Study" in the Division of College Extension.

## Curriculum in Agriculture

## B. S. in Agriculture

## FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Engl.	125	Written Comm. I .....	3	Engl.	135	Written Comm. II .....	2
Geol.	110	Gen. Geology .....	3	Speech	105	Oral Comm. I .....	2
Chem.	210	Chemistry I .....	5	Bot.	110	Gen. Botany .....	5
An. Husb.	106	El. of An. Husb. ....2 and		Chem.	230	Chem. II Rec. ....	3
An. Husb.	113	El. of An. Husb. Lab. 1 or		An. Husb.	106	El. of An. Husb. ....2 and	
Dairy Husb.	104	El. of Dairying .....	3	An. Husb.	113	El. of An. Husb. Lab., 1 or	
		Air Science .....	1 or	Dairy Husb.	104	El. of Dairying .....	3
		Military .....	1			Air Science .....	1 or
Gen. Agr.	004	Freshman Assembly .....	0			Military .....	1
Gen. Agr.	003	Agr. Seminar* .....	0	Gen. Agr.	003	Agr. Seminar* .....	0
Phys. Ed.	010	Physical Education M ....	0	Phys. Ed.	010	Physical Education M ....	0
Total .....			15	Total .....			16

## SOPHOMORE†

Hort.	110	El. of Hort. Rec. ....	2	Econ.	110	Economics I .....	3
Hort.	111	El. of Hort. Lab. ....	1	An. Husb.	155	Prin. of Feeding .....	3
Chem.	310	Org. Chemistry (Agr.) ..	3	Agron.	149	Soils .....	4 or
Chem.	315	Org. Chemistry Lab. ....	2	Agron.	106	Farm Crops .....	4
Agron.	149	Soils .....	4 or	Zool.	110	Gen. Zoology .....	5
Agron.	106	Farm Crops .....	4			Air Science .....	1 or
Poul. Husb.	104	Farm Poul. Prod. Rec. ..	2			Military .....	1
Poul. Husb.	105	Farm Poul. Prod. Lab. ..	1	Gen. Agr.	003	Agr. Seminar* .....	0
		Air Science .....	1 or	Phys. Ed.	010	Physical Education M ....	0
		Military .....	1				
Gen. Agr.	003	Agr. Seminar* .....	0				
Phys. Ed.	010	Physical Education M ....	0				
Total .....			16	Total .....			16

## JUNIOR

Math.	175	College Algebra .....	3 or	Ent.	210	Gen. Econ. Entomol. ....	3
Math.	130	Mathematics in Agr. ....	3	An. Husb.	405	Genetics .....	3 or
An. Husb.	405	Genetics .....	3 or	Bact.	140	Agr. Microbiology§ .....	3
Bact.	140	Agr. Microbiology§ .....	3	Tech. Jour.	305	Agr. Journalism .....	3
Physiol.	131	Anat. and Physiology‡, 3 or		Gen. Agr.	003	Humanities II .....	4
Bot.	300	El. Plant Physiology .....	3			Elective .....	7
Agr. Econ.	206	Farm Organization .....	3				
Gen. Agr.	003	Agr. Seminar* .....	0				
Engl.	090	English Proficiency .....	0				
		Elective .....	5				
Total .....			17	Total .....			16

## SENIOR

Gen. Stud.	250	Humanities I .....	4	Gen. Stud.	260	Humanities II .....	4
Gen. Agr.	003	Agr. Seminar* .....	0	Gen. Agr.	003	Agr. Seminar* .....	0
		Elective .....	12			Elective .....	12
Total .....			16	Total .....			16

Number of hours required for graduation, 128.

\* Four meetings each semester.

† Sometime during the second semester of the sophomore year each student is required to file a written statement in the office of the Dean of the School of Agriculture, designating the department of the school in which he will major.

‡ Students who do not expect to major in animal husbandry, dairy husbandry, or poultry husbandry may take Elementary Plant Physiology (Bot. 300) instead of Anatomy and Physiology (Physiol. 131).

§ Students expecting to take additional work in bacteriology, either for advanced work in soils or dairying, will take General Microbiology instead of Agricultural Microbiology.

Only students who have a year and a half of high school algebra are eligible for College Algebra (Math. 175).



### Electives

The electives in the Curriculum in Agriculture are grouped as follows:

	<i>Semester Hours</i>
<b>Major Electives</b> .....	12
These electives may be taken in any one of the departments of the School of Agriculture. In certain cases also a science department outside of the school may be selected for a major department; <i>e.g.</i> , Chemistry, Bacteriology.	
<b>Minor Agricultural Electives</b> .....	9
These electives may be taken from one or more departments but must strengthen the student's preparation in agriculture.	
<b>General Electives</b> .....	15
These electives should be chosen to meet individual needs and to round out the preparation provided by the rest of the student's curriculum. All students not offering one unit of high school physics for entrance must include three hours of physics in their electives.	

All electives must be officially approved before assignment, by both the Dean of the School of Agriculture and the head of the department in which the student majors.

#### SUBSTITUTION TO MEET CERTAIN OBJECTIVES

Students desiring to prepare themselves for scientific or special work in the field of agriculture may, with the approval of the Dean of the School of Agriculture and the head of the department in which they expect to major, substitute courses in the departments of Mathematics, Physics, Chemistry, Bacteriology, Zoology, Botany and Plant Pathology, Education, Agricultural Engineering, Modern Languages, and other approved departments, for twenty-five hours in the Curriculum in Agriculture; provided, that no student may receive a degree in agriculture who does not have at least twenty-five hours in technical agriculture in not fewer than three departments.

Curriculum in Agricultural Administration  
B. S. in Agriculture

FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Engl.	125	Written Comm. I .....	3	Math.	145	General Algebra .....	5
Speech	105	Oral. Comm. I .....	2	Dairy Husb.	104	El. of Dairying .....	3 or
An. Husb.	106	El. of An. Husb. ....2 and	2	An. Husb.	106	El. of An. Husb. ....2 and	1
An. Husb.	113	El. of An. Husb. Lab., 1 or	3	An. Husb.	113	El. of An. Husb. Lab. ....	1
Dairy Husb.	104	El. of Dairying .....	3	Gen. Stud.	160	Biology II .....	4
Gen. Stud.	150	Biology I .....	4	Gen. Stud.	120	Man's Phys. World II ....	4
Gen. Stud.	110	Man's Phys. World I ....	4			Air Science .....	1 or
		Air Science .....	1 or			Military .....	1
		Military .....	1	Gen. Agr.	003	Agr. Seminar* .....	0
Gen. Agr.	004	Freshman Assembly .....	0	Phys. Ed.	010	Physical Education M ....	0
Gen. Agr.	003	Agr. Seminar* .....	0				
Phys. Ed.	010	Physical Education M ....	0				
Total .....			17	Total .....			17

SOPHOMORE

Engl.	135	Written Comm. II .....	2	Agr. Econ.	203	Econ. of Farm Bus. ....	3
Econ.	110	Economics I .....	3	Agr. Econ.	597	Agr'l Econ. Stat. ....	3
Agron.	149	Soils .....	4 or	An. Husb.	155	Prin. of Feeding .....	3
Agron.	106	Farm Crops .....	4	Agron.	106	Farm Crops .....	4
Agr. Econ.	290	Rural Sociology .....	3	Agron.	149	Soils .....	4
Poul. Husb.	104	Farm Poul. Prod. Rec., 2	2	Hort.	110	El. of Hort. ....	2
Poul. Husb.	105	Farm Poul. Prod. Lab., 1	1	Hort.	111	El. of Hort. Lab. ....	1
		Air Science .....	1 or			Air Science .....	1 or
		Military .....	1			Military .....	1
Gen. Agr.	003	Agr. Seminar* .....	0	Gen. Agr.	003	Agr. Seminar* .....	0
Phys. Ed.	010	Physical Education M ....	0	Phys. Ed.	010	Physical Education M ....	0
Total .....			16	Total .....			17

JUNIOR

Agr. Econ.	212	Farm Accounting .....	3	Agr. Econ.	206	Farm Organization .....	3
Agr. Econ.	561	Land Economics .....	3	Agr. Econ.	218	Marketing Farm Prod. ....	3
Gen. Stud.	250	Humanities I .....	4	Gen. Stud.	260	Humanities II .....	4
Gen. Agr.	003	Agr. Seminar* .....	0	Tech. Journ.	305	Agr. Journalism .....	3
Engl.	090	English Proficiency .....	0	Gen. Agr.	003	Agr. Seminar* .....	0
		Elective .....	6			Elective .....	3
Total .....			16	Total .....			16

SENIOR

Gen. Agr.	.003	Agr. Seminar* .....	0	Agr. Econ.	553	Agr. Econ. Summary .....	2
		Effective .....	16	Gen. Agr.	003	Agr. Seminar* .....	0
						Elective .....	14
Total .....			16	Total .....			16

Number of hours required for graduation, 131.

\* Four meetings each semester.

Electives

The electives in the Curriculum in Agricultural Administration are grouped as follows:

	Semester Hours
<b>Major Electives</b> .....	9
These electives are to be chosen from the courses in the Department of Agricultural Economics.	
<b>Minor Agricultural Electives</b> .....	15
These electives must be chosen from departments in the School of Agriculture and will directly strengthen the student's preparation in agriculture.	
<b>General Electives</b> .....	15
These electives should be chosen to meet individual needs and to round out the preparation provided by the rest of the student's curriculum.	

All electives must be officially approved before assignment, by both the Dean of the School of Agriculture and the head of the Department of Economics and Sociology.



**Curriculum in Agricultural Education*****B. S. in Agriculture***

For 1959 Graduation

(For Vocational Agriculture Teachers)

**FRESHMAN**

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Engl.	125	Written Comm. I .....	3	Engl.	135	Written Comm. II .....	2
Bot.	110	Gen. Botany .....	5	Dairy Husb.	104	El. of Dairying .....	3
Psych.	310	Gen. Psychology .....	3	Chem.	110	General Chemistry .....	5
An. Husb.	106	Elem. of An. Husb. ....	2	Geol.	110	General Geology .....	3
An. Husb.	113	Elem. of An. Husb. Lab.,	1	Educ.	100	Educ. Psychology I .....	3
Ind. Engg.	180	Welding .....	1			Air Science .....	1 or
		Air Science .....	1 or			Military .....	1
		Military .....	1	Gen. Agr.	003	Agr. Seminar* .....	0
Gen. Agr.	004	Freshman Assembly .....	0	Phys. Ed.	010	Physical Education M ....	0
Gen. Agr.	003	Agr. Seminar* .....	0				
Phys. Ed.	010	Physical Education M ....	0				
Total .....			16	Total .....			17

**SOPHOMORE**

Chem.	310	Org. Chemistry (Agr.) ....	3	Agron.	106	Farm Crops .....	4
Speech	105	Oral Comm. I .....	2	An. Husb.	155	Prin. of Feeding .....	3
Speech	205	Parl. Law .....	1	Econ.	110	Economics I .....	3
Hort.	110	El. of Horticulture Rec.,	2	Educ.	105	Educ. Psychology II .....	3
Hort.	111	El. of Horticulture Lab.,	1	Agr. Engg.	120	Farm Power .....	3
Agron.	149	Soils .....	4			Air Science .....	1 or
Agr. Engg.	110	Farm Mechanics .....	2			Military .....	1
		Air Science .....	1 or	Gen. Agr.	003	Agr. Seminar* .....	0
		Military .....	1	Phys. Ed.	010	Physical Education M ....	0
Gen. Agr.	003	Agr. Seminar* .....	0				
Phys. Ed.	010	Physical Education M ....	0				
Total .....			16	Total .....			17

**JUNIOR**

Agron.	160	Soil Management .....	3	Agr. Econ.	212	Farm Accounting .....	3
An. Husb.	197	Livestock Production .....	3	Poul. Husb.	104	Farm Poul. Prod. Rec. ..	2
An. Husb.	134	Prin. of Livestock Sel. ....	3	Poul. Husb.	105	Farm Poul. Prod. Lab. ..	1
An. Husb.	204	El. of Meat Proc. and ..	2	Ent.	210	Gen. Econ. Entomology ..	3
An. Husb.	211	Meat Processing .....	or 1	Tech. Jour.	305	Agr. Journalism .....	3
Dairy Husb.	132	Milk Production I .....	3	Educ.	120	Prin. of Sec. Education ..	3
Bot.	410	Plant Pathology I .....	3	Agr. Engg.	115	Farm Machinery Repair ..	3
Educ.	505	Voc. Education .....	3	Gen. Agr.	003	Agr. Seminar* .....	0
Gen. Agr.	003	Agr. Seminar* .....	0				
Engl.	090	English Proficiency .....	0				
Total .....			18	Total .....			18

**SENIOR**

Agr. Econ.	218	Marketing Farm Prods. ..	3	An. Husb.	225	An. Husb. Practicums ....	2
Agr. Econ.	206	Farm Organization .....	3	Agron.	114	Grain Gradg. and Judg.,	2
Educ.	255	Meth. of Teaching Agr.,	3	Poul. Husb.	133	Poultry Practicums .....	2
Agr. Engg.	410	Farm Bldgs. Constr. ....	3	Educ.	265	Tchg. Partic. in Agr. ....	3
Agr. Engg.	415	Agr. Engg. Applications,	2	Agr. Engg.	405	Farm Mechanics Meth. ..	3
Hist.	255	Amer. Government .....	3	Rural Soc.	290	Rural Sociology .....	3
Gen. Agr.	003	Agr. Seminar* .....	0	Gen. Agr.	003	Agr. Seminar* .....	0
Total .....			17	Total .....			15

Number of hours required for graduation, 134.

\* Four meetings each semester.

# Curriculum in Agricultural Journalism

## B. S. in Agricultural Journalism

### FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Gen. Agr.	003	Agr. Seminar* .....	0	Gen. Agr.	003	Agr. Seminar* .....	0
Gen. Agr.	004	Freshman Assembly .....	0	Bot.	110	Gen. Botany .....	5
Chem.	110	General Chemistry .....	5	Chem.	310	Org. Chem. (Agr.) .....	3
Engl.	125	Written Comm. I .....	3	Engl.	135	Written Comm. II .....	2
Geol.	110	General Geology .....	3			Air Science .....	1 or
		Air Science .....	1 or			Military .....	1
		Military .....	1	Phys. Ed.	010	Physical Education .....	0
		Physical Education .....	0	Tech. Journ.	050	Tech. Journ. Lec. ....	0
Phys. Ed.	010	Oral Comm. I .....	2	Tech. Journ.	105	Graphic Arts Survey ....	2
Speech	105	Tech. Journ. Lec. ....	0	Tech. Journ.	115	Typography Lab. ....	1
Tech. Journ.	050	Agr'l Elective .....	3			Agr'l Elective .....	3
Total .....			17	Total .....			17

### SOPHOMORE

Gen. Agr.	003	Agr. Seminar*	0	An. Husb.	405	Genetics	3
Hist.	365	Elementary Logic	3 or	Gen. Agr.	003	Agr. Seminar*	0
Math.	130	Mathematics in Agr.	3	Agr. Econ.	290	Rural Sociology	3 or
		Air Science	1 or	Geol.	210	Prin. of Geography	3
		Military	1			Air Science	1 or
Phys. Ed.	010	Physical Education	0			Military	1
Tech. Journ.	050	Tech. Journ. Lec.	0	Phys. Ed.	010	Physical Education	0
Tech. Journ.	215	Reporting I	3	Tech. Journ.	050	Tech. Journ. Lec.	0
Zool.	110	Gen. Zoology	5	Tech. Journ.	225	Reporting II	3
		Agr'l Elective	5			Agr'l Elective	7
Total			17	Total			17

### JUNIOR

Gen. Agr.	003	Agr. Seminar*	0	Agr. Econ.	218	Marketing Farm Prod.	3
Econ.	110	Economics I	3	Gen. Agr.	003	Agr. Seminar*	0
Engl.	090	English Proficiency	0	Tech. Journ.	050	Tech. Journ. Lec.	0
Tech. Journ.	050	Tech. Journ. Lec.	0	Tech. Journ.	255	Prin. of Advertising	3
Tech. Journ.	265	Editing	2	Tech. Journ.	275	News Photography	2
		Agr'l Elective	7	Tech. Journ.	465	Mag. Art. Writ.	2
		Elective	5			Agr'l Elective	3
						Elective	4
Total			17	Total			17

### SENIOR

Gen. Agr.	003	Agr. Seminar*	0	Agr. Econ.	537	Agricultural Policy	3
Gen. Stud.	250	Introd. to Human. I	4	Gen. Agr.	003	Agr. Seminar*	0
Tech. Journ.	050	Tech. Journ. Lec.	0	Gen. Stud.	260	Introd. to Human. II	4
Tech. Journ.	405	Reporting III	3	Tech. Journ.	050	Tech. Journ. Lec.	0
		Agr'l Elective	3	Tech. Journ.	235	Rural Press	2 or
		Elective	7	Tech. Journ.	315	Radio and TV News	2
				Tech. Journ.	485	Interp. of Contemp.	
						Affairs	3
						Elective	5
Total			17	Total			17

Number of hours required for graduation, 136.

\* Four meetings each semester.

Four credit hours of journalism publications laboratory will be elected. Twelve or more additional credit hours must be elected as a major in one of the departments of the School of Agriculture.

All electives must be approved by the head of the Department of Technical Journalism, the head of the department in which the student is taking his agricultural major, and by the Dean of Agriculture.



**Curriculum in Dairy Manufacturing***B. S. in Agriculture***FRESHMAN**

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Engl.	125	Written Comm. 1 .....	3	Engl.	135	Written Comm. II .....	2
Gen. Stud.	150	Biology I .....	4	Speech	105	Oral Comm. I .....	2
Chem.	210	Chemistry I .....	5	Gen. Stud.	160	Biology II .....	4
Dairy Husb.	104	El. of Dairying .....	3	Chem.	230	Chemistry II Rec. ....	3
		Air Science .....	1 or	Chem.	250	Chemistry II Lab. ....	2 or
		Military .....	1	Dairy Husb.	118	Dairy Cattle Judg. ....	2
Gen. Agr.	004	Freshman Assembly .....	0	An. Husb.	106	El. of An. Husb. ....	2
Gen. Agr.	003	Agr. Seminar* .....	0	An. Husb.	113	El. of An. Husb. Lab. ...	1
Phys. Ed.	010	Physical Education M ....	0			Air Science .....	1 or
						Military .....	1
				Gen. Agr.	003	Agr. Seminar* .....	0
				Phys. Ed.	010	Physical Education M ....	0
Total .....			16	Total .....			17

**SOPHOMORE**

Dairy Husb.	125	Fund. Dairy Tech. ....	2	Dairy Husb.	139	Mkt. Milk and Dy. Insp.,	4
Math.	175	College Algebra .....	3 or	An. Husb.	155	Prin. of Feeding .....	3
Math.	130	Mathematics in Agr. ....	3	Bact.	510	Dairy Bacteriology .....	3
Bact.	110	Gen. Microbiology .....	3	Bact.	515	Dairy Bact. Lab. ....	2
Chem.	310	Organic Chem. (Agr.) ....	3	Gen. Stud.	220	Intro. Soc. Sci. II .....	4
Gen. Stud.	210	Intro. Soc. Sci. I .....	4			Air Science .....	1 or
		Air Science .....	1 or			Military .....	1
		Military .....	1	Gen. Agr.	003	Agr. Seminar* .....	0
Gen. Agr.	003	Agr. Seminar* .....	0	Phys. Ed.	010	Physical Education M ....	0
Phys. Ed.	010	Physical Education M ....	0				
Total .....			16	Total .....			17

**JUNIOR**

Dairy Husb.	146	Butter Making .....	3	Dairy Husb.	132	Milk Production .....	3
Econ.	330	Prin. of Acc't'g .....	3	Dairy Husb.	181	Cheese Making .....	3
Psych.	310	Gen. Psychology .....	3	Dairy Husb.	188	Dairy Prod. Judg. ....	1
Gen. Agr.	003	Agr. Seminar* .....	0	Econ.	110	Econ. I .....	3
Engl.	090	English Proficiency .....	0	Gen. Agr.	003	Agr. Seminar* .....	0
		Elective† .....	8			Elective .....	7
Total .....			17	Total .....			17

**SENIOR**

Dairy Husb.	174	Ice Cream Making .....	3	Dairy Husb.	167	Cond. and Pwd. Milk ....	3
Dairy Husb.	195	Adv. Dy. Prod. Judg. ....	1	Dairy Husb.	404	Dairy Seminar .....	1
Dairy Husb.	446	Dairy Plant Mgt. ....	2	Dairy Husb.	453	Tech. Controls .....	2
Engl.	155	Comm'l Corresp. ....	3	Psych.	705	Psych. Adv. and Sell'g,	3
Gen. Agr.	003	Agr. Seminar* .....	0	Gen. Agr.	003	Agr. Seminar* .....	0
		Elective .....	7			Elective .....	7
Total .....			16	Total .....			16

Number of hours required for graduation, 132.

\* Four meetings each semester.

† Students not offering one unit of high school physics for entrance must include three hours of physics in their electives.

Only students who have a year and a half of high school algebra are eligible for Math. 175, College Algebra.

# Curriculum in Horticulture

## B. S. in Agriculture

### FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Engl.	125	Written Comm. I .....	3	Engl.	135	Written Comm. II .....	2
Bot.	110	Gen. Botany .....	5	Speech	105	Oral Comm. I .....	2
Geol.	110	Gen. Geology .....	3	Chem.	210	Chemistry I .....	5
Math.	130	Math. in Agr. ....3 or		Hort.	110	El. of Hort. Rec. ....	2
Math.	175	College Algebra* .....	3	Hort.	111	El. of Hort. Lab. ....	1
		Air Science .....1 or		Econ.	330	Prin. of Acctg. ....	3
		Military .....	1			Air Science .....1 or	
Gen. Agr.	004	Freshman Assembly .....	0			Military .....	1
Gen. Agr.	003	Agr. Seminar† .....	0	Gen. Agr.	003	Agr. Seminar† .....	0
Phys. Ed.		Physical Educ. M or W	0	Phys. Ed.		Physical Educ. M or W	0
Total .....			14 or 15	Total .....			15 or 16

### SOPHOMORE

Chem.	230	Chemistry II Rec. ....	3	Agron.	149	Soils .....	4
Hort.	153	Lands. Gardening .....	3	Chem.	310	Org. Chem. (Agr.) .....	3
Hort.	104	Plant Propagation .....	3	Econ.	110	Econ. I .....	3
Bot.	690	Tax. Bot. Fl. Pl. ....	3			Air Science .....1 or	
		Air Science .....1 or				Military .....	1
		Military .....	1	Gen. Agr.	003	Agr. Seminar† .....	0
Gen. Agr.	003	Agr. Seminar† .....	0	Phys. Ed.		Physical Educ. M or W	0
Phys. Ed.		Physical Educ. M or W	0			Option A, B, C or D ....	6
		Option A, B, C, or D ....	3	Total .....			16 or 17
Total .....			15 or 16	Total .....			16 or 17

### JUNIOR

Bot.	300	El. of Plant Physiology ..	3	Gen. Stud.	260	Humanities II .....	4
An. Husb.	405	Genetics .....	3	Ento.	210	Gen. Ec. Entomol. ....	3
Bot.	410	Plant Path. I .....	3	Hort.	411	Lit. of Hort. ....	2
Gen. Stud.	250	Humanities I .....	4	Gen. Agr.	003	Agr. Seminar† .....	0
Gen. Agr.	003	Agr. Seminar† .....	0			Option A, B, C or D ....	8
Engl.	090	English Proficiency .....	0	Total .....			17
		Option A, B, C, or D ....	4	Total .....			17
Total .....			17	Total .....			17

### SENIOR

Ento.	425	Hort. Entomol. ....	2	Hort.	404	Spraying .....	3
Agron.	530	Soil Fertility .....	3	Bot.	420	Hort. Crop Diseases ....	3
Hort.	425	Hort. Seminar .....	1	Tech. Journ.	305	Agr. Journalism .....	3
Gen. Agr.	003	Agr. Seminar† .....	0	Gen. Agr.	003	Agr. Seminar† .....	0
		Option A, B, C or D ....	11			Option A, B, C or D ....	8
Total .....			17	Total .....			17

Number of hours required for graduation, 128 or 132.

\* One and one-half units of high school algebra are required for College Algebra.

† Four meetings each semester.



## Requirements

## OPTION A (Floriculture)

	<i>Course</i>	<i>Sem. Hrs.</i>
Hort.	139 Plant Materials I .....	3
Hort.	132 Nursery Practice .....	3
Hort.	182 Gh. Cons. and Mgt. ....	3
Hort.	196 El. of Floriculture .....	3
Hort.	217 Comm. Floriculture I ....	3
Hort.	224 Comm. Floriculture II ..	3
Hort.	203 Floral Arrgt. I .....	2
	Social Science Courses*,	6
	Electives† .....	14

## OPTION B (Ornamental Horticulture)

	<i>Course</i>	<i>Sem. Hrs.</i>
Hort.	132 Nursery Practice .....	3
Bot.	670 Plant Ecology .....	3
Hort.	139 Plant Materials I .....	3
Hort.	146 Plant Materials II .....	3
Hort.	453 Planting Design .....	2
Hort.	418 Arboriculture .....	3
	Social Science Courses*,	6
	Electives† .....	17

## OPTION C (Pomology)

Hort.	Any Pomology Courses ..	9
Hort.	189 Veg. Gardening .....	3
Bact.	140 Agr. Microbiology .....	3
Hort.	175 Pres. Food by Freezing	3
Dairy H.	104 El. of Dairying .....	3 or
Poul. H.	104 Farm Poul. Prod. Lec. 2 and	
Poul. H.	105 Farm. Poul. Prod. Lab. ..	1
	Social Science Courses*,	6
	Electives† .....	13

## OPTION D (Vegetable Crops)

Hort.	Vegetable Courses .....	8
Hort.	175 Pres. Food by Freezing ..	3
Hort.	160 Small Fruits .....	3
Bact.	140 Agr. Microbiology .....	3
Dairy H.	104 El. of Dairying .....	3 or
Poul. H.	104 Farm. Poul. Prod. Lec. 2 and	
Poul. H.	105 Farm. Poul. Prod. Lab. ..	1
	Social Science Courses*,	6
	Electives† .....	14

\* To be selected from courses offered by the departments of Economics and Sociology; History, Government, and Philosophy; and Psychology.

† Students not offering one unit of high school physics for entrance must include three hours of Agricultural Physics among their electives.

# Curriculum in Landscape Design\*

## B. S. in Landscape Design

### FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Bot.	120	Gen. Botany .....	5	Hort.	110	El. of Hort. Rec. ....	2
Gen. Stud.	110	Man's Phys. World I .....	4	Hort.	111	El. of Hort. Lab. ....	1
Engl.	125	Written Comm. I .....	3	Gen. Stud.	120	Man's Phys. World II ...	4
Arch.	120	Freehand Draw. I .....	2	Engl.	135	Written Comm. II .....	2
Mach. Des.	110	Engg. Draw. ....	2	Sp.	105	Oral Comm. I .....	2
		Air Science .....	1 or	Arch.	124	Freehand Draw. II .....	2
		Military .....	1	Math.	190	Plane Trig. ....	3
Gen. Agr.	004	Freshman Assembly .....	0			Air Science .....	1 or
Gen. Agr.	003	Agr. Seminar† .....	0			Military .....	1
Phys. Ed.	010	Physical Education M, 0 or		Gen. Agr.	003	Agr. Seminar† .....	0
Phys. Ed.	055	Physical Education W ....	0	Phys. Ed.	010	Physical Education M, 0 or	
				Phys. Ed.	055	Physical Education W ....	0
Total .....				Total .....			
16 or 17				16 or 17			

### SOPHOMORE

Hort.	150	Lands. Gardening .....	3	Geol.	410	Geomorphology .....	4
Arch.	230	El. of Arch. I .....	4	Arch.	234	El. of Arch. II .....	4
Arch.	105	Shades and Shadows .....	1	Arch.	110	Perspective Drawing .....	1
Arch.	285	Hist. Paintg. and Sculp., 3		Arch.	200	Apprec. of Arch. ....	3
Bot.	410	Plant Pathology I .....	3	Arch.	130	Pencil Sketch. ....	2
Bot.	690	Tax. Bot. Flrg. Plts. ....	3	Bot.	670	Plant Ecology .....	3
		Air Science .....	1 or			Air Science .....	1 or
		Military .....	1			Military .....	1
Gen. Agr.	003	Agr. Seminar† .....	0	Gen. Agr.	003	Agr. Seminar† .....	0
Phys. Ed.	010	Physical Education M, 0 or		Phys. Ed.	010	Physical Education M, 0 or	
Phys. Ed.	055	Physical Education W ....	0	Phys. Ed.	055	Physical Education W ....	0
Total .....				Total .....			
17 or 18				17 or 18			

### JUNIOR

Hort.	474	Theo. Lds. Des. ....	2 or	Hort.	453	Planting Design .....	2 or
Hort.	446	Lands. Constr. ....	3	Hort.	439	Community Planning .....	3
Hort.	139	Plant Materials I .....	3	Hort.	146	Plant Materials II .....	3
Civ. Engg.	120	Surveying I .....	2	Ent.	210	Gen. Econ. Ent. ....	3
Agron.	149	Soils .....	4	Civ. Engg.	125	Surveying II .....	3
Arch.	160	Water Color I .....	2	Gen. Agr.	003	Agr. Seminar† .....	0
Gen. Agr.	003	Agr. Seminar† .....	0			Electives .....	4
Engl.	090	English Proficiency .....	0				
		Electives .....	3				
Total .....				Total .....			
16 or 17				15 or 16			

### SENIOR

Hort.	460	Lands. Design I .....	4	Hort.	467	Lands. Design II .....	4
Hort.	446	Lands. Constr. ....	3 or	Hort.	439	Community Planning ....	3 or
Hort.	470	Theo. Lands. Des. ....	2	Hort.	453	Planting Design .....	2
Gen. Stud.	210	Introd. Soc. Sci. I .....	4	Gen. Stud.	220	Introd. Soc. Sci. II .....	4
Gen. Agr.	003	Agr. Seminar† .....	0	Tech. Journ.	305	Agr. Journalism .....	3
		Electives .....	6	Gen. Agr.	003	Agr. Seminar† .....	0
						Electives .....	3
Total .....				Total .....			
16 or 17				16 or 17			

Number of hours required for graduation: Women, 131; men, 135.

\* See, Entrance to College, Requirements for.

† Four meetings each semester.

**Curriculum in Milling Technology***B. S. in Milling Industry***FRESHMAN**

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Chem.	210	Chemistry I .....	5	Chem.	230	Chemistry II Rec. ....	3
Gen. Stud.	150	Biology I .....	4	Chem.	250	Chemistry II Lab. ....	2
Engl.	125	Written Comm. I .....	3	Gen. Stud.	160	Biology II .....	4
Math.	175	College Algebra .....	3	Mach. Des.	110	Engg. Drawing .....	2
Mill. Ind.	111	Survey of Milling .....	1	Math.	190	Plane Trig. ....	3
Gen. Agr.	004	Freshman Assembly .....	0	Mill. Ind.	104	El. of Milling .....	2
Gen. Agr.	003	Agr. Seminar .....	0	Gen. Agr.	003	Agr. Seminar .....	0
Mill. Ind.	018	Milling Ind. Seminar .....	0	Mill. Ind.	018	Milling Ind. Seminar .....	0
		Air Science .....	1 or			Air Science .....	1 or
		Military .....	1			Military .....	1
		Physical Education .....	0			Physical Education .....	0
Total .....			17	Total .....			17

**SOPHOMORE**

Econ.	110	Economics I .....	3	Engl.	140	Written Comm. IIB.....	3
Mill. Ind.	118	Flow Sheets .....	2	Mill. Ind.	125	Mill. Prac. I .....	3
Phys.	110	Gen. Physics I .....	4	Phys.	120	General Phys. II .....	4
Gen. Agr.	003	Agr. Seminar .....	0	Gen. Agr.	003	Agr. Seminar .....	0
Mill. Ind.	018	Milling Ind. Seminar .....	0	Mill. Ind.	018	Milling Ind. Seminar .....	0
		Air Science .....	1 or			Air Science .....	1 or
		Military .....	1			Military .....	1
		Physical Education .....	0			Physical Education .....	0
		Option A, B, or C .....	7			Option A, B, or C .....	6
Total .....			17	Total .....			17

**JUNIOR**

Agron.	135	Mkt. Grad. of Cer. ....	3	Mill. Ind.	460	Qual. Wht. and Flr. ....	3
Hist.	115	Civilization I .....	3	Hist.	130	Civilization II .....	3
Speech	105	Oral Comm. I .....	2	Gen. Agr.	003	Agr. Seminar .....	0
Gen. Agr.	003	Agr. Seminar .....	0	Mill. Ind.	018	Milling Ind. Seminar .....	0
Mill. Ind.	018	Milling Ind. Seminar .....	0			Option A, B, or C .....	8
Engl.	090	Engl. Proficiency .....	0			Electives .....	3
		Option A, B, or C .....	6				
		Electives .....	3				
Total .....			17	Total .....			17

**SENIOR**

Mill. Ind.	481	Exp. Baking I .....	3	Engl.	155	Com'l Corres. ....	3
Gen. Agr.	003	Agr. Seminar .....	0	Ent.	165	Mill. Entomology .....	4
Mill. Ind.	018	Milling Ind. Seminar .....	0	Gen. Agr.	003	Agr. Seminar .....	0
		Option A, B, or C .....	11	Mill. Ind.	018	Milling Ind. Seminar .....	0
		Electives .....	3			Option A, B, or C .....	7
						Electives .....	3
Total .....			17	Total .....			17

Number of hours required for graduation, 136.

(Options for the Curriculum in Milling Technology on page 74.)



## Options for the Curriculum in Milling Technology

OPTION A (Operation)							
		<i>Course</i>	<i>Sem. Hrs.</i>			<i>Course</i>	<i>Sem. Hrs.</i>
App. Mech.	405	Applied Mechanics .....	4	Math.	215	Anal. Geom. and Calc. I,	4
App. Mech.	410	Mech. of Matls. I Rec. ..	4	Math.	230	Anal. Geom. and Calc. II,	4
App. Mech.	474	Fluid Mechanics B .....	3	Mill. Ind.	439	Adv. Flow Sheets .....	2
Chem.	330	Gen. Org. Chem. ....	5	Mill. Ind.	453	Milling Practice II .....	3
Elec. Engg.	120	Elec. Engg. C Rec. ....	2	Mill. Ind.	418	Flr. and Feed Mill Con.,	3
Elec. Engg.	124	Elec. Engg. C Lab. ....	1	Mill. Ind.	404	Mill. Tech. I .....	2
Mach. Des.	115	Descriptive Geometry ....	2	Mill. Ind.	411	Mill. Tech. II .....	2
Mach. Des.	120	Machine Design I .....	2	Econ.	465	Labor Management .....	2
OPTION B (Chemistry)							
Bact.	110	Gen. Microbiology .....	3	Chem.	595	Phys. Chem. II Rec. ....	3
Chem.	435	Quantitative Analysis ....	4	Chem.	600	Phys. Chem. II Lab. ....	2
Chem.	511	Org. Chemistry I .....	3	Chem.	650	Gen. Biochem. ....	5
Chem.	512	Org. Chemistry I Lab. ....	2	Math.	215	Anal. Geom. and Cal. I ..	4
Chem.	516	Org. Chemistry II .....	3	Math.	230	Anal. Geom. and Cal. II,	4
Chem.	517	Org. Chemistry II Lab.,	2	Math.	245	Anal. Geom. and Cal. III,	4
Chem.	585	Phys. Chem. I Rec. ....	3	Mill. Ind.	425	Flr. and Feed Analysis ..	3
Chem.	590	Phys. Chem. I Lab. ....	2	Mill. Ind.	446	Adv. Wht. and Flr. Test.,	3
OPTION C (Administration)							
Agr. Econ.	529	Grain Marketing .....	3	Psy.	310	Gen. Psychology .....	3
Chem.	330	Gen. Org. Chem. ....	5	Hist.	295	Business Law I .....	3
Chem.	435	Quantitative Analysis ....	4	An. Husb.	155	Prin. of Feeding .....	3
Econ.	130	Money and Banking .....	3	Math.	320	El. of Statistics .....	3
Econ.	330	Prin. of Accounting ....	3	Math.	340	App. El. of Statistics ....	2
Econ.	405	Bus. Org. and Finance ....	3	Mill. Ind.	425	Flour and Feed Analysis,	3
Econ.	450	Sales Management .....	3	Mill. Ind.	200	El. of Feed Manufacture,	3
Econ.	455	Labor Econ. I .....	3				

**Curriculum in Feed Technology***B. S. in Feed Technology***FRESHMAN**

FIRST SEMESTER				SECOND SEMESTER			
		<i>Course</i>	<i>Sem. Hrs.</i>			<i>Course</i>	<i>Sem. Hrs.</i>
Chem.	210	Chemistry I .....	5	Chem.	230	Chemistry II Rec. ....	3
Gen. Stud.	150	Biology I .....	4	Chem.	250	Chemistry II Lab. ....	2
Engl.	125	Written Comm. I .....	3	Gen. Stud.	160	Biology II .....	4
Math.	175	College Algebra .....	3	Mach. Des.	110	Engg. Draw. ....	2
Mill. Ind.	111	Survey of Milling .....	1	Math.	190	Plane Trig. ....	3
Gen. Agr.	004	Freshman Assembly .....	0	Mill. Ind.	104	El. of Milling .....	2
Mill. Ind.	018	Milling Ind. Seminar .....	0	Gen. Agr.	003	Agr. Seminar .....	0
Gen. Agr.	003	Agr. Seminar .....	0	Mill. Ind.	018	Milling Ind. Seminar .....	0
		Air Science .....	1 or			Air Science .....	1 or
		Military .....	1			Military .....	1
		Physical Education .....	0			Physical Education .....	0
Total .....			17	Total .....			17

**SOPHOMORE**

Dairy Husb.	104	El. of Dairy. ....	3 or	Engl.	140	Written Comm. II .....	3
An. Husb.	106	El. of A.H. Lec. ....	2 and	Phys.	120	Gen. Physics II .....	4
An. Husb.	113	El. of A.H. Lab. ....	1	Poul. Husb.	104	Farm Poul. Prod. Rec. ..	2
Econ.	110	Economics I .....	3	Poul. Husb.	105	Farm Poul. Prod. Lab. ..	1
Mill. Ind.	118	Flow Sheets .....	2	Gen. Agr.	003	Agr. Seminar .....	0
Mill. Ind.	200	El. of Feed Mfg. ....	3	Mill. Ind.	018	Milling Ind. Seminar .....	0
Physics	110	Gen. Physics I .....	4			Air Science .....	1 or
Speech	105	Oral Comm. I .....	2			Military .....	1
Gen. Agr.	003	Agr. Seminar .....	0			Physical Education .....	0
Mill. Ind.	018	Milling Ind. Seminar .....	0			Option A, B, or C .....	5
		Air Science .....	1 or				
		Military .....	1				
		Physical Education .....	0				
Total .....			18	Total .....			16

**JUNIOR**

Agron.	135	Mkt. Grading Cer. ....	3	Econ.	465	Labor Management .....	2
An. Husb.	155	Prin. of Feeding .....	3 or	Mill. Ind.	600	Feed Tech. I .....	3
Chem.	730	Prin. of An. Nutr. ....	3	Gen. Agr.	003	Agr. Seminar .....	0
Physiol.	131	Anat. and Physiology ....	3	Mill. Ind.	018	Milling Ind. Seminar .....	0
Gen. Agr.	003	Agr. Seminar .....	0			Option A, B, or C .....	9
Mill. Ind.	018	Milling Ind. Seminar .....	0			Electives .....	3
Engl.	090	Engl. Proficiency .....	0				
		Option A, B, or C .....	5				
		Electives .....	3				
Total .....			17	Total .....			17

**SENIOR**

Hist.	115	Civilization I .....	3	Ent.	165	Mill. Ent. ....	4
Mill. Ind.	210	Feed Form. and Blendg.,	3	Hist.	130	Civilization II .....	3
Gen. Agr.	003	Agr. Seminar .....	0	Gen. Agr.	003	Agr. Seminar .....	0
Mill. Ind.	018	Milling Ind. Seminar .....	0	Mill. Ind.	018	Milling Ind. Seminar .....	0
		Option A, B, or C .....	8			Option A, B, or C .....	7
		Electives .....	3			Electives .....	3
Total .....			17	Total .....			17

Total number of hours required for graduation, 136.

(Options for the Curriculum in Feed Technology on page 76.)

## Options for the Curriculum in Feed Technology

## OPTION A (Operation)

		<i>Course</i>	<i>Sem. Hrs.</i>			<i>Course</i>	<i>Sem. Hrs.</i>
App. Mech.	405	Applied Mechanics .....	4	Mach. Des.	130	Mechanism .....	3
App. Mech.	410	Mech. of Matls. I Rec. ..	4	Math.	215	Anal. Geom. and Calc. I,	4
Chem.	330	Gen. Organic Chem. ....	5	Math.	230	Anal. Geom. and Calc. II,	4
Mach. Des.	115	Descriptive Geom. ....	2	Mill. Ind.	601	Feed Tech. II .....	3
Mach. Des.	120	Machine Drawing I .....	2	Mill. Ind.	418	Flr. and Feed. Mill Con.,	3

## OPTION B (Nutrition)

Bact.	110	Gen. Microbiology .....	3	Chem.	580	Des. Phys. Chem. ....	3
Chem.	435	Quantitative Analysis ...	4	Chem.	650	Gen. Biochemistry .....	5
Chem.	511	Organic Chem. I .....	3	Chem.	750	Vitamins .....	2
Chem.	512	Organic Chem. I Lab. ....	2	Math.	215	Anal. Geom. and Calc. I,	4
Chem.	516	Organic Chem. II .....	3	Math.	230	Anal. Geom. and Calc. II,	4
Chem.	517	Organic Chem. II Lab. ....	2	Mill. Ind.	425	Flr. and Feed Analysis,	3

## OPTION C (Administration)

Chem.	330	Org. Chemistry .....	5	Econ.	450	Sales Management .....	3
Chem.	435	Quantitative Analysis ...	4	Hist.	295	Bus. Law I .....	3
Econ.	130	Money and Banking .....	3	Math.	320	El. of Stat. ....	3
Econ.	330	Principles of Acct. ....	3	Math.	340	Applied El. of Stat. ....	2
Econ.	405	Bus. Org. and Fin. ....	3	Mill. Ind.	425	Flr. and Feed Analysis,	3
Agr. Econ.	529	Grain Marketing .....	3				



**Curriculum in Technical Agronomy***B. S. in Agriculture***FRESHMAN**

FIRST SEMESTER				SECOND SEMESTER			
		<i>Course</i>	<i>Sem. Hrs.</i>			<i>Course</i>	<i>Sem. Hrs.</i>
Engl.	125	Written Comm. I.....	3	Engl.	135	Written Comm. II.....	2
Math.	175	College Algebra.....	3	Math.	190	Pl. Trigonometry.....	3
Chem.	210	Chemistry I.....	5	Chem.	230	Chemistry II Rec.....	3
Geol.	110	Gen. Geology.....	3	Chem.	250	Chemistry II Lab.....	2
An. Husb.	106	El. of An. Husb.....	2	Bot.	110	Gen. Botany.....	5
		Air Science.....	1 or			Air Science.....	1 or
		Military.....	1			Military.....	1
Gen. Agr.	003	Agr. Seminar*.....	0	Gen. Agr.	003	Agr. Seminar*.....	0
Gen. Agr.	004	Freshman Assembly.....	0	Phys. Ed.	010	Physical Education M....	0
Phys. Ed.	010	Physical Education M....	0				
Total .....			17	Total .....			16

**SOPHOMORE**

Phys.	110	Gen. Physics I.....	4	Zool.	110	Gen. Zoology.....	5
Econ.	110	Economics I.....	3	Agron.	149	Soils.....	4
Agron.	106	Farm Crops.....	4	Psychol.	310	Gen. Psychology.....	3
Chem.	330	Gen. Org. Chem.....	5 or	Speech	105	Oral Comm. I.....	2
Chem.	511	Org. Chem. I and Lab. ..	5			Air Science.....	1 or
		Air Science.....	1 or			Military.....	1
		Military.....	1	Gen. Agr.	003	Agr. Seminar*.....	0
Gen. Agr.	003	Agr. Seminar*.....	0	Phys. Ed.	010	Physical Education M....	0
Phys. Ed.	010	Physical Education M....	0			Option A, B, C, or D....	2
Total .....			17	Total .....			17

**JUNIOR**

Engl.	444	Sci. Report Writ.....	2	An. Husb.	155	Prin. of Feeding.....	3
An. Husb.	405	Genetics.....	3	Bact.	110	Gen. Microbiology.....	3
Gen. Agr.	003	Agr. Seminar*.....	0	Gen. Agr.	003	Agr. Seminar*.....	0
Engl.	090	Engl. Proficiency.....	0			Option A, B, C, or D....	11
		Option A, B, C, or D....	12				
Total .....			17	Total .....			17

**SENIOR**

Gen. Stud.	250	Humanities I.....	4	Gen. Stud.	260	Humanities II.....	4
Gen. Agr.	003	Agr. Seminar*.....	0	Gen. Agr.	003	Agr. Seminar*.....	0
		Option A, B, C, or D....	13			Option A, B, C, or D....	13
Total .....			17	Total .....			17

Number of hours required for graduation, 135.

\* Four meetings each semester.

The Curriculum in Technical Agronomy is designed to provide training for students interested in professional work in agronomy. Three options are provided so that students may specialize. Option A (Soil Science) is to prepare students for professional work in soils at the bachelor's level and for graduate work. Option B (Applied Agronomy and Soil Conservation) is to prepare students for professional work in the general fields of agronomy. Option C (Crop Science) is to prepare students for specialized professional work in crops and for graduate work. Option D (Wildlife Conservation) prepares students for general wildlife management and protection.

(Options for the Curriculum in Technical Agronomy on page 78.)

A student who is interested in general agriculture with major work in agronomy should enroll in the Curriculum in Agriculture.

### Options for the Curriculum in Technical Agronomy

#### OPTION A (Soil Science)

Agron.		Any courses in soils .....	9	Bot.	600	Plant Physiology .....	4
Agron.		Any course in crops 2 or 3		Phys.	120	Gen. Physics II .....	4
Math.	215,			Math.	320	El. Statistics .....	3
	230, 245	Anal. Geom. and Calc. ..	12			Electives .....	12
Chem.	435	Quant. Anal. ....	4 or				
Chem.	450	Quant. Anal. I .....	4				

#### OPTION B (Applied Agronomy and Soil Conservation)

Agron.		Any courses in crops .....	6	Agr. Econ.	557	Production Econ. ....	3 or
Agron.		Any courses in soils .....	6	Agr. Econ.	206	Farm. Org. ....	3
Hort.	110, 111	El. of Hort. ....	3	Bot.	401	Plant Path. I .....	3
Bot.	600	Plant Physiology .....	4	Ento.	210	Gen. Ec. Entomol. ....	3
						Electives .....	23

#### OPTION C (Crop Science)

Agron.		Any courses in crops .....	12	Agr. Econ.	557	Production Econ. ....	3 or
Agron.		Any course in soils .....	3	Agr. Econ.	206	Farm. Org. ....	3
Math.	320	El. Statistics .....	3	Bot.	410	Plant Path. I .....	3
Bot.	600	Plant Physiology .....	4	Ento.	210	Gen. Ec. Entomol. ....	3
Hort.	110, 111	El. Hort. ....	3			Electives .....	17

#### OPTION D (Wildlife Conservation)

Hort.	110	Elem. of Hort. ....	2	Bot.	690	Tax. Bot. of Flow. Plts.,	3
Ento.	210	Gen. Econ. Ento. ....	3	Zool.	675	Mammalogy .....	3
Zool.	680	Wildlife Cons. ....	3	Agron.	412	Pasture Management ....	3
Zool.	685	Wildlife Mgt. Tech. ....	3	Agron.	160	Soil Management .....	3
Zool.	690	Fisheries Mgt. ....	5			Electives .....	23

# AGRICULTURAL ECONOMICS

## Section of

## Economics and Sociology

GEORGE MONTGOMERY, *Head of Department*

Instruction in agricultural economics and rural sociology is offered in the School of Agriculture. Instruction in economics, sociology, accounting and business administration is offered in the School of Arts and Sciences.

Research in agricultural economics and rural sociology provides new and current information concerning the economic and social problems of rural life. This information and inspection trips are used to supplement textbooks and reference materials for classroom purposes. Opportunity for capable students to assist with research projects on a part time basis provides additional understanding of economic problems and relationships. Students have an opportunity to learn of the principles and economic forces involved in farm management, marketing, taxation, land utilization, agricultural finance, economic cooperation and rural life.

### COURSES IN AGRICULTURAL ECONOMICS

#### FOR UNDERGRADUATE CREDIT

**203. Economics of the Farm Business.** 3 semester hours. Each semester.

The application of economic principles to agricultural production and marketing problems with emphasis on the farm as a firm; combination of resources; costs and revenue; the forces which determine farm prices; the role of farm prices. Prerequisite: Econ. 110, Math. 145 or 175, or consent of the instructor.

**206. Farm Organization.** 3 semester hours. Each semester.

Economic forces affecting the organization and operation of the farm business. Two hours of recitation and three hours of laboratory a week. Prerequisite: Econ. 110, Agron. 149, An. Husb. 155.

**212. Farm Accounting.** 3 semester hours. Each semester.

Double and single entry systems of farm accounts. Analysis and interpretation of farm records. Farm income tax returns. Practice in analyzing a farm record and making a tax return. Prerequisite: Econ. 110.

**218. Marketing of Farm Products.** 3 semester hours. Each semester.

An introduction to marketing functions, types of agencies involved in marketing, market organization and regulation, marketing efficiency and price-making forces. Prerequisite: Econ. 110.

#### FOR UNDERGRADUATE AND GRADUATE CREDIT

**529. Grain Marketing.** 3 semester hours. Each semester.

Price influences and relationships, buying and selling problems, domestic and export trade; grain trade organization and regulation. Three hours of recitation a week. Prerequisite: Econ. 110.

**533. Advanced Farm Organization.** 3 semester hours. Second semester.

Advanced studies of factors affecting the successful organization and operation of farms. Two hours of recitation and three hours of laboratory a week. Prerequisite: Agr. Econ. 206.

**537. Agricultural Policy.** 3 semester hours. Each semester.

A study dealing with the economic problems of agriculture with emphasis on the influence of private and governmental policies on such problems. Attention will be directed toward analyzing the effects of different types of private and governmental policies on the agricultural industry. Prerequisite: Econ. 110; senior standing.

**541. Agricultural Industries.** 2 semester hours. Second semester, odd-numbered years.

Study of geographic, economic, and social factors controlling the es-



tablishment and maintenance of the major agricultural industries. Offered in 1955-'56 and alternate years thereafter. Two hours of recitation a week. Prerequisite: Econ. 110; junior standing.

**545. Conservation of Natural Resources.** 2 semester hours. Second semester, even-numbered years.

A survey of the major natural resources in the United States, and the development of principles for their conservation. Prerequisite: Econ. 110; junior standing.

**549. World Agriculture.** 3 semester hours. Second semester.<sup>4</sup>

Evaluation of world resources for agricultural production. Present and potential world consumption of agricultural commodities. Tenure of agricultural resources. Programs aiding in the development of rural economies of the world. Prerequisite: Econ. 110 or Gen. Stud. 160; senior standing.

**553. Agricultural Economics Summary.** 2 semester hours. Each semester.

Summarization and correlation of courses pursued in college; problems requiring application of principles and broad understanding of the field; contemporary economic developments. Two hours of recitation a week. Prerequisite: Senior standing.

**557. Production Economics.** 3 semester hours. Each semester.

The principles underlying the combination of elements of production with particular reference to agriculture. Three hours of recitation a week. Prerequisite: Econ. 110.

**561. Land Economics.** 3 semester hours. Each semester.

Relation of population to land supply; property rights in land; land tenure; land utilization including conservation; land valuation; land taxation. Three hours of recitation a week. Prerequisite: Econ. 110.

**565. Economics of Land Utilization.** 3 semester hours. First semester.

An economic analysis of alternative uses and practices for farmland, economics of soil conservation, land classification and its relationship to economic productivity. Three hours of recitation and one or two field trips. Prerequisite: Econ. 110, Agron. 149; junior standing.

**Land Law.** See Hist. 735.

**569. Agricultural Finance.** 3 semester hours. Second semester.

Sources and use of credit for purchase of farm land and to finance farm operations. Three hours of recitation a week. Prerequisite: Econ. 110.

**573. Market Prices.** 3 semester hours. Second semester.

Explanation of price analysis and forces determining prices. Three hours of recitation a week. Prerequisite: Econ. 110.

**577. Farmer Movements.** 3 semester hours. Second semester.

Principles underlying successful organization for farmers. Policies of the principal general farm organizations. Three hours of recitation a week. Prerequisite: Econ. 110.

**581. Livestock Marketing.** 3 semester hours. Second semester.

Livestock marketing services, functions, and prices. Three hours of recitation a week. Prerequisite: Econ. 110.

**585. Principles of Cooperation.** 3 semester hours. First semester.

Principles underlying successful cooperative activities. Three hours of recitation a week. Prerequisite: Econ. 110.

**589. Marketing of Dairy Products.** 3 semester hours. Second semester.

Factors affecting prices; dairy marketing organizations. Three hours of recitation a week. Prerequisite: Econ. 110.

**593. Egg and Poultry Marketing.** 3 semester hours. First semester, 1956-'57, and even years.

Marketing organization, regulations, and efficiency; factors influencing prices. Three hours of recitation a week. Prerequisite: Econ. 110.

**597. Agricultural Economic Statistics.** 3 semester hours. First semester.

A study of the principles and methods involved in the collection, analysis, interpretation, and presentation of statistical materials with special reference to agricultural economic data. Prerequisite: Econ. 110.

**601. Agricultural Economic Problems.** Credit to be arranged. Each semester and summer.

Prerequisite: Consult instructor.

#### FOR GRADUATE CREDIT

**835. Research in Agricultural Economics.** Credit to be arranged. Each semester and summer.

Individual research problems which may be used for a master's degree. Prerequisite: Consult instructor.

**840. Seminar in Economic Research.** 3 semester hours. Second semester.

The scientific reasoning underlying the selection of research problems, the formulation and testing of hypotheses, and the evaluation and presentation of results. Three hours of recitation a week. Prerequisite: Consent of instructor.

### COURSES IN RURAL SOCIOLOGY

#### FOR UNDERGRADUATE CREDIT

**290. Rural Sociology.** 3 semester hours. Each semester and summer.

Social and cultural life of rural people, principal groups, institutions and organizations and their functioning in communities.

#### FOR UNDERGRADUATE AND GRADUATE CREDIT

**700. Advanced Rural Sociology.** 3 semester hours. Second semester.

The development of rural sociology. Comparative rural life in the United States and other countries through the use of case studies of rural social organization and cultures. Prerequisite: Rural Soc. 290.

#### FOR GRADUATE CREDIT

**925. Research in Rural Sociology.** Credit to be arranged. Each semester and summer.

Prerequisite: Soc. 250, Rural Soc. 700.

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## AGRONOMY

RAYMOND V. OLSON, *Head of Department*

The farms used by the Department of Agronomy comprise 320 acres of medium rolling upland soil, and 60 acres of irrigated bottom land. The general fields and experimental plots, used for the breeding and testing of farm crops and for conducting experiments in soil fertility and methods of culture, afford the student opportunity for study and investigation.

Laboratories for soil and crop work are maintained for the regular use of students. Material is provided for the study of the grain and forage crops best adapted to different purposes and most suitable for growing in the state. Greenhouse space is provided for problems and research work in crops and soils.

### COURSES IN FARM CROPS

#### FOR UNDERGRADUATE CREDIT

**106. Farm Crops.** 4 semester hours. Each semester and summer.

Distribution, importance, characteristics, and production of the common field crops. Study of species and types of principal field crops. Three hours of recitation and three hours of laboratory a week. Prerequisite: Bot. 110 or Gen. Stud. 160.



**107. Farm Crops Laboratory.** 1 semester hour. Each semester.

For students who have credit in course 3-A, Farm Crops A in Home Study Department. Study of species and types of principal field crops. Three hours of laboratory a week. Prerequisite: Bot. 110 or Gen. Stud. 160.

**108. Forage Crops.** 3 semester hours. First semester.

Adaptation, cultural methods, production, preservation, and utilization of grasses, legumes, and other forage species. Three hours recitation a week. Prerequisite: Agron. 106.

**114. Grain Grading and Judging.** 2 semester hours. Second semester.

Application of the Federal Standards for grading farm crops and judging of grains and other crop products. Six hours of laboratory a week. Prerequisite: Agron. 106.

**121. Seed Testing.** 2 semester hours. First semester.

Offered in 1956-57 and alternate years thereafter. Laboratory testing of seeds, including identification, purity, and germination. Six hours of laboratory a week. Prerequisite: Bot. 110 or Gen. Stud. 160.

**128. Advanced Grain Judging.** 2 semester hours. First semester.

Commercial grading and judging of field crops and identification of principal types and varieties. Six hours of laboratory a week. Prerequisite: Agron. 114.

**135. Market Grading of Cereals.** 3 semester hours. First semester.

Market grades of cereals and factors that influence them. One hour of recitation and six hours of laboratory a week. Prerequisite: Mill. Ind. 104.

## FOR UNDERGRADUATE AND GRADUATE CREDIT

**404. Crop Improvement.** 2 semester hours. First semester.

Methods of pure seed production and breeding of agricultural crops. Two hours of recitation a week. Prerequisite: Agron. 106.

**412. Pasture Management.** 3 semester hours. Second semester.

Establishment, management, and utilization of tame and native pastures. Three hours of recitation a week. Prerequisite: Agron. 106.

**418. Principles of Agronomic Experimentation.** 3 semester hours. First semester.

Methods and principles of research and statistical analysis of experimental data. Two hours of recitation and three hours of laboratory a week. Prerequisite: Agron. 106, 149.

**425. Methods of Plant Breeding.** 3 semester hours. Second semester.

The application of principles and methods of breeding field crops, including laboratory, greenhouse, and field procedures. Two hours of recitation and three hours of laboratory a week. Prerequisite: Agron. 106, An. Husb. 405, Bot. 410.

**432. Plant Genetics.** 3 semester hours. First semester.

An advanced course dealing with genetic principles as applied to plant species. Three hours of recitation a week. Prerequisite: An. Husb. 405.

**439. Crop Problems.** Credit to be arranged. Each semester and summer.

Prerequisite: Agron. 106, 149.

Studies may be chosen in the fields of:

*Genetics, Crop Improvement, Pasture Improvement, Ecology, Weed Control, Plant Physiology, Production.*

**447. Crop Ecology.** 3 semester hours. Second semester.

Study of climatic factors and their effect on production and geographic distribution of crops in regions and countries. Three hours of recitation a week. Prerequisite: Agron. 106, 149, or consent of instructor.

**455. Special Crops.** 2 semester hours. First semester.

Growth habits, production methods, and classification of fiber, sugar,



root, tuber, oil, stimulant, and sedative crops. Two hours of recitation and three hours of laboratory a week. Prerequisite: Agron. 106.

**461. Weed Control.** 3 semester hours. Second semester.

Identification, growth habits, and methods of control of weeds. Two hours of recitation and three hours of laboratory a week. Prerequisite: Agron. 106.

**467. Identification of Pasture Plants.** 1 semester hour. Second semester.

Field and laboratory study of range and pasture plants with special emphasis on grasses and their distinguishing characteristics. Three hours of laboratory a week. Prerequisite: Consult instructor.

**474. Pasture and Range Surveys.** 2 semester hours. Second semester.

A study of the methods of range survey and the evaluation of pasture practices. One hour of recitation and three hours of laboratory a week. Prerequisite: Agron. 411, 467.

**605. Advanced Crop Ecology.** 3 semester hours. First semester.

Principles of growth and development of crop plants in relation to environment. Three hours of recitation a week. Prerequisite: Agron. 447.

**610. Developmental Genetics.** 3 semester hours. Second semester.

Introduction to the relationships between genetic and biochemical systems, with emphasis on the "nature of the gene." Three hours of lecture a week. Prerequisite: An. Husb. 405, and suitable courses in organic chemistry.

**Genetics Seminar.** (See An. Husb. 426.)

FOR GRADUATE CREDIT

**838. Agronomy Seminar.** 1 semester hour. Each semester.

A discussion of agronomic developments. Prerequisite: Graduate standing.

**901. Research in Crops.** Credit to be arranged. Each semester and summer.

Special problems which may extend through the year and furnish data for a master's or doctor's thesis. Prerequisite: Consult instructor.

**913. Topics in Plant Breeding.** 2 semester hours. Second semester.

Discussion and lectures on important papers and contributions in this field. Prerequisite: Consent of instructor.

**919. Topics in Plant Genetics.** 2 semester hours. First semester.

Discussion and lectures on important papers and contributions in this field. Prerequisite: Consent of instructor.

**925. Advanced Forage Crops.** 3 semester hours. First semester.

Important forage crops species are studied throughout current literature with regard to growth characteristics, utilization, and breeding procedures. Three hours of recitation a week. Prerequisite: Agron. 108.

**931. Photo- and Thermoperiodism of Crop.** Credit to be arranged. When scheduled or on request.

Influence of light periodicity and temperatures on the character of growth of crops, whether vegetative or reproductive. One hour recitation a week and assigned reading. Prerequisite: Agron. 605 or consent of instructor.

**937. Crop Hardiness.** Credit to be arranged. When scheduled or on request.

A study of factors in hardiness of crops to cold, heat, and drought and the production of crops under conditions of adverse temperatures and water deficit. One hour of recitation a week and assigned reading. Prerequisite: Agron. 605 or consent of instructor.

**943. World Crop Production.** Credit to be arranged. When scheduled or on request.

Production of crops in different parts of the world in relation to natural conditions. Prerequisite: Agron. 447 or consent of the instructor.

## COURSES IN SOILS

## FOR UNDERGRADUATE CREDIT

**149. Soils.** 4 semester hours. Each semester.

Fundamental principles underlying the formation, fertility, and management of soils. Three hours of recitation and three hours of laboratory a week. Prerequisite: Chem. 210, Geol. 110, or Gen. Stud. 120.

**150. Soils Laboratory.** 1 semester hour. Each semester.

For students transferring from Two-year Agriculture only. Field trips, fertility analysis, and use of soil survey maps. Three hours of laboratory a week. Prerequisite: Chem. 210, Geol. 110, or Gen. Stud. 120.

**160. Soil Management.** 3 semester hours. Each semester.

Nitrogen maintenance, crop rotations, water erosion control, and use of lime, manure, and commercial fertilizers under high rainfall conditions in Kansas. Three hours of recitation a week. Prerequisite: Agron. 106, 149.

**170. Dryland Soil Management.** 2 semester hours. Each semester.

Water conservation, wind erosion control, soil management and soil use under low rainfall conditions in Kansas. Two hours of recitation a week. Prerequisite: Agron. 106, 149.

## FOR UNDERGRADUATE AND GRADUATE CREDIT

**502. Management of Irrigated Soils.** 2 semester hours. Second semester.

Evaluating soils for irrigation. Water application in relation to soils and crops. Principles of soil management as applied to irrigated lands. Reclamation and management of saline and alkali soils. Two hours of recitation a week. Prerequisite: Agron. 106, 149.

**509. Development and Classification of Soils.** 3 semester hours. Second semester.

Influence of soil-forming agencies on soil characteristics and methods of classifying and mapping soils. Two hours of recitation and three hours of laboratory a week. Prerequisite: Agron. 149.

**516. Soil Problems.** Credit to be arranged. Each semester and summer.

Prerequisite depends on the problem assigned.

Studies may be chosen in the fields of:

*Chemistry, Physics, Conservation, Fertility, Development and Classification.*

**519. Chemical Fertilizers.** 3 semester hours. First semester.

Manufacturing, processing and using chemical fertilizers. Study of the properties and characteristics of chemical fertilizers including the principles affecting the use of such materials. Three hours of recitation a week. Prerequisite: Agron. 149.

**523. Chemical Properties of Soils.** 3 semester hours. First semester.

A study of soils as a chemical and colloidal system, including their chemical and mineralogical composition and reactions occurring in them. Three hours of recitation a week. Prerequisite: Agron. 149.

**530. Soil Fertility.** 3 semester hours. First semester.

Fundamentals of soil fertility. Three hours of recitation a week. Prerequisite: Agron. 149, Bot. 300.

**537. Soil Physics.** 3 semester hours. Second semester.

A study of the physical properties of soils, including methods of physical analysis and ways of improving soil tilth. Two hours of recitation and three hours of laboratory a week. Prerequisite: Agron. 149, Math. 175, Phys. 110.

**544. Soil Analysis Applications.** 3 semester hours. First semester.

Theories and procedures for the chemical analysis of soils. Applications of analysis in soil fertility evaluations and in research work are



discussed. One hour of recitation and six hours of laboratory a week.  
Prerequisite: Agron. 149, Chem. 435, 450, or 455.

#### FOR GRADUATE CREDIT

- 808. Research in Soils.** Credit to be arranged. Each semester and summer.  
Special problems which may extend throughout the year and furnish data for a master's or doctor's thesis. Prerequisite: Consult instructor.
- 815. Soil Physical Chemistry.** 3 semester hours. Second semester.  
Application of physical chemistry to soils. Cation and anion equilibria, cation activities, electrokinetics, sorption and other physico-chemical reactions in soils. Two hours of recitation and three hours of laboratory a week. Prerequisite: Agron. 523, 537, Chem. 595.
- 822. Advanced Soil Physics.** 3 semester hours. First semester.  
An advanced study of prominent theories concerning the physical behavior of soils. Two hours of recitation and three hours of laboratory a week. Prerequisite: Agron. 537, Math. 245, Phys. 120.
- 829. Wind Erosion.** 3 semester hours. First semester.  
A study of the physics and dynamics of erosion of soil by wind and its relation to soil properties. Two hours of recitation and three hours of laboratory a week. Prerequisite: Agron. 537, Math. 245, Phys. 120.
- 838. Agronomy Seminar.** 1 semester hour. Each semester.  
A discussion of agronomic developments. Prerequisite: Graduate standing.
- 845. Soil Genesis.** 2 semester hours. Second semester.  
Theories of soil formation processes. Two hours of recitation a week. Prerequisite: Agron. 509.
- 852. Soil Mineralogy.** 2 semester hours. Second semester.  
Mineralogical investigation of soils with special emphasis on the microscopic examination and identification of the sand and silt fractions. Six hours of laboratory a week. Prerequisite: Geol. 575, Agron. 149.

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## ANIMAL HUSBANDRY

RUFUS F. COX, *Head of Department*

The courses in the Department of Animal Husbandry give the student special instruction in the selection, breeding, feeding, management, and marketing of all classes of livestock.

The animal husbandry farm and pastures consist of 1,810 acres of land which are devoted to the maintenance of herds and flocks of purebred cattle, sheep, hogs, and horses, and to experimental projects with meat animals. All animals maintained by the department are used for class work.

The laboratory of the animal husbandry student is the feed lot, the judging pavilion, and the abattoir, where the animal can be studied from the standpoint of the breeder, the feeder, and the packer.

#### FOR UNDERGRADUATE CREDIT

- 106. Elements of Animal Husbandry.** 2 semester hours. Each semester and alternate summers.  
A survey of the field of animal husbandry, with special emphasis on the importance of livestock as a major phase of agriculture. Two hours of recitation a week.
- 113. Elements of Animal Husbandry Laboratory.** 1 semester hour. Each semester and alternate summers.  
Three hours of laboratory a week. A study of market types and classes of livestock.



- 120. Animal Husbandry A.** 2 semester hours. Second semester. Two hours of lecture a week.  
Introduction and present status of livestock in the United States; livestock markets, breeds of livestock; purebred livestock production. Open only to students pursuing the Curriculum in Veterinary Medicine.
- 127. Livestock Judging A.** 1 semester hour. First semester. Three hours of laboratory a week.  
Open only to students in Veterinary Medicine.
- 134. Principles of Livestock Selection.** 3 semester hours. First semester.  
One hour of recitation and six hours of laboratory a week.  
Origin, development, characteristics, and adaptation of different breeds of livestock, with special emphasis on the selection of breeding animals. Prerequisite: An. Husb. 113 and junior standing.
- 141. Judging Farm Animals.** 2 semester hours. Second semester. Six hours of laboratory a week.  
Advanced work in the judging of beef cattle, sheep, swine, and horses. Prerequisite: An. Husb. 134 or consent of instructor.
- 148. Form and Function in Livestock.** 2 semester hours. First semester.  
A detailed study of animal form and type, influence of type upon function, special training in presenting orally the relative merits of animals of all breeds. Six hours of laboratory a week. Prerequisite: An. Husb. 141.
- 155. Principles of Feeding.** 3 semester hours. Each semester and summer.  
The digestive system and processes of nutrition; origin, chemical analysis, and feeding values of different feeds; nutritive requirements for maintenance, growth, and production of farm animals. Three hours of recitation a week. Prerequisite: Chem. 310 or equivalent.
- 162. Livestock Feeding.** 3 semester hours. Second semester.  
A résumé of digestion and nutrition dealing primarily with practical feeding. Open only to students in the Curriculum of Veterinary Medicine. Three hours of recitation a week. Prerequisite: Chem. 330, Physiol. 435.
- 169. Beef Cattle Production.** 3 semester hours. Second semester.  
Three hours of recitation a week. Prerequisite: An. Husb. 155.
- 176. Swine Production.** 3 semester hours. Second semester.  
Three hours of recitation a week. Prerequisite: An. Husb. 155.
- 183. Sheep Production.** 3 semester hours. First semester.  
Three hours of recitation a week. Prerequisite: An. Husb. 155.
- 190. Horse Production.** 2 semester hours. First semester.  
Two hours of recitation a week. Prerequisite: An. Husb. 155.
- 197. Livestock Production.** 3 semester hours. First semester and summer.  
Open only to juniors and seniors not majoring in animal husbandry. Practical insight into the production of beef cattle, horses, swine, and sheep. Three hours of recitation a week. Prerequisite: An. Husb. 155.
- 204. Elements of Meat Processing.** 2 semester hours. Each semester and summer.  
Meat consumption, principles of processing, curing, and freezing. Two hours of lecture and recitation per week. Prerequisite: An. Husb. 106, 113.
- 211. Meat Processing.** 1 semester hour. Each semester.  
Killing, dressing, cutting, packaging, and freezing meat and meat products. Field trip. Three hours of laboratory a week. Prerequisite: An. Husb. 106, 113, 204 or concurrent assignment.
- 219. Meat Selection and Utilization H. E.** 2 semester hours. Each semester.  
For students in Home Economics. Selection of meats and cutting meats; carcass grading; prepared meats and meat products; frozen

meats and meat preparation. One hour lecture, three hours laboratory a week.

- 225. Animal Husbandry Practicums.** 2 semester hours. Second semester. Open only to students majoring in animal husbandry and to students pursuing the Curriculum in Agricultural Education. Manual phases of livestock management. Six hours of laboratory a week.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 405. Genetics.** 3 semester hours. Each semester and summer. Variation, Mendelian inheritance, and related subjects. Three hours of lecture a week. Prerequisite: Zool. 110 or Bot. 110.
- 412. Advanced Genetics.** 3 semester hours. Second semester. Particular attention is given to the relation of chromosomes to heredity. Three hours of recitation a week. Prerequisite: An. Husb. 405.
- 413. Advanced Genetics Laboratory.** 1 semester hour. Second semester. Three hours of laboratory a week. Special attention given to the compilation and keeping of genetics data. To be taken concurrently with or subsequent to An. Husb. 412.
- 419. Animal Breeding.** 3 semester hours. Second semester. Physiology of reproduction; present status of livestock improvement; function of purebred livestock; breeding systems and practices; application of principles of genetics to problems of animal breeding. Three hours of recitation a week. Prerequisite: An. Husb. 405.
- 426. Genetics Seminar.** 1 semester hour. Each semester. Study and criticism of genetic experiments with animals and plants and of the biological and mathematical methods employed. One hour of recitation a week. Prerequisite: An. Husb. 405 or Zool. 620.
- 447. Animal Nutrition.** 3 semester hours. First semester. Science of animal nutrition with special attention to recent discoveries in this field. Three hours of recitation a week. Prerequisite: An. Husb. 155.
- 454. Animal Husbandry Seminar.** 1 semester hour. Second semester. Open only to senior and graduate students majoring in animal husbandry. One hour of recitation a week. Prerequisite: An. Husb. 155.
- 462. The American Livestock Industry.** 3 semester hours. Second semester. The origin, development, and economic significance of the livestock industry of the United States. Assigned readings, reports, conferences, and lectures. Prerequisite: An. Husb. 106, 155; senior or graduate standing.
- 468. Principles of Animal Husbandry Experimentation.** 2 semester hours. Second semester. Conducting and interpreting experiments involving the use of animals. Two hours of recitation a week. Prerequisite: An. Husb. 155, 405.
- 475. Classification and Grading of Meats.** 1 semester hour. First semester. Grading; nutritive values; factors influencing quality; dressing percentages; identification of meats from different animals. Three hours of laboratory a week. Prerequisite: An. Husb. 204, 211.
- 478. Institutional Meats.** 2 semester hours. One hour recitation. Three hours of laboratory a week. Spring semester, 1956-57, and alternate years. Prerequisite: An. Husb. 219 and junior standing. Particular attention will be given to grades, brands, wholesale cuts, institutional cuts, fabricated meats, serving portions, shrinkage and variety meats. Emphasis given to costs and prices as related to menus. Field trip required.
- 482. Meat Practicums.** 2 semester hours. Second semester. Includes studies of the correlation of type, degree of finish, and other factors in the live animal, with carcass factors, particularly with reference to muscular development, skeleton, grading, and cutting and



boning yields. Six hours of laboratory a week. Prerequisite: An. Husb. 204, 211.

**485. Meat Packing Plant Operation.** 2 to 6 semester hours. Summer session.

A minimum of four weeks of supervised study for each two hours of credit, in a commercial meat packing plant.

**489. Wool Grading and Classification.** 1 semester hour. First semester.

Three hours of laboratory a week. A study of the factors determining the commercial classes and grades of wool and the desired fleece qualities of the various breeds of sheep. Practice in judging and scoring fleeces. Prerequisite: Concurrent with or subsequent to An. Husb. 183.

**490. Advanced Wool Grading and Classification.** 1 semester hour. First semester. Three hours of laboratory a week.

Advanced work in the grading and classification of commercial and purebred fleeces, with particular emphasis on the grading procedures used by commercial wool marketing agencies. Laboratory exercises designed to acquaint the student with the physical properties of wool as they may affect its grading and classification. Prerequisite: An. Husb. 183, 489.

**496. Animal Husbandry Problems.** Credit to be arranged. Each semester and summer.

Prerequisite: An. Husb. 155 and other courses; consult instructor. Work offered in:

*Animal Breeding, Animal Nutrition, Beef Cattle Production, Horse Production, Livestock Selection, Meats, Sheep Production, Swine Production.*

**503. Problems in Training Agricultural Judging Teams.** 2 semester hours. Summer.

A seminar course in training agricultural judging teams. Ten hours of recitation a week. Prerequisite: An. Husb. 113, Agron. 114, Poul. Husb. 104, 105, Dairy Husb. 104, and one year's teaching experience.

**512. Animal Husbandry Literature.** Credit to be arranged. Each semester and summer.

Preparation of abstracts and reports from scientific journals on current research in the field of Animal Husbandry. Prerequisite: Graduate standing or permission of instructor.

FOR GRADUATE CREDIT

**800. Research in Genetics.** Credit to be arranged. Each semester and summer.

Problems in which small mammals are used as the experimental animals. Prerequisite: An. Husb. 412.

**804. Research in Animal Husbandry.** Credit to be arranged. Each semester and summer.

Special problems in genetics and in the production of all kinds of livestock except dairy cattle. Prerequisite: Consult instructor.

**811. Problems in Beef Cattle Production.** 3 semester hours. Summer.

Eighteen hours of recitation a week. Prerequisite: Graduate standing and one year's experience in county agent work or in teaching vocational agriculture. Offered in 1955 and every third year thereafter.

**818. Problems in Sheep Production.** 3 semester hours. Summer.

Eighteen hours of recitation a week. Prerequisite: Graduate standing and one year's experience in county agent work or in teaching vocational agriculture. Offered in 1956 and every third year thereafter.

**825. Problems in Swine Production.** 3 semester hours. Summer.

Eighteen hours of recitation a week. Prerequisite: Graduate standing and one year's experience in county agent work or in teaching vocational agriculture. Offered in 1957 and every third year thereafter.



**832. The Wool Industry.** 3 semester hours. Second semester.

Supply and demand, production, marketing, manufacturing. Two hours of recitation and three hours of laboratory a week. Prerequisite: An. Husb. 183.

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**DAIRY HUSBANDRY**

F. W. ATKESON, *Head of Department*

The Department of Dairy Husbandry, with its modern dairy barn and dairy products processing plant, is well equipped to train men for key positions in the dairy industry.

A wider application of science to the problem of milk production and manufacturing of dairy products requires technically trained men. Courses in bacteriology, chemistry, mathematics, accounting, engineering and commercial subjects provide excellent background for the dairy courses.

Instruction in dairy production includes dairy cattle feeding, management, breeding, milk production, and judging. A purebred herd of Holstein, Guernsey, Jersey and Ayrshire cattle owned by the College provides animals for dairy cattle judging classes and for feeding and breeding experiments.

The four-year curriculum in Dairy Manufacturing is designed to prepare students for positions as dairy plant managers, superintendents, sales managers, equipment and supply technicians, dairy products graders, inspectors and sanitarians, executives, research and technical workers, and teachers.

**FOR UNDERGRADUATE CREDIT****104. Elements of Dairying.** 3 semester hours. Each semester.

Problems of the milk producer and manufacturer; feeding, handling, breeding, and selecting of dairy cattle; composition and properties of milk; manufacture of dairy products. Two hours of recitation and three hours of laboratory a week.

**111. Dairy Cattle Judging for Veterinary Students.** 1 semester hour. Second semester.

Three hours of laboratory a week.

**113. Techniques in Teaching Dairy Cattle Judging.** 1 semester hour. First semester.

This course is designed especially to meet the needs of future vocational agriculture instructors, 4-H club leaders and others who might be teaching Dairy Cattle Judging. Three hours of laboratory a week.

**118. Dairy Cattle Judging.** 2 semester hours. Second semester. Six hours of laboratory a week. Prerequisite: Dairy Husb. 104.**125. Fundamentals of Dairy Technology.** 2 semester hours. First semester.

A thorough study of the properties of major milk constituents, methods of analysis, quality tests, standardization, and manufacturing processes. One hour of recitation and three hours of laboratory a week. Prerequisite: Dairy Husb. 104, Chem. 210; sophomore standing.

**132. Milk Production.** 3 semester hours. First semester.

Handling the dairy herd, construction of dairy barns and buildings, other subjects concerning the dairy farmer. Three hours of recitation a week. Prerequisite: Dairy Husb. 104, An. Husb. 155 or 162.

**139. Market Milk and Dairy Inspection.** 4 semester hours. Second semester.

A study of the problems of the milk-plant operator, including the production, procurement, processing, selling and quality control. Inspection of farms and milk plants. Two hours of recitation and six hours of laboratory a week. Prerequisite: Dairy Husb. 125, Bact. 110.

**146. Butter Making.** 3 semester hours. First semester.

The butter industry; cream production and care on the farm and in the plant; manufacturing, marketing, and food value of butter. Sampling

and grading cream, butter analysis and tests, preparation of cream for churning, manufacturing of butter. Offered in 1955-'56 and alternate years thereafter. Two hours of recitation and three hours of laboratory a week. Prerequisite: Dairy Husb. 104, 125, Bact. 110.

**153. Dairy Inspection for Veterinary Students.** 2 semester hours. First semester.

Composition and properties of milk, clean milk production, study of state and city ordinances affecting milk and dairy products. Testing of milk and dairy products, preparation and testing of chemical disinfectants, scoring of dairy farms and milk plants. One hour of recitation and three hours of laboratory a week.

**160. Advanced Dairy Cattle Judging.** 1 semester hour. First semester.

Continuation of Dairy Husbandry 118; visits to some of the best farms in the state. Three hours of laboratory a week. Prerequisite: Dairy Husb. 118.

**167. Condensed and Powdered Milk.** 3 semester hours. Second semester.

History, methods, condensing machinery, and powdered milk industry. Condensing milk in the College plant. Offered in 1956-'57 and alternate years. Two hours of recitation and three hours of laboratory a week. Prerequisite: Dairy Husb. 104, 125, Bact. 110.

**174. Ice Cream Making.** 3 semester hours. First semester.

Theory and practice in the manufacture of frozen dairy foods. Offered in 1956-'57 and alternate years. Two hours of recitation and three hours of laboratory a week. Prerequisite: Dairy Husb. 125, Bact. 110.

**181. Cheese Making.** 3 semester hours. Second semester.

Theory and practice in the manufacture of various types of cheese. Offered in 1956-'57 and alternate years. Two hours of recitation and three hours of laboratory a week. Prerequisite: Dairy Husb. 125, Bact. 110.

**188. Dairy Products Judging.** 1 semester hour. Second semester.

Three hours of laboratory a week. Prerequisite: Dairy Husb. 104.

**195. Advanced Dairy Products Judging.** 1 semester hour. First semester.

Three hours of laboratory a week. Continuation of Dairy Husb. 188.

**203. Artificial Breeding.** 2 semester hours. First semester.

A study of techniques employed in the artificial breeding of cattle. One hour of lecture and three hours of laboratory a week. Prerequisite: Junior standing.

FOR UNDERGRADUATE AND GRADUATE CREDIT

**404. Dairy Seminar.** 1 semester hour. Second semester.

Study of dairy periodicals, bulletins, books, other dairy literature. One hour of recitation a week. Prerequisite: Dairy Husb. 104, 132.

**411. Milk Secretion and Reproduction.** 3 semester hours. Second semester.

Study of the physiology of the processes involved in milk secretion and reproduction and the related internal secretions. Managed milking studies, types of milking machines, mastitis preventive practices, breeding efficiency studies, breeding records, systems, and artificial breeding practices. Two hours of recitation and three hours of laboratory a week. Offered in 1956-'57 and alternate years thereafter. Prerequisite: Senior standing in Dairy Husbandry.

**419. Dairy Cattle Nutrition.** 3 semester hours. First semester.

Application of principles of nutrition to practical feeding of dairy cattle. Exercises in practical feeding problems, designing and balancing rations. Two hours of lecture and three hours of laboratory a week. Prerequisite: Dairy Husb. 104, An. Husb. 155.

**420. Dairy Cattle Management.** 2 semester hours. Second semester.

Production practices, record keeping, labor saving equipment, milking systems, fitting and showing, stabling methods, dairy farm planning and



analysis, field study trip. One hour of lecture and three hours of laboratory a week. Prerequisite: Dairy Husb. 132.

**425. Dairy Cattle Breeding and Selection.** 3 semester hours. First semester.

History of breeds and families, inheritance of milk secretion, bull indexes, selection of herd sire, systems of breeding. Herdbook studies, pedigree writing and analysis. Two hours of recitation and three hours of laboratory a week. Offered in 1955-'56 and alternate years thereafter.

**432. Dairy Production Problems.** Credit to be arranged. Each semester and summer.

Prerequisite: Dairy Husb. 104, 118, 132, An. Husb. 155.

**439. Dairy Manufacturing Problems.** Credit to be arranged. Each semester.

Prerequisite: Dairy Husb. 104, 146.

**446. Dairy Plant Management.** 2 semester hours. First semester.

Offered in 1956-'57 and alternate years thereafter. Two hours of recitation a week. Prerequisite: Dairy Husb. 125, 146.

**453. Technical Control of Dairy Products.** 2 semester hours. Second semester.

Coordination of the role of the dairy control laboratory in maintaining constant check in quality, purity and wholesomeness of all dairy products and ingredients most commonly used in their manufacture. Efficiency of sterilizing agents, washing powders, and related materials. Plant sanitation. Two three-hour laboratory periods a week. Required of all students pursuing the Curriculum in Dairy Manufacturing. Prerequisite: Dairy Husb. 125; senior standing in dairy manufacturing or graduate standing.

#### FOR GRADUATE CREDIT

**804. Research in Dairy Husbandry.** Credit to be arranged. Each semester.

Special investigation in dairy production or manufacturing which may be used as a basis for master's thesis. Credits obtained may also be applied toward the degree, Doctor of Philosophy. Prerequisite: Consult instructor.

*Dairy Mechanics.* (See Agr. Engg. 455.)

*Dairy Bacteriology.* (See Bact. 510.)

*Milk Chemistry.* (See Chem. 488.)

*Marketing of Dairy Products.* (See Agr. Econ. 589.)

*Genetics Seminar.* (See An. Husb. 426.)

## ENTOMOLOGY

HERBERT C. KNUTSON, Head of Department

Entomology is the study of insects and their near relatives. Economic entomology stresses their relations to plants and animals, including man. The courses in this department fall into two groups: (1) Broad, general, cultural courses suitable for any students, such as 105, 110, 210, 410, and 650; (2) professional courses which include most of the remainder. They provide training in this field for research, resident, and extension teaching, plant and animal inspection, industrial and commercial pest control, and administration in the services of colleges, experiment stations, other agencies of the states and the federal government, industry, and private practice.

Courses listed for alternate years will be given in unscheduled years if a sufficient number of students to fill a class indicate to the head of the department before the middle of the previous semester in which the course is to be offered that they desire to register for them.

For a minor, the following courses should be completed: 105, 110, or 210, and five or six additional credit hours.

For a major, in addition to the minor, professional courses and a broad,



basic training in agriculture and the biological and physical sciences are needed to provide a satisfactory foundation for graduate work.

FOR UNDERGRADUATE CREDIT

**105. General Entomology.** 3 semester hours. Each semester and summer.  
A basic study of insects and related arthropods as animals, their classification, behavior, and relations to plants and animals, including man.

**110. General Entomology Laboratory.** 1 semester hour. Each semester and summer.

Three hours of laboratory a week. Prerequisite: Ent. 105 or concurrent registration.

**165. Milling Entomology.** 4 semester hours. Second semester.

Elementary structure, life histories, classification, and control of insects and their near relatives; insect and rodent pests of flour mills, elevators, granaries, warehouses and bakeries, and standard methods of mill and granary sanitation. Laboratory provides opportunities for basic studies and practical experience in mill sanitation. Three hours of recitation and three hours of laboratory a week.

**210. General Economic Entomology.** 3 semester hours. Each semester.

Elementary anatomy, physiology, and classification of insects; the life histories, habits, and control recommendations for the more important insect pests. Two hours of recitation and three hours of laboratory a week.

FOR UNDERGRADUATE AND GRADUATE CREDIT

**410. Advanced General Entomology.** 3 semester hours. Second semester.

Broad biological aspects of the subject; understanding of the relation of insects to the complex environmental factors; the various subdivisions of entomology. Prerequisite: Ent. 105, 110, or 210, Zool. 110. Offered next in 1956-'57 and in alternate years.

**425. Horticultural Entomology.** 2 semester hours. First semester.

Injurious insects of the vegetable garden, shade trees, flowering and greenhouse plants, deciduous and citrus orchards; methods of control; insecticides. Prerequisite: Ent. 105 and 110 or 210.

**440. Staple Crop Entomology.** 3 semester hours. Second semester.

Important economic insects of field crops, and methods of dealing with them. Two hours of recitation and three hours of laboratory a week. Prerequisite: Ent. 105, 110, or 210.

**455. Medical Entomology.** 3 semester hours. First semester.

Insects and other arthropods as parasites and disseminators of disease; life cycles, biology, and control of insect parasites of man and animals. Two hours of recitation and three hours of laboratory a week. Prerequisite: Ent. 105, 110, or 210 and Zool. 110. Offered in 1956-'57 and alternate years.

**470. Insect Ecology.** 2 semester hours. First semester.

Influence of light, temperature, pressure, moisture, evaporation, air movements, food relations, biotic and other conditions of soil atmosphere. Prerequisite: Ent. 105, 110, or 210 and Zool. 110.

**480. Entomological Methods.** 3 semester hours. Summer session.

Methods, materials, and techniques used in entomological work; population sampling, insect collection and preservation, planning replicated experimental work, culture of laboratory insects, recording and use of environmental data, use of constant temperature and humidity equipment, note-taking, filing. Prerequisite: Ent. 105 and 110, or 210.

**485. Insect Control by Host Plant Resistance.** 2 semester hours. First semester.

Resistance of varieties of crop plants to insect attack and their utilization in insect control; insect habits and physiology in relation to the cause of resistance and methods of breeding resistant varieties of crops. Prerequisite: An. Husb. 405, Ent. 105, 110, or 210.

**516. External Insect Morphology.** 4 semester hours. First semester.

External anatomy of representative insects belonging to a number of orders, structure of the exoskeleton, a basis for taxonomy and hexapod morphology. One hour of recitation and six hours of laboratory a week. Prerequisite: Ent. 105, 110 or 210.

**531. Internal Insect Morphology.** 4 semester hours. Second semester.

Internal anatomy of representative insects, plan and structure of the internal systems. One hour of recitation and six hours of laboratory a week. Prerequisite: Ent. 515. Offered in 1955-'56 and alternate years.

**545. Insect Physiology.** 3 semester hours. Second semester.

Physiological aspects of the integument, transport mechanisms, nutrition, respiration, metabolism, excretion, nervous and muscular systems, reproduction, and growth of insects. Physiological literature and report writing. Offered second semester, 1956-'57, and alternate years. Prerequisite: Ent. 531 or consent of instructor, Zool. 480.

**546. Insect Physiology Laboratory.** 2 semester hours. Second semester.

Experiments in enzyme systems, respiration, responses to stimuli, nutrition, excretion, properties of insect blood, and other studies. Offered second semester, 1956-'57, and alternate years. Prerequisite: Ent. 545 or concurrent assignment.

**575. Principles of Taxonomy.** 1 semester hour. Second semester.

The methods and principles of systematic entomology and zoology; characterization of taxonomic categories; international rules of zoological nomenclature. Prerequisite: Ent. 105 and 110 or 210; Zool. 110, Ent. 590 or Zool. 555, or Zool. 570 or Zool. 665 should be taken concurrently.

**590. Taxonomy of Insects I.** 2 semester hours. Second semester.

Determination of major orders of insects, taxonomic literature, use of catalogues. Six hours of laboratory a week. Prerequisite: Ent. 515 and concurrent registration in Ent. 575.

**605. Taxonomy of Insects II.** 3 semester hours. Second semester.

Intensive study of a selected group of insects. Nine hours of laboratory a week. Prerequisite: Ent. 590, 575.

**621. Taxonomy of Immature Insects.** 3 semester hours. Second semester.

Classification and bionomics of immature stages of insects; practice in their identification. Six hours of laboratory a week. Prerequisite: Ent. 590. Offered in 1955-'56 and alternate years.

**650. General Bee Culture.** 3 semester hours. Second semester.

Structure, life history, general behavior, activity, and products of the honeybee; practice beekeeping; bee diseases and their eradication and control; relation of bees to agriculture and horticulture. Two hours of recitation and three hours of laboratory a week. Prerequisite: Ent. 105 and 110, or 210.

**665. Advanced Bee Culture.** 3 semester hours. First semester.

Queening, wintering, honey extraction and marketing. Two hours of recitation and three hours of laboratory a week. Prerequisite: Ent. 650. Offered in 1956-'57 and in alternate years.

**670. Advanced Bee Culture II.** 3 semester hours. Second semester.

Honey plant and beekeeping regions; swarm control and colony division; queen rearing and introduction; honey production. Two hours of recitation and three hours of laboratory a week. Prerequisite: Ent. 650. Offered in 1956-'57 and in alternate years.

**710. Insect Toxicology.** 3 semester hours. First semester.

Chemical, physical, and biological properties of pesticidal chemicals and various components of formulations. Advantages and limitations in the use of chemical control practices. Review of literature and report preparations are required. Prerequisite: Ent. 105 and 110 or 210; and a course in organic chemistry.



**750. Entomological and Zoological Literature.** 2 semester hours. First semester.

A study of bibliographies, biological journals, and keys to the literature of all types in the zoological sciences; the preparation and publication of technical papers. Especial emphasis is given to the best time-saving aids and methods for all aspects of library work, for thesis preparation by members of the class, and students beginning to specialize in any phase of the animal sciences. Prerequisite: Ent. 105 and 110 or 210 and Zool. 110.

**765. Zoology and Entomology Seminar.** 1 semester hour. Each semester. Prerequisite: Consult seminar committee.

**799. Problems in Entomology.** Credit to be arranged. Each semester and summer.

For non-thesis studies.

Work is offered in apiculture, economic entomology, and taxonomy and morphology. Prerequisite: Basic courses in the specific area.

FOR GRADUATE CREDIT

**911. Insect Toxicology Laboratory.** 2 semester hours. First semester.

Design of laboratory experiments and evaluation of pesticidal, mammalian, and plant toxicity. Effects of formulations on efficiency. Analytical methods of residues. Local field trips. Prerequisite: Ent. 710, equivalent or concurrent registration; consent of instructor.

**999. Research in Entomology.** Credit to be arranged. Each semester and summer.

Work is offered in apiculture, economic entomology, insect physiology, medical entomology, pest control technology, taxonomy, and morphology. Prerequisite: At least nine hours of entomology and basic work in zoology, botany, bacteriology, chemistry, and mathematics.

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## FLOUR AND FEED MILLING INDUSTRIES

JOHN A. SHELLENBERGER, *Head of Department*

The Department of Flour and Feed Milling Industries prepares students for careers in the various phases of cereal technology. The Curriculum in Milling Technology provides options in Operation, Chemistry, and Administration. The Curriculum in Feed Technology provides options in Administration, Operation, and Nutrition. (See outline of curriculums on preceding pages.)

The department has a complete mill of 170 hundredweight daily capacity as well as several experimental mill units. These are specially equipped for student training and research in milling technology.

A completely modern pilot plant bakery for student training and research is available. This plant is fully equipped with dough mixers, proofing cabinets, oven, and other equipment required for baking tests. The physical dough testing laboratory offers special opportunities for student training and research. The chemical laboratories have the usual chemical apparatus for wheat, flour, and feed testing and special equipment for advanced problems.

A new building houses a pilot plant formula-feed mill which includes various types of grinders, pelleting machines, blenders, packaging machines, and laboratories.

FOR UNDERGRADUATE CREDIT

**018. Milling Industry Seminar.** Required. Each semester.

Discussion of problems of interest to all students in flour and feed milling industries. One lecture each month.



- 104. Elements of Milling.** 2 semester hours. Each semester and summer.  
Introduction to milling processes. One hour of lecture, two hours of laboratory, and one hour of unassembled laboratory a week.
- 111. Survey of Milling.** 1 semester hour. First semester.  
A general survey of the milling industry field. One hour of lecture a week.
- 118. Flow Sheets.** 2 semester hours. Each semester and summer.  
The construction and assembling of a flow sheet. Six hours of laboratory a week. Prerequisite: Mill. Ind. 104, Mach. Des. 110.
- 125. Milling Practice I.** 3 semester hours. Each semester and summer.  
A study of milling machinery and methods of operating the 170 hundredweight flour mill. One hour of lecture and six hours of laboratory a week. Prerequisite: Mill. Ind. 118.
- 200. Elements of Feed Manufacture.** 3 semester hours. Second semester.  
An introduction to feed milling processes. Two hours of lecture and three hours of laboratory a week.
- 210. Feed Formulation and Blending.** 3 semester hours. Second semester.  
Calculating formulas and operating batch and continuous feed mixing systems. One hour of lecture and six hours of laboratory a week. Prerequisite: Mill. Ind. 118.

## FOR UNDERGRADUATE AND GRADUATE CREDIT

- 404. Milling Technology I.** 2 semester hours. First semester.  
Technical study of special phases of wheat conditioning and flour milling. Six hours of laboratory a week. Prerequisite: Mill. Ind. 125.
- 411. Milling Technology II.** 2 semester hours. Second semester.  
A study of physical, chemical, and engineering principles used in control of flour mill operation. Six hours of laboratory a week. Prerequisite: Mill. Ind. 404.
- 418. Flour and Feed Mill Construction.** 3 semester hours. Second semester.  
The design and layout of flour and feed plants. Eight hours of laboratory and one hour of unassembled laboratory a week. Prerequisite: Mill. Ind. 453 or 210, Mach. Des. 120, 130.
- 425. Flour and Feed Analysis.** 3 semester hours. Second semester.  
Methods of analysis and quantitative tests of flour and feed composition. Eight hours of laboratory a week and one hour of unassembled laboratory a week. Prerequisite: Chem. 435, 510, or 330.
- 432. Plant Enzymes.** 2 semester hours. First semester.  
Theories of enzyme action and the function of enzymes. Commercial methods of manufacture and industrial uses of enzymes with special emphasis on the application of enzymes to the cereal industry. Two hours of lecture per week. Prerequisite: Chem. 330, 650.
- 439. Advanced Flow Sheets.** 2 semester hours. First semester.  
The design of flows for various cereal processing methods. Six hours of laboratory a week. Prerequisite: Mill. Ind. 118.
- 446. Advanced Wheat and Flour Testing.** 3 semester hours. First semester.  
Physical and chemical methods used in testing wheat and flour. One hour of lecture and six hours of laboratory a week. Prerequisite: Mill. Ind. 425.
- 453. Milling Practice II.** 3 semester hours. First semester.  
A study of roll surfaces and their effect on break release, bolting surface in relation to over- and under-bolting, millwright work, lubricating and power requirements. One hour of lecture and six hours of laboratory a week. Prerequisite: Mill. Ind. 125.
- 460. The Qualities of Wheat and Flour.** 3 semester hours. Second semester.  
The qualities of wheat and flour as affected by growth, storage and physical, chemical and biological factors. Three hours of lecture a week. Prerequisite: Chem. 310 or 330.

- 464. Fundamentals of Grain Storage.** 2 semester hours. First semester.  
Basic science of grain storage including role of moisture in grain, physical factors which influence deterioration, chemical changes in storage, role of microorganisms, respiration and heating, influence of insects on storage. Prerequisite: Mill. Ind. 460.
- 467. Cereal Products Sanitation.** 2 semester hours. First semester.  
Sanitation problems and control methods in cereal technology. One hour of lecture and three hours of laboratory a week. Prerequisite: Mill. Ind. 125, Ent. 165.
- 474. Milling Industry Problems.** Credit to be arranged. Each semester and summer.  
Prerequisite: Consent of staff.
- 481. Experimental Baking I.** 3 semester hours. First semester.  
Practice in laboratory baking tests, comparison of methods, formulas and flours; interpretation of results. One hour of lecture and six hours of laboratory a week. Prerequisite: Chem. 310.
- 488. Experimental Baking II.** 3 semester hours. Second semester.  
Practice in bakery methods of producing breads and pastries. One hour of lecture and six hours of laboratory a week. Prerequisite: Mill. Ind. 481.
- 600. Feed Technology I.** 3 semester hours. First semester.  
Study of technical phases of feed manufacture such as the operation of pellet machines, molasses mixers, hammer mills, and other equipment. One hour of lecture and six hours of laboratory a week. Prerequisite: Mill. Ind. 210.
- 601. Feed Technology II.** 3 semester hours. Second semester.  
Advanced study of the engineering principles used in feed manufacture. One hour of lecture and six hours of laboratory a week. Prerequisite: Mill. Ind. 600.

#### FOR GRADUATE CREDIT

- 804. Research in Milling Industry.** Credit to be arranged. Each semester and summer.  
Research may be used as basis for the graduate thesis. Prerequisite: Consult staff.
- 811. Graduate Seminar in Milling Industry.** 1 semester hour. Each semester.  
Discussion of technical problems in the cereal industry. One hour of recitation a week. Attendance required of all graduate students in milling industry.

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## GENERAL AGRICULTURE

ARTHUR D. WEBER, *Dean*  
CLYDE W. MULLEN, *Assistant Dean*

- 003. Agricultural Seminar.** Required. Each semester.  
Four meetings each semester. Programs presented by students, members of faculty, and invited speakers.
- 004. Freshman Assembly.** Required of freshmen. First semester.  
A survey of fields of opportunity in agriculture.
- 109. Agricultural Student Journalism.** 1 semester hour. Each semester.  
Maximum, 4 semester hours of credit.

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## HORTICULTURE

WM. F. PICKETT, *Head of Department*

The Curriculum in Horticulture provides for training in either practical or professional work in ornamental horticulture, floriculture, vegetable



crops, and fruit growing. The Curriculum in Landscape Design leads to the degree Bachelor of Science in Landscape Design, and is intended for students who wish training in design and drafting.

The horticultural farm, the campus, the greenhouses, and the research laboratories provide plant materials and equipment for instructional and research use. The Master of Science degree may be earned in any of the fields mentioned above.

**146. Plant Materials II.** 3 semester hours. Second semester.

Trees, shrubs, vines for ornamental planting; planting plans and reports. Two hours of recitation and three hours of laboratory a week. Prerequisite: Bot. 110.

**153. Landscape Gardening.** 3 semester hours. First semester and summer.

An introductory course in the fundamental principles of landscape design. Three hours of recitation a week.

FOR UNDERGRADUATE AND GRADUATE CREDIT

**439. Community Planning.** 3 semester hours. Second semester.

Growth and development of cities and towns, land subdivision. Offered in 1955-'56 and alternate years thereafter. One hour of recitation and six hours of laboratory a week. Prerequisite: Hort. 474.

**446. Landscape Construction.** 3 semester hours. First semester.

Topographic maps; grading plans, structures, sewerage, water supply, lighting, and drainage on the private estate. Offered in 1956-'57 and alternate years. Two hours of recitation and three hours of laboratory a week.

**453. Planting Design.** 2 semester hours. Second semester.

The use of plants in landscape composition. Perspective and elevational sketches and plans. Offered in 1956-'57 and alternate years. Six hours of laboratory a week. Prerequisite: Hort. 146.

**460. Landscape Design I.** 4 semester hours. First semester.

Elementary designing of the home grounds, country estates, special gardens, sketch problems. Twelve hours of laboratory a week. Prerequisite: Hort. 146, 153.

**467. Landscape Design II.** 4 semester hours. Second semester.

Advanced course in designing of large parks, cemeteries, golf courses, educational groups and high-class land subdivisions. Sketch problems. Twelve hours of laboratory a week. Prerequisite: Hort. 460, 474.

**474. Theory of Landscape Design.** 2 semester hours. First semester.

The economic and esthetic theory of design; taste, character, historic style, and composition; natural elements in design. Two hours of recitation a week. Offered in 1955-'56 and alternate years. Prerequisite: Hort. 153.

COURSES IN POMOLOGY

FOR UNDERGRADUATE CREDIT

**160. Small Fruits.** 2 semester hours. Second semester.

Growing, harvesting, and marketing small fruits. Two hours of recitation a week. Prerequisite: Bot. 110 or Gen. Stud. 150.

**161. Small Fruits Laboratory.** 1 semester hour. Second semester.

Culture, propagation, pruning, pest control, transplanting, mulching, fertilizing, varieties. Three hours of laboratory a week. Preferably to be taken concurrently with Hort. 160. Prerequisite: Bot. 110 or Gen. Stud. 150.

**168. Systematic Pomology.** 3 semester hours. First semester.

Technical study of fruit varieties, varietal relationship, pomological nomenclature, variety description, artificial and natural systems of variety classification, judging. Two hours of recitation and three hours



of laboratory a week. Offered in 1955-'56 and alternate years. Prerequisite: Hort. 110, 111.

**175. Preserving Foods by Freezing.** 3 semester hours. First semester.

Selection and preparation of foods for freezing, managing and operating frozen food locker plants, selecting and using home-frozen food cabinets, judging of frozen foods prepared and stored by various methods. Two hours of recitation and three hours of laboratory a week.

## COURSES IN GENERAL HORTICULTURE

### FOR UNDERGRADUATE CREDIT

**104. Plant Propagation.** 3 semester hours. First semester.

Principles and practices of propagating horticultural plants. Two hours of recitation and three hours of laboratory a week. Prerequisite: Bot. 110.

**110. Elements of Horticulture Recitation.** 2 semester hours. Each semester and summer.

Principles and practices in the several phases of horticulture. Two hours of recitation a week. Prerequisite: Bot. 110 or Gen. Stud. 150.

**111. Elements of Horticulture Laboratory.** 1 semester hour. Each semester.

Study of horticultural plants, including identification, propagation, pruning, spraying, transplanting, cover crops, and fruit varieties. Three hours of laboratory a week. To be taken concurrently with Hort. 110 if possible. Prerequisite: Bot. 110 or Gen. Stud. 150.

**132. Nursery Practice.** 3 semester hours. Second semester.

Tree seed; planting practice, regeneration. Two hours of recitation and three hours of laboratory a week. Prerequisite: Bot. 110.

### FOR UNDERGRADUATE AND GRADUATE CREDIT

**404. Spraying.** 3 semester hours. Second semester.

Spray machinery, chemical properties, insecticides, fungicides, spray dates, fumigation. Two hours of recitation and three hours of laboratory a week. Prerequisite: Junior or senior classification.

**411. Literature of Horticulture.** 2 semester hours. Second semester.

Books and publications are reviewed and bibliographies prepared. Open only to junior, senior, and graduate students in horticulture. Offered in 1956-'57 and alternate years. Two hours of recitation a week.

**418. Arboriculture.** 3 semester hours. Second semester.

Principles and practices of caring for ornamental plantings; transplanting, pruning, tree surgery, fertilizing, diagnosis of pests. Two hours of recitation and three hours of laboratory a week. Prerequisite: Consult instructor.

**425. Horticulture Seminar.** 1 semester hour. Each semester.

Critical discussion of horticultural publications and of experimental and research projects under way at this and other experiment stations. May not be taken for more than three credit hours. Open only to junior, senior, and graduate students in horticulture. One hour of recitation a week.

**432. Horticultural Problems.** Credit to be arranged. Each semester and summer.

Problems and reports in pomology, olericulture, floriculture, ornamental horticulture, or landscape design. Prerequisite: Consult instructor.

### FOR GRADUATE CREDIT

**801. Research in Horticulture.** Credit to be arranged. Each semester and summer.

Investigations in pomology, olericulture, floriculture, ornamental horticulture, or landscape design. Data collected may form basis for a master's thesis. Prerequisite: Consult instructor.

**COURSES IN LANDSCAPE DESIGN****FOR UNDERGRADUATE CREDIT****139. Plant Materials I.** 3 semester hours. First semester.

Perennials and annuals for general ornamental planting; planting plans. Two hours of recitation and three hours of laboratory a week. Prerequisite: Bot. 110.

**FOR UNDERGRADUATE AND GRADUATE CREDIT****481. Practical Pomology.** 3 semester hours. Second semester.

Applied orcharding, manufacturing products, finances, marketing, grading and packing fruits, identification of fruit plant varieties, advanced pruning. Two hours of recitation and three hours of laboratory a week. Offered in 1956-'57 and alternate years. Prerequisite: Hort. 110, 111.

**488. Advanced Pomology.** 3 semester hours. First semester.

A course in fruit production. Two hours of recitation and three hours of laboratory a week. Offered in 1956-'57 and alternate years. Prerequisite: Hort. 110, 111.

**COURSES IN VEGETABLE GARDENING AND FLORICULTURE****FOR UNDERGRADUATE CREDIT****182. Greenhouse Construction and Management.** 3 semester hours. Second semester.

Greenhouse construction, ventilation, soils, and water. Two hours of recitation and three hours of laboratory a week.

**189. Vegetable Gardening.** 3 semester hours. Second semester.

Principles underlying vegetable production for the home or local market; special attention given to farm gardens, varieties, planting schedules, and crop rotations. Two hours of recitation and three hours of laboratory a week.

**196. Elements of Floriculture.** 3 semester hours. First semester.

Care of potted plants in the greenhouse and home. Two hours of recitation and three hours of laboratory a week.

**203. Floral Arrangement I.** 2 semester hours. First semester.

Floral arrangement in the home, care and uses of cut flowers and potted plants. Consult instructor for prerequisites. One hour of recitation and three hours of laboratory a week.

**210. Floral Arrangement II.** 2 semester hours. Second semester.

Floral merchandising, sources of supplies, floral design, the commercial flower shop. One hour of recitation and three hours of laboratory a week. Consult instructor for prerequisites.

**217. Commercial Floriculture I.** 3 semester hours. First semester.

Principles underlying the culture of greenhouse crops. Two hours of recitation and three hours of laboratory a week.

**224. Commercial Floriculture II.** 3 semester hours. Second semester.

Two hours of recitation and three hours of laboratory a week. Prerequisite: Hort. 217.

**FOR UNDERGRADUATE AND GRADUATE CREDIT****495. Market Gardening.** 3 semester hours. First semester.

Competitive areas, market requirements, harvesting, grading, packing, sources of market supplies, and prices. Two hours of recitation and three hours of laboratory a week. Offered in 1956-'57 and alternate years. Prerequisite: Agron. 149, Hort. 189.

**502. Vegetable Cash Crops.** 2 semester hours. First semester.

Vegetable crops grown in Kansas principally as cash crops: potatoes, sweet potatoes, watermelons, and cantaloupes. Two hours of recitation



a week. Offered in 1955-'56 and alternate years. Prerequisite: Agron. 149, Hort. 189.

## POULTRY HUSBANDRY

THOMAS B. AVERY, *Head of Department*

The poultry plant, occupying about forty acres and situated just north of the northeast corner of the College campus, is devoted to the breeding, rearing, and management of the stock used for class and experimental work.

### FOR UNDERGRADUATE CREDIT

**104. Farm Poultry Production Lecture.** 2 semester hours. Each semester. An introductory course presenting numerous phases of poultry production, processing, management, marketing. Two hours of recitation a week.

**105. Farm Poultry Production Laboratory.** 1 semester hour. Each semester.

Practical work, identifying breeds and varieties, judging and selecting laying stock and breeding stock; study of poultry houses and equipment; market dressing. Three hours of laboratory a week.

**112. Poultry Judging.** 3 semester hours. First semester.

Production characteristics and evolution of present breeds and types. Judging the standard breeds and varieties by comparison; judging hens for egg and meat production on the basis of certain physical characteristics. One hour of recitation and six hours of laboratory a week. Prerequisite: Poul. Husb. 104, 105.

**119. Market Poultry and Eggs.** 4 semester hours. First semester.

Methods of handling market eggs and live and dressed poultry. Candling, grading, and preservation of eggs; killing, dressing, grading, and packing market poultry. Two hours of recitation and six hours of laboratory a week. Offered in 1955-'56 and alternate years. Prerequisite: Poul. Husb. 104, 105.

**126. Hatchery Management.** 3 semester hours. Second semester.

Development of the chick; metabolism; survey of the literature on incubation, brooding, and hatchery management; actual care of an incubator and a brooder. Two hours of recitation and three hours of laboratory a week. Prerequisite: Poul. Husb. 104, 105.

**133. Poultry Practicums.** 2 semester hours. Second semester.

Especially designed for students in the Curriculum in Agricultural Education. Poultry judging and practical poultry management as applied to vocational education. One hour of recitation and three hours of laboratory a week. Prerequisite: Poul. Husb. 104, 105.

### FOR UNDERGRADUATE AND GRADUATE CREDIT

**404. Nutrition of the Fowl.** 3 semester hours. Second semester.

Designed for advanced students. The nutritive requirements of the fowl are considered, together with metabolism of nutrients, respiration, digestion, and excretion. Poultry feeds, the compilation of rations, and feeding practices are discussed. The feeding and care of chicks on deficient diets for a period of several weeks provide practical application of nutrition problems. Two hours of recitation and three hours of laboratory a week. Prerequisite: Poul. Husb. 104, 105, An. Husb. 155.

**411. Avian Metabolism.** 3 semester hours. First semester.

Special emphasis on the physiological processes in reproduction, digestion, absorption, circulation, respiration, excretion and internal secretions. Three hours of recitation a week. Offered in 1956-'57 and



alternate years. Prerequisite: Poul. Husb. 104, 105, Zool. 110, Special Anatomy 401.

**418. Poultry Problems.** 2 semester hours. Each semester.

Investigations of a practical nature which may be continued into the next semester if necessary. The area of study might include incubation, brooding, feeding, management, breeding, survey of literature, or closely related subjects. Prerequisite: Poul. Husb. 104, 105; consult instructors.

**425. Poultry Genetics.** 2 semester hours. Second semester.

A study of inherited characteristics in poultry. Two hours of recitation a week. Offered in 1956-'57 and alternate years. Prerequisite: An. Husb. 405.

**432. Poultry Genetics Laboratory.** 1 semester hour. Second semester.

Exercises in practical poultry breeding problems. Included are analyses of records and selection of breeding stock. Three hours of laboratory a week. Offered in 1956-'57 and alternate years. Prerequisite: Poul. Husb. 104, 105, An. Husb. 405.

**439. Poultry Management.** 3 semester hours. Second semester.

A detailed study of all phases of farm and commercial flocks, including cost of production. Three hours of recitation a week. Prerequisite: Poul. Husb. 104, 105; senior or graduate standing.

**446. Poultry Seminar.** 1 semester hour. First semester.

Required of all juniors majoring in poultry husbandry and continued into the senior year. Also required of graduate students. One hour of recitation or conference a week. Prerequisite: Poul. Husb. 104, 105.

**453. Poultry Industry Training.** 3 semester hours. Summer session.

Nine weeks of supervised practical experience in an approved commercial poultry plant, hatchery, or farm. The employer and resident instructor will collaborate in arriving at a grade. Open to upperclassmen and graduate students. Prerequisite: Poul. Husb. 104, 105, 112, 119, 126.

FOR GRADUATE CREDIT

**801. Research in Poultry Husbandry.** Credit to be arranged. Each semester.

Investigations which may form the basis of a master's or doctor's thesis. Conferences by appointment. Prerequisite: Poul. Husb. 104, 105, 112, 119, 126; consult instructors.

*Advanced (Poultry) Farm Organization.* (See Agr. Econ. 533.)

*Poultry Sanitation.* (See Bact. 440.)

*Special (Poultry) Anatomy.* (See Anat. 401.)

*Genetics Seminar.* (See An. Husb. 426.)

# The Agricultural Experiment Station

ARTHUR D. WEBER, *Director*

RAY IAMS THROCKMORTON, *Director Emeritus*

LELAND EVERETT CALL, *Director Emeritus*

HAROLD E. MYERS, *Associate Director*

C. PEAIRS WILSON, *Assistant Director*

The Kansas Agricultural Experiment Station was organized under the provisions of an act of congress, approved March 2, 1887, which is commonly known as the Hatch act.

Two days later, March 4, 1887, the legislature of Kansas adopted a resolution accepting the conditions of the Hatch act, and vesting the responsibility of carrying out its provisions in the Board of Regents of Kansas State College.

Later acts of Congress, and amendments thereto, authorized grants of money for agricultural research "... subject to legislative assent of the several States and Territories to the purpose of said grants. . ." These acts, the provisions of which have been accepted by the Kansas Legislature, are as follows: Adams Act of 1906; Purnell Act of 1925; Bankhead-Jones Act of 1935; an amendment to the Bankhead-Jones Act, and the Agricultural Marketing Act of 1946.

The Kansas Agricultural Experiment Station has been in operation 68 years. Throughout this period, financial support has been provided by state as well as federal appropriated funds. In addition, financial support has been provided from fees and from commercial organizations.

The unique responsibility of the Agricultural Experiment Station is to conduct original research in the broad field of agriculture and to publish and disseminate the results of agricultural research. Attention is devoted largely to the solution of problems related to the farm and farm home. More than 250 projects covering practically all phases of agriculture are being pursued by members of the station staff. Among these phases are the following: physiology and nutrition of plants and animals; diseases of plants and animals; chemical composition of soils, plants, and animal products; plant and animal breeding; crop rotations and fertilizers; acclimatization of new plants and trees; grasses and forage plants; feeds for livestock; production, processing, marketing, distribution, and use of agricultural products; farm management and other economic problems; sociological problems bearing on the development and improvement of the rural home and rural life; human nutrition and family living. Farms, well-equipped laboratories, and scientific equipment are available for the use of experiment station personnel.

Results of research are published in the form of scientific papers, bulletins, circulars, pamphlets, leaflets, popular journals, news releases to the agricultural press, radio and television stations, and reports at field days and other special events. All bulletins and other publications of the Agricultural Experiment Station are sent without charge to citizens of the state. Any person in the state may have his name placed on the permanent mailing list of the station to receive announcements of station publications.

Letters of inquiry and general correspondence should be addressed to the Agricultural Experiment Station, Kansas State College, Manhattan, Kansas.

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## BRANCH AGRICULTURAL EXPERIMENT STATIONS

### FORT HAYS BRANCH STATION

Land occupied by this station is part of what was originally the Fort Hays military reservation. A bill was approved by congress March 28, 1900,

setting aside this reservation for experimental and educational purposes. By act of the state legislature, approved February 7, 1901, the act of congress donating this land and imposing the support of these institutions was accepted. The same session of the legislature passed an act providing for the organization of a branch experiment station and appropriating a fund for preliminary work. In the division of this land, the College received 3,560 acres.

Investigations are confined primarily to the study of problems peculiar to the western half of the state where rainfall is limited. They include: beef cattle grazing, feeding and breeding studies; crop improvement with special emphasis on wheat, sorghum, and grasses; soil management; studies with yellow streak mosaic in wheat; weed control; insects as related to alfalfa seed production; crop production; and agricultural engineering.

#### **GARDEN CITY BRANCH STATION**

In 1906, the county commissioners of Finney county purchased for purposes of agricultural experimentation a tract of land amounting to 320 acres, situated four and one-half miles from Garden City. The land has been leased for a term of 99 years to the Kansas Agricultural Experiment Station as an experimental and demonstration farm. In 1937 and 1939 the state purchased 235 acres adjoining the original tract, thus making a total of 555 acres available to the station. Investigations in irrigation, dry-land farming, dairying, crop improvement, and lamb feeding are conducted at this station.

#### **COLBY BRANCH STATION**

The legislature of 1913 provided for the establishment of a branch experiment station near Colby. It is located on a tract of 594 acres. The original tract of land was purchased by Thomas county and deeded to the state. In 1941 the state purchased an additional 320 acres. Operations at the Colby station were begun in March, 1914. Investigations include: crop improvement, soil and crop management, dairy herd management, and adaptation studies with fruit and shade trees, shrubs and flowers.

#### **TRIBUNE BRANCH STATION**

The Tribune Branch Station was established in 1911 by an act of the Kansas state legislature.

At the Tribune station experimental work is conducted for the benefit of the surrounding western territory. Special attention is paid to the problems of producing crops under conditions of limited rainfall. The station was established in 1911 by the legislature.

#### **MOUND VALLEY BRANCH STATION**

The station was established by action of the 1949 legislature and consists of 282 acres. The station is devoted to the study of soil, crops, and the relationship of soil and soil treatments to the quality of the feed produced as measured by the performance of dairy cows. To facilitate this study, a herd of identical twin cows and heifers of the dairy breeds have been assembled. It is one of the largest herds of identical twin dairy animals to be found in the United States.

Soil fertility, forage crop improvement, and crop production studies are major enterprises on the station.



# The School of Arts and Sciences

JOHN C. WEAVER, *Dean*

ORVAL EBBERTS, *Assistant to the Dean*

JOE EISENBACH, JR., *Assistant to the Dean (on leave)*

RAY W. ROSE, *Temporary Assistant to the Dean*

Every student takes courses in the School of Arts and Sciences.

A college education includes a certain amount of general knowledge, no matter what the student expects to make his specialty. So every educated person looks forward to learning as much as he can about the world and society, about history and politics, about literature, the arts, and music. He knows that the laws of the universe, science, and mathematics are important. These general courses in the School of Arts and Sciences aim at helping the student to understand himself and to adjust himself to his surroundings. It is this kind of knowledge which often marks the educated person and helps him to be happy and successful in later life.

The student who enrolls in a professional or vocational curriculum must take basic courses in mathematics, science, written and oral communications, and other fields in order to prepare himself for advanced work in his own field. These basic courses are offered by the School of Arts and Sciences. Such courses also are important for individuals who may be going on to law or medical school in another university.

Many students intend to specialize in the particular fields of study that make up the School of Arts and Sciences. Teachers and technicians, research workers and writers, scientists and business men are prepared here. Specialization is offered in accounting, art, bacteriology, botany, business administration, chemistry, economics, education, entomology, English, geology, government, history, languages, mathematics, medical technology, music, philosophy, physical education, physics, physiology, psychology, social science, sociology, speech, statistics, technical journalism, and zoology.

The student may expect to find three kinds of courses in the School of Arts and Sciences: general education, basic introductions to work in other colleges, and specialized training in the departments of knowledge listed above.

## Curriculum in Biological Science

This curriculum is designed for those who wish to prepare for professional work in bacteriology, botany, entomology, or zoology. Because of the large number of electives, a student may select courses that will prepare him for graduate study in one or more of the fields, work in an industrial or government laboratory, or teaching in the public schools.

## Curriculum in Biological Science

### OPTION FOR MEDICAL TECHNICIANS OR PUBLIC HEALTH LABORATORY SCIENTISTS

The demand for medical technicians and public health laboratory scientists has increased markedly. Training for such work is provided in this curriculum. A student may choose to take his last year of this work either in residence at an approved hospital or laboratory or on the campus of Kansas State College. Thus he may qualify for both a certificate for Medical Technologists and a Bachelor of Science degree in four years.

## Curriculum in Biological Science

### PREMEDICAL OPTION

This curriculum is designed for those who plan to enter a medical school. The specified work meets all the general medical school entrance requirements set forth by the American Medical Association. By choosing the proper electives, a student can satisfy the individual requirements of the medical school of his choice. A student who satisfactorily completes three years of this curriculum can qualify for a Bachelor of Science degree on

completion of one year of professional training in an accredited school of medicine or dentistry.

### **Curriculum in Geology**

This curriculum is designed for the student who expects to become a professional geologist in order to work for such organizations as oil companies, the U. S. Geological Survey, state geological surveys, state highway commissions, or other agencies that employ geologists. The curriculum includes sixteen hours of electives in order to permit a greater degree of specialization of the student's choice in minerals and mineral resources, petroleum geology, paleontology, structural and dynamic geology, stratigraphy, and highway geology. This curriculum should also be taken by students who wish to do graduate work in geology. The Curriculum in Physical Science also offers a major in geology primarily for students who expect to teach in physical science.

### **Curriculum in Humanities**

This curriculum offers major concentration in English, languages, music, speech (including general speech, speech education, drama and theatre, radio and television, and speech therapy), and art. It is designed for the student who desires a general humanistic foundation for his education. A student can adapt it also to prepare for a professional career or for teaching.

### **Curriculum in Humanities**

#### **ART AND PAINTING OPTION**

This curriculum offers opportunity for major work in art, training either for professional work or for teaching.

### **Curriculum in Physical Science**

This curriculum provides for the needs of the student who desires major work in mathematics, statistics, chemistry, physics, or geology. By choosing the proper electives he may prepare himself for graduate, commercial, or government laboratory work or for secondary teaching. The student wishing more specialized work in chemistry, geology, or physics should enroll in the Curriculum in Chemistry, the Curriculum in Physical Science, the Curriculum in Geology, or the Curriculum in Physics.

### **Curriculum in Physical Science**

#### **GEOPHYSICS OPTION**

The importance of the physics of the earth in modern geological work including oil and mineral prospecting is such that this special curriculum is provided. The demand for persons well trained in geophysics is increasing.

### **Curriculum in Social Science**

This curriculum is designed especially to provide for the needs of students who wish major work in economics, sociology, psychology, philosophy, history, and government. The student who expects to enter a school of law should enroll in this curriculum and consult the special adviser for his work. A prelaw student who satisfactorily completes three years of this curriculum is eligible for a Bachelor of Science degree on completion of one year of professional training in an accredited law school. The electives in this curriculum are arranged so that majors may prepare themselves in their fields of specialization for research, graduate study, teaching, or employment in business concerns or government agencies, including the foreign service.

### **Curriculum in Business Administration**

This curriculum offers professional training for the student who expects to enter industry or commerce upon graduation. Majors are offered in marketing, finance, labor management, and general business. In every



case the courses selected are designed to give the student an academic and practical background in the respective fields.

### **Curriculum in Business Administration**

#### **ACCOUNTING OPTION**

The demand for competent accountants is sufficient to justify a curriculum offering a major in accounting. This major provides a course sequence that includes all the academic work needed to qualify for the examination for a Certified Public Accountant. Qualified accountants find extensive employment opportunities in government and industry. Many graduates establish their own accounting firms.

### **Curriculum in Chemistry**

The importance of chemical processes in every phase of our modern civilization has increased the demand for trained chemists. This curriculum provides the basic training for persons interested in research, graduate work, teaching, or employment in our vast chemical industry.

### **Curriculum in Elementary Education**

This four-year curriculum is designed to meet the needs of the student preparing to teach in the elementary schools. By selecting the proper elective courses, the student can qualify to teach in any elementary school in Kansas (by qualifying for a Degree Elementary Certificate from the State Board of Education).

### **Curriculum in Secondary Education**

This four-year curriculum is designed to meet the needs of the student preparing to teach in the secondary schools. Excluding those areas for which special curriculums exist (vocational agriculture, vocational home economics, physical education, music, and industrial arts), preparation for teaching in at least two general fields can be obtained (by earning a Secondary Three-year Certificate from the State Board of Education).

### **Curriculums in Applied Music**

#### **INSTRUMENT OPTION**

#### **VOICE OPTION**

Two four-year curriculums are offered in applied music. These curriculums are designed to give the student an opportunity for personalized training in voice, piano, violin, organ, or other instruments and to minor in another of these fields. Further, by choosing the proper electives, the student becomes eligible to receive a three-year special state teaching certificate to teach music and has permission to teach any nonmusic subject in which he has completed 15 or more college hours. If sufficient extra hours are completed so that not more than 40 hours in music are submitted to the State Board of Education, the student is eligible to receive the state three-year renewable-for-life certificate.

### **Curriculums in Music Education**

#### **INSTRUMENT OPTION**

#### **VOICE OPTION**

Two four-year curriculums in music education are offered with specialization in voice, instrument, or public school band or orchestra. The student who completes one of these curriculums is awarded the degree Bachelor of Science in Music Education. He is eligible to receive a special state certificate to teach music and has permission to teach any nonmusic subject in which he has completed 15 or more college hours. If sufficient extra hours are completed so that not more than 40 hours in music are submitted to the State Board of Education, the student is eligible to receive the state three-year renewable-for-life certificate.



**Curriculums in Physical Education****MEN****WOMEN**

The theoretical and practical instruction given in these curriculums prepares the student for teaching physical and health education and for coaching athletic games. By selecting the proper electives, the student may qualify to teach one or more subjects outside the field of specialization.

**Curriculum in Physics**

The fundamental importance of physics in our defense efforts and modern technical developments including peace-time use of atomic energy is well publicized. This curriculum offers professional training for the student who wishes to enter an industrial development or research position or to continue study in a graduate school.

**Curriculum in Technical Journalism**

Journalism graduates edit magazines and trade publications, serve in extension and other government information agencies, direct public relations for business and public institutions, cover news at home and abroad for wire services, publish weekly newspapers, and work in every department of daily newspapers. The curriculum is designed to train the student to gather information, to write with facility, and to comprehend the social consequences of his activities. Each student is required to prepare himself to write with understanding in a technical field.

**Preveterinary Curriculum**

All the course requirements for admittance to the four-year professional Curriculum in Veterinary Medicine are provided in this curriculum. This two-year preveterinary curriculum and the Curriculum in Veterinary Medicine lead to the two degrees, Bachelor of Science and Doctor of Veterinary Medicine.

Curriculum in Biological Science  
Bachelor of Science

FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
		<i>Course</i>	<i>Sem. Hrs.</i>			<i>Course</i>	<i>Sem. Hrs.</i>
Chem.	110	General Chemistry .....	5 or	Chem.	330	Gen. Org. Chem. ....	5
Chem.	210	Chemistry I* .....	5	Engl.	135	Written Comm. II .....	2
Engl.	125	Written Comm. I .....	3	Gen. Stud.	260	Intro. to Human. II .....	4
Gen. Stud.	250	Intro. to Human. I .....	4	Sp.	105	Oral Comm. I .....	2
		Air Science <i>or</i>				Air Science <i>or</i>	
		Military .....	1			Military .....	1
		Elective and Major .....	3			Elective and Major .....	2
		Physical Education .....	0			Physical Education .....	0
Total .....			15 or 16	Total .....			15 or 16

SOPHOMORE

Bot.	110	General Botany .....	5	Bact.	250	Bacteriology .....	5
Gen. Stud.	210	Intro. Soc. Sci. I .....	4	Ent.	105	General Entomology .....	3
Zool.	110	General Zoology .....	5	Ent.	110	Gen. Entomology Lab. ....	1
		Air Science <i>or</i>		Gen. Stud.	220	Intro. Soc. Sci. II .....	4
		Military .....	1	Geog.	210	Principles of Geograhya,	3
		Physical Education .....	0			Air Science <i>or</i>	
						Military .....	1
						Physical Education .....	0
Total .....			14 or 15	Total .....			16 or 17

JUNIOR

An. Husb.	405	Genetics .....	3	Elective and Major .....				15
Engl.	090	English Proficiency .....	0					
		Elective and Major .....	12					
Total .....			15	Total .....			15	

SENIOR

Elective and Major ..... 15		Elective and Major ..... 15	
<hr/>		<hr/>	
Total .....	15	Total .....	15
Number of hours required for graduation: 120 (women) or 124 (men).			

Majors:

*Bacteriology:* Chem. 230, 250, 435, 505, 650; Math. 175, 190; Phys. 110, 120; Bact. 610, 670, 675 or 710, and 8 additional hours in bacteriology.  
*Botany:* 19 hours in 400-799 group.  
*Entomology:* Math. 175, 190, and 20 hours in 400-799 group in entomology.  
*Zoology:* 19 hours in 400-799 group.

\* Chemistry I required of students who major in bacteriology.

For Curriculum in Wildlife Conservation, see Option D in the Curriculum in Technical Agronomy in the School of Agriculture.

**Curriculum in Biological Science***Bachelor of Science***Option for Medical Technicians  
or Public Health Laboratory Scientists****FRESHMAN**

FIRST SEMESTER				SECOND SEMESTER			
		<i>Course</i>	<i>Sem. Hrs.</i>			<i>Course</i>	<i>Sem. Hrs.</i>
Chem.	210	Chemistry I .....	5	Bact.	560	Public Health Bact. ....	3
Engl.	125	Written Comm. I .....	3	Chem.	230	Chemistry II Rec. ....	3
Gen. Stud.	250	Intro. to Human. I .....	4	Chem.	250	Chemistry II Lab. ....	2
Psych.	310	Gen. Psychology .....	3	Engl.	135	Written Comm. II .....	2
		Air Science <i>or</i>		Gen. Stud.	260	Intro. to Human. II .....	4
		Military .....	1	Sp.	105	Oral Comm. I .....	2
		Physical Education .....	0			Air Science <i>or</i>	
						Military .....	1
						Physical Education .....	0
Total .....			15 or 16	Total .....			16 or 17

**SOPHOMORE**

Chem.	505	Organic Chemistry .....	5	Bact.	250	Bacteriology .....	5
Phys.	210	Household Physics .....	4	Chem.	435	Quant. Analysis .....	4
Zool.	110	General Zoology .....	5	Geog.	210	Principles of Geography, ..	3
		Air Science <i>or</i>		Zool.	635	Zoological Technic .....	2
		Military .....	1			Air Science <i>or</i>	
		Physical Education .....	0			Military .....	1
						Elective .....	3
						Physical Education .....	0
Total .....			14 or 15	Total .....			17 or 18

**JUNIOR**

Bact.	270	Hematology .....	3	Bact.	670	Immunology .....	5
Bact.	610	Bact. of Human		Gen. Stud.	220	Introd. Soc. Sci. II .....	4
		Diseases .....	5	Zool.	465	Human Physiology .....	4
Chem.	650	General Biochemistry ....	5	Zool.	525	Human Parasit. Rec. ....	3
Engl.	090	English Proficiency .....	0	Zool.	540	Human Parasit. Lab. ....	1
Gen. Stud.	210	Introd. Soc. Sci. I .....	4				
Total .....			17	Total .....			17

**SENIOR**

Number of semester hours required for graduation: 96 (women) or 100 (men) from Kansas State College, plus an equivalent of 24 hours' credit taken during 12 months' study at an approved hospital or laboratory.



# Curriculum in Biological Science

## Bachelor of Science

### Premedical Option

#### FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Chem.	210	Chemistry I .....	5	Chem.	230	Chemistry II Rec. ....	3
Engl.	125	Written Comm. I .....	3	Chem.	250	Chemistry II Lab. ....	2
Gen. Stud.	250	Intro. to Human. I .....	4	Engl.	135	Written Comm. II .....	2
Math.	175	College Algebra .....	3	Gen. Stud.	260	Intro. to Human. II .....	4
		Air Science <i>or</i>		Math.	190	Plane Trigonometry .....	3
		Military .....	1	Sp.	105	Oral Comm. I .....	2
		Physical Education .....	0			Air Science <i>or</i>	
						Military .....	1
						Physical Education .....	0
Total .....			15 or 16	Total .....			16 or 17

#### SOPHOMORE

Gen. Stud.	210	Intro. Soc. Sci. I .....	4	Gen. Stud.	220	Intro. Soc. Sci. II .....	4
Mod. Lang.	110	Tech. German I .....	3	Mod. Lang.	120	Tech. German II .....	3
Phys.	110	General Physics I .....	4	Phys.	120	General Physics II .....	4
Zool.	110	General Zoology .....	5	Zool.	405	Compar. Anatomy .....	4
		Air Science <i>or</i>				Air Science <i>or</i>	
		Military .....	1			Military .....	1
		Physical Education .....	0			Physical Education .....	0
Total .....			16 or 17	Total .....			15 or 16

#### JUNIOR

An. Husb.	405	Genetics .....	3	Chem.	435	Quant. Analysis .....	4
Chem.	505	Organic Chemistry .....	5	Ent.	105	General Entomology .....	3
Engl.	090	English Proficiency .....	0	Ent.	110	Gen. Entomology Lab. ..	1
Engl.	245	American Literature I ..	3	Psych.	310	General Psychology .....	3
Mod. Lang.	125	Tech. German III .....	3	Zool.	420	Embryology .....	4
		Elective .....	1				
Total .....			15	Total .....			15

#### SENIOR

Bot.	110	General Botany .....	5	Bact.	250	Bacteriology .....	5
		Elective .....	9	Geog.	210	Principles of Geography,	3
						Elective .....	6
Total .....			14	Total .....			14

Number of hours required for graduation: 120 (women) or 124 (men).

**Curriculum in Geology***Bachelor of Science***FRESHMAN**

FIRST SEMESTER				SECOND SEMESTER			
		<i>Course</i>	<i>Sem. Hrs.</i>			<i>Course</i>	<i>Sem. Hrs.</i>
Chem.	210	Chemistry I .....	5	Chem.	230	Chemistry II Rec. ....	3
Engl.	125	Written Comm. I .....	3	Chem.	250	Chemistry II Lab. ....	2
Math.	175	College Algebra .....	3	Engl.	135	Written Comm. II .....	2
Math.	190	Plane Trigonometry .....	3	Mach. Des.	110	Engg. Drawing .....	2
		Air Science <i>or</i>		Math.	215	Anal. Geom. and Calc. I, ..	4
		Military .....	1	Sp.	105	Oral Comm. I .....	2
		Elective .....	1			Air Science <i>or</i>	
		Physical Education .....	0			Military .....	1
						Physical Education .....	0
Total .....			15 or 16	Total .....			15 or 16

**SOPHOMORE**

Gen. Stud.	150	Biology I .....	4	Gen. Stud.	160	Biology II .....	4
Geol.	110	Gen. Geology .....	3	Math.	245	Anal. Geom. and Calc. III, ..	4
Math.	230	Anal. Geom. and Calc. II, ..	4	Mod. Lang.	200	Spanish I .....	3
Phys.	130	Engg. Physics I .....	5	Phys.	140	Engg. Physics II .....	5
		Air Science <i>or</i>				Air Science <i>or</i>	
		Military .....	1			Military .....	1
		Physical Education .....	0			Physical Education .....	0
Total .....			16 or 17	Total .....			16 or 17

**JUNIOR**

Elec. Engg.	120	Elec. Engg. C Rec. ....	2	Civ. Engg.	120	Surveying I .....	2
Elec. Engg.	124	Elec. Engg. C. Lab. ....	1	Gen. Stud.	220	Introd. Soc. Sci. II .....	4
Engl.	090	English Proficiency .....	0	Geol.	425	Field Methods in	
Gen. Stud.	210	Introd. Soc. Sci. I .....	4			Geology .....	3
Geol.	405	Historical Geology .....	4	Mod. Lang.	320	Spanish III .....	3
Math.	600	Differential Equations ..	3	Phys.	471	Elec. and Mag. ....	4
Mod. Lang.	310	Spanish II .....	3	Phys.	480	Elec. and Mag. Lab. ....	1
Total .....			17	Total .....			17

**SENIOR**

Gen. Stud.	250	Intro. to Human. I .....	4	Gen. Stud.	260	Intro. to Human. II .....	4
Geol.	515	Structural Geology .....	4	Geol.	445	Aerial Photogeology .....	3
Govt.	325	Law for Engineers .....	2	Geol.	535	Petroleum Geol. ....	4
Phys.	515	Electronic Phys. I .....	4	Phys.	615	Geophysics .....	3
		Elective .....	3			Elective .....	3
Total .....			17	Total .....			17

Number of hours required for graduation: 130 (women) or 134 (men).

# Curriculum in Humanities

## Bachelor of Science

### FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Engl.	125	Written Comm. I .....	3	Engl.	135	Written Comm. II .....	2
Gen. Stud.	110	Man's Phys. World I .....	4	Gen. Stud.	120	Man's Phys. World II ....	4
Hist.	115	Civilization I .....	3	Hist.	130	Civilization II .....	3
Sp.	105	Oral Comm. I .....	2	Psych.	310	General Psychology .....	3
		Air Science <i>or</i>				Air Science <i>or</i>	
		Military .....	1			Military .....	1
		Modern Language .....	3			Modern Language .....	3
		Physical Education .....	0			Physical Education .....	0
Total .....			15 or 16	Total .....			15 or 16

### SOPHOMORE

Engl.	215	Engl. Literature I .....	3	Engl.	225	Engl. Literature II .....	3
Gen. Stud.	150	Biology I .....	4	Gen. Stud.	160	Biology II .....	4
		Air Science <i>or</i>		Math.	125	Math. of Human Affairs,	3
		Military .....	1			Air Science <i>or</i>	
		Elective and Major .....	5			Military .....	1
		Modern Language .....	3			Elective and Major .....	2
		Physical Education .....	0			Modern Language .....	3
						Physical Education .....	0
Total .....			15 or 16	Total .....			15 or 16

### JUNIOR

Engl.	090	English Proficiency .....	0	Engl.	255	American Literature II ..	3
Engl.	245	American Literature I ..	3	Gen. Stud.	220	Introd. Soc. Sci. II .....	4
Gen. Stud.	210	Introd. Soc. Sci. I .....	4	Mus.	250	App. of Music .....	2
		Elective and Major .....	8			Elective and Major .....	6
Total .....			15	Total .....			15

### SENIOR

Arch.	200	App. of Architecture <i>or</i>				Elective and Major .....	15
Arch.	285	Hist. of Pntng. and					
		Sculpt. ....	3				
		Elective and Major .....	12				
Total .....			15	Total .....			15

Number of hours required for graduation: 120 (women) or 124 (men).

### Majors:

*English*: 30 hours subsequent to Engl. 125, 135.

*Speech* (general speech, speech education, drama and theatre, radio and television, speech therapy): 30 hours subsequent to Sp. 105.

*Language*: 30 hours in a single language.

*Art*: 30 hours.

*Music*: 30 hours subsequent to Mus. 105, 150, 155.



**Curriculum in Humanities***Bachelor of Science***Art and Painting Option****FRESHMAN**

FIRST SEMESTER				SECOND SEMESTER			
		<i>Course</i>	<i>Sem. Hrs.</i>			<i>Course</i>	<i>Sem. Hrs.</i>
Arch.	120	Freehand Drawing I .....	2	Arch.	124	Freehand Drawing II ....	2
Arch.	210	Pict. Composition I .....	2	Arch.	214	Pict. Composition II .....	2
Engl.	125	Written Comm. I .....	3	Engl.	135	Written Comm. II .....	2
Gen. Stud.	110	Man's Phys. World I ....	4	Gen. Stud.	120	Man's Phys. World II ....	4
Hist.	115	Civilization I .....	3	Hist.	130	Civilization II .....	3
		Air Science <i>or</i>		Sp.	105	Oral Comm. I .....	2
		Military .....	1			Air Science <i>or</i>	
		Physical Education .....	0			Military .....	1
						Physical Education .....	0
Total .....			14 or 15	Total .....			15 or 16

**SOPHOMORE**

Arch.	160	Water Color I .....	2	Arch.	164	Water Color II .....	2
Arch.	170	Life Drawing I .....	2	Arch.	174	Life Drawing II .....	2
Gen. Stud.	150	Biology I .....	4	Gen. Stud.	160	Biology II .....	4
Psych.	310	General Psychology .....	3	Math.	125	Math. of Human Affairs,	3
		Air Science <i>or</i>				Air Science <i>or</i>	
		Military .....	1			Military .....	1
		Modern Language .....	3			Modern Language .....	3
		Physical Education .....	0			Physical Education .....	0
Total .....			14 or 15	Total .....			14 or 15

**JUNIOR**

Arch.	180	Oil Painting I .....	2	Arch.	184	Oil Painting II .....	2
Engl.	090	English Proficiency .....	0	Engl.	225	Engl. Literature II .....	3
Engl.	215	Engl. Literature I .....	3	Gen. Stud.	220	Introd. Soc. Sci. II .....	4
Gen. Stud.	210	Introd. Soc. Sci. I .....	4			Elective .....	4
		Elective .....	4			Modern Language .....	3
		Modern Language .....	3				
Total .....			16	Total .....			16

**SENIOR**

Arch.	285	Hist. of Pntng. and		Arch.	200	App. of Architecture ....	3
		Sculpt. ....	3	Engl.	245	American Literature I ..	3
Psych.	765	Psychology of Art .....	3	Mus.	250	App. of Music .....	2
		Elective .....	9			Elective .....	8
Total .....			15	Total .....			16

Number of hours required for graduation: 120 (women) or 124 (men).

Electives, if desired, may be chosen from Arch. 130, 135, 140, 145, 150, 218, 220, 405, 420, 424, 440, 444, and Art 100, 102, 104, 106, 117, 119, 121, 123, 125, 130, 132, 134, 136, 138, 140, 401, 402, 405, 412, 415, 417, 430, 431, 432, 434, 435, 443, 448.

# Curriculum in Physical Science

## Bachelor of Science

### FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Chem.	210	Chemistry I .....	5	Chem.	230	Chemistry II Rec. ....	3
Engl.	125	Written Comm. I .....	3	Engl.	135	Written Comm. II .....	2
Geol.	110	General Geology .....	3	Math.	190	Plane Trigonometry .....	3
Math.	175	College Algebra .....	3	Sp.	105	Oral Comm. I .....	2
		Air Science or				Air Science or	
		Military .....	1			Military .....	1
		Elective .....	1			Elective .....	5
		Physical Education .....	0			Physical Education .....	0
Total .....			15 or 16	Total .....			15 or 16

### SOPHOMORE

Gen. Stud.	150	Biology I .....	4	Econ.	110	Economics I .....	3
Math.	215	Anal. Geom. and Calc. I, ..	4	Gen. Stud.	160	Biology II .....	4
Phys.	110	General Phys. I .....	4	Math.	230	Anal. Geom. and Calc. II, ..	4
Psych.*	310	General Psychology .....	3	Phys.	120	General Physics II .....	4
		Air Science or				Air Science or	
		Military .....	1			Military .....	1
		Physical Education .....	0			Physical Education .....	0
Total .....			15 or 16	Total .....			15 or 16

### JUNIOR

Engl.	090	English Proficiency .....	0	Gen. Stud.	260	Intro. to Human. II .....	4
Gen. Stud.	250	Intro. to Human. I .....	4	Govt.	255	American Government ....	3
		Elective and Major .....	11			Elective and Major .....	8
Total .....			15	Total .....			15

### SENIOR

Elective and Major .....			15	Elective and Major .....			15
Total .....			15	Total .....			15

Number of hours required for graduation: 120 (women) or 124 (men).

#### Majors:

**Chemistry:** Chem. 250, 450, 455, 511, 512, 516, 517, 585, 590, 595.

**Geology:** Chem. 250, Geol. 405, 410, 415, 425, 515.

**Mathematics:** Math. 245, 600, and 9 hours normally selected from 415, 460, 525, 615, 620.

**Physics:** Chem. 250, Math. 245, Phys. 410, 420, 432, 434, 450, 460, 471, 480, 560. Seniors enroll for Phys. 740 for two semesters.

**Statistics:** Math. 245, 320, 340, 600, 615, 745, and 6 hours selected from 700-799 group in statistics.

A nine-hour proficiency in German is urged but not required.

\* Statistics majors replace Psych. 310 by Math. 320.

**Curriculum in Physical Science***Bachelor of Science***Geophysics Option****FRESHMAN**

FIRST SEMESTER				SECOND SEMESTER			
		<i>Course</i>	<i>Sem. Hrs.</i>			<i>Course</i>	<i>Sem. Hrs.</i>
Chem.	210	Chemistry I .....	5	Chem.	230	Chemistry II Rec. ....	3
Geol.	110	General Geology .....	3	Chem.	250	Chemistry II Lab. ....	2
Math.	175	College Algebra .....	3	Engl.	125	Written Comm. I .....	3
Math.	190	Plane Trigonometry .....	3	Geol.	405	Historical Geology .....	4
		Air Science <i>or</i>		Math.	215	Anal. Geom. and Calc. I, 4	
		Military .....	1			Air Science <i>or</i>	
		Elective .....	1			Military .....	1
		Physical Education .....	0			Physical Education .....	0
Total .....			15 or 16	Total .....			16 or 17

**SOPHOMORE**

Engl.	135	Written Comm. II .....	2	Geol.	230	Cartography .....	3
Geol.	425	Field Meth. in Geol. ....	3	Geol.	415	Cryst. and Mineralogy ....	4
Math.	230	Anal. Geom. and Calc. II, 4		Math.	245	Anal. Geom. and Cal. III, 4	
Phys.	130	Engg. Physics I .....	5	Phys.	140	Engg. Physics II .....	5
Sp.	105	Oral Comm. I .....	2			Air Science <i>or</i>	
		Air Science <i>or</i>				Military .....	1
		Military .....	1			Physical Education .....	0
		Physical Education .....	0	Total .....			16 or 17
Total .....			16 or 17	Total .....			16 or 17

**JUNIOR**

Engl.	090	English Proficiency .....	0	Gen. Stud.	160	Biology II .....	4
Gen. Stud.	150	Biology I .....	4	Gen. Stud.	220	Introd. Soc. Sci. II .....	4
Gen. Stud.	210	Introd. Soc. Sci. I .....	4	Geol.	445	Aerial Photogeology .....	3
Geol.	515	Structural Geology .....	4	Phys.	471	Elec. and Magn. ....	4
Govt.	325	Law for Engineers .....	2	Phys.	480	Elec. and Magn. Lab. ....	1
Math.	600	Differential Equations ....	3	Total .....			16
Total .....			17	Total .....			16

**SENIOR**

Gen. Stud.	250	Introd. to Human. I .....	4	Gen. Stud.	260	Introd. to Human. II .....	4
Phys.	515	Electronic Physics I .....	4	Geol.	535	Petroleum Geology .....	4
Phys.	618	Geophysics I .....	3	Phys.	621	Geophysics II .....	3
		Elective .....	6			Elective .....	6
Total .....			17	Total .....			17

Number of hours required for graduation: 130 (women) or 134 (men).



# Curriculum in Social Science

## Bachelor of Science

### FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Engl.	125	Written Comm. I .....	3	Engl.	135	Written Comm. II .....	2
Gen. Stud.	110	Man's Phys. World I .....	4	Gen. Stud.	120	Man's Phys. World II ....	4
Hist.	115	Civilization I .....	3	Hist.	130	Civilization II .....	3
Sp.	105	Oral Comm. I .....	2	Psych.	310	General Psychology .....	3
		Air Science <i>or</i>				Air Science <i>or</i>	
		Military .....	1			Military .....	1
		Option .....	3			Option .....	3
		Physical Education .....	0			Physical Education .....	0
Total .....			15 or 16	Total .....			15 or 16

### SOPHOMORE

Econ.	110	Economics I .....	3	Econ.	120	Economics II .....	3
Engl.	215	Engl. Literature I .....	3	Gen. Stud.	160	Biology II, .....	4
Gen. Stud.	150	Biology I .....	4	Soc.	250	Sociology .....	3
		Air Science <i>or</i>				Air Science <i>or</i>	
		Military .....	1			Military .....	1
		American History Elec.,	3			History Elective .....	3
		Option or Elective .....	2			Option .....	2
		Physical Education .....	0			Physical Education .....	0
Total .....			15 or 16	Total .....			15 or 16

### JUNIOR

Engl.	090	English Proficiency .....	0	Engl.	245	American Literature I ....	3
Govt.	255	American Government ....	3			Elective and Major .....	9
Math.	125	Math. of Human Affairs, ..	3			Sociology Elective .....	3
		Economics Elective .....	3				
		Elective and Major .....	6				
Total .....			15	Total .....			15

### SENIOR

Elective and Major ..... 15

Number of hours required for graduation: 120 (women) or 124 (men).

Option: 8 to 10 hours in a modern language, psychology, philosophy, speech, geography, or history.

#### Majors:

**Economics:** Math. 320, Hist. 205, Phil. 365, Acctg. 300 and 310, Sp. 115, Econ. 130, 455, 470, 505, and 6 hours of economics (above the 400 level) in addition to curricular requirements. Math. 145 (or 175) is to be substituted for Math. 125. The Economics elective and the American History elective are not required. Mathematics may be selected as an option. If Philosophy is the option, Phil. 365 will be a part of the 8-10 hour requirement. For course sequence, consult an economic advisor.

**Government:** Govt. 270 and 18 hours of government in addition to curricular requirements.

**History:** 3 hours of government and 12 hours of history in addition to curricular requirements.

**Law:** Curriculum adapted in consultation with Department of History, Government, and Philosophy.

**Philosophy:** Phil. 365, 755, 760, and 12 hours of philosophy in addition to curricular requirements.

**Psychology (general major):** Psych. 605 or 655, 615, 635, 686 and 12 hours of psychology in addition to Psych. 310. Replace Econ. 120 by Phil. 380.

**Psychology (pre-professional major):** Psych. 410, 665, 700 and 15 hours of psychology in addition to Psych. 310. Replace Gen. Stud. 150, 160, and Econ. 120 by Zool. 110, 465, and Math. 145 or 175, 320.

**Sociology:** 18 hours including 625, 665, 675, 680 in addition to curricular requirements.

**Curriculum in Business Administration***B. S. in Business Administration***FRESHMAN**

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Acctg.	300	Accounting I .....	3	Acctg.	310	Accounting II .....	3
Bus. Adm.	020	Bus. Adm. Orientation ..	0	Bus. Adm.	020	Bus. Adm. Orientation ..	0
Engl.	125	Written Comm. I .....	3	Engl.	140	Written Comm. IIB .....	3
Gen. Stud.	110	Man's Phys. World I .....	4	Gen. Stud.	120	Man's Phys. World II ....	4
Hist.	205	American Ind. History ..	3	Math.	145	General Algebra .....	5
Sp.	105	Oral Comm. I .....	2			Air Science or	
		Air Science or				Military .....	1
		Military .....	1			Physical Education .....	0
		Physical Education .....	0				
Total .....				Total .....			
15 or 16				15 or 16			

**SOPHOMORE**

Acctg.	320	Int. Accounting or		Bus. Adm.	030	Bus. Adm. Lecture .....	0
Acctg.	730	Cost Accounting .....	3	Econ.	120	Economics II .....	3
Bus. Adm.	030	Bus. Adm. Lecture .....	0	Gen. Stud.	160	Biology II .....	4
Econ.	110	Economics I .....	3	Psych.	310	General Psychology .....	3
Gen. Stud.	150	Biology I .....	4	Soc.	250	Sociology .....	3
Geog.	210	Prin. of Geography .....	3			Air Science or	
Math.	320	Elements of Statistics ..	3			Military .....	1
		Air Science or				Elective .....	2
		Military .....	1			Physical Education .....	0
		Physical Education .....	0				
Total .....				Total .....			
16 or 17				15 or 16			

**JUNIOR**

Bus. Adm.	030	Bus. Adm. Lecture .....	0	Bus. Adm.	030	Bus. Adm. Lecture .....	0
Bus. Adm.	440	Marketing .....	3	Bus. Adm.	405	Bus. Org. and Finance ..	3
Econ.	130	Money and Banking .....	3	Engl.	155	Comm'l Correspondence ..	3
Engl.	090	English Proficiency .....	0	Gen. Stud.	260	Intro. to Human. II .....	4
Gen. Stud.	250	Intro. to Human. I .....	4	Govt.	310	Business Law II .....	3
Govt.	295	Business Law I .....	3			Elective .....	2
		Elective .....	2				
Total .....				Total .....			
15				15			

**SENIOR**

Bus. Adm.	030	Bus. Adm. Lecture .....	0	Bus. Adm.	510	Bus. Adm. Summary .....	2
Econ.	470	Public Finance .....	3	Govt.	255	American Government ...	3
		Elective .....	11			Special Business	
						Electives .....	10
Total .....				Total .....			
14				15			

Number of hours required for graduation: 120 (women) or 124 (men).

At least 10 semester hours of electives are to be chosen from Acctg. 320, 730, 735, 740, 745, 750, 755, 760, 765, 770, 775, 780, 785; Ag. Econ. 557; Bus. Adm. 410, 415, 420, 425, 430, 435, 445, 450; Econ. 455, 460, 465, 475, 480, 485, 490, 495, 500, 505; Engl. 165; Govt. 720; Hist. 465; Math. 160; Psych. 705, 715, 720, 725, 730, 745; Shop 410; Soc. 625, 640; Tech. Journ. 245, 255. Majors in marketing will include Bus. Adm. 435, 445, 450; majors in finance will include Bus. Adm. 410, 435; majors in labor management will include Econ. 455, 460, 465.

Curriculum in Business Administration  
B. S. in Business Administration

Accounting Option

FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Acctg.	300	Accounting I .....	3	Acctg.	310	Accounting II .....	3
Bus. Adm.	020	Bus. Adm. Orientation ..	0	Bus. Adm.	020	Bus. Adm. Orientation ..	0
Engl.	125	Written Comm. I .....	3	Engl.	140	Written Comm. IIB .....	3
Gen. Stud.	110	Man's Phys. World I ..	4	Gen. Stud.	120	Man's Phys. World II ....	4
Hist.	205	American Ind. History ..	3	Math.	145	General Algebra .....	5
Sp.	105	Oral Comm. I .....	2			Air Science <i>or</i>	
		Air Science <i>or</i>				Military .....	1
		Military .....	1			Physical Education .....	0
		Physical Education .....	0				
Total .....			15 or 16	Total .....			15 or 16

SOPHOMORE

Acctg.	320	Int. Accounting .....	3	Acctg.	735	Adv. Cost Acctg. ....	2
Acctg.	730	Cost Accounting .....	3	Acctg.	740	Valuation Accounting ....	3
Bus. Adm.	030	Bus. Adm. Lecture .....	0	Bus. Adm.	030	Bus. Adm. Lecture .....	0
Econ.	110	Economics I .....	3	Econ.	120	Economics II .....	3
Gen. Stud.	150	Biology I .....	4	Gen. Stud.	160	Biology II .....	4
Math.	160	Math. of Finance .....	3	Math.	320	Elements of Statistics ..	3
		Air Science <i>or</i>				Air Science <i>or</i>	
		Military .....	1			Military .....	1
		Physical Education .....	0			Physical Education .....	0
Total .....			16 or 17	Total .....			15 or 16

JUNIOR

Acctg.	745	Adv. Accounting .....	3	Acctg.	755	Tax Accounting .....	3
Acctg.	750	Govt. Accounting .....	2	Bus. Adm.	030	Bus. Adm. Lecture .....	0
Bus. Adm.	030	Bus. Adm. Lecture .....	0	Bus. Adm.	405	Bus. Org. and Finance ..	3
Econ.	130	Money and Banking .....	3	Gen. Stud.	260	Intro. to Human. II ....	4
Engl.	090	English Proficiency .....	0	Govt.	295	Business Law I .....	3
Gen. Stud.	250	Intro. to Human. I .....	4			Elective .....	2
Psych.	310	General Psychology .....	3				
Total .....			15	Total .....			15

SENIOR

Econ.	470	Public Finance .....	3	Bus. Adm.	510	Bus. Adm. Summary ....	2
Govt.	310	Business Law II .....	3	Engl.	155	Comm'l Correspondence ..	3
		Elective .....	9	Govt.	255	American Government ....	3
						Elective .....	6
Total .....			15	Total .....			14

Number of hours required for graduation: 120 (women) or 124 (men).

Electives: Those preparing for the examination for Certified Public Accountant should take other accounting courses from the special business electives as listed in the Curriculum in Business Administration.



**Curriculum in Chemistry***B. S. in Chemistry***FRESHMAN****FIRST SEMESTER**

	<i>Course</i>	<i>Sem. Hrs.</i>
Chem.	095 Chem. Seminar .....	0
Chem.	210 Chemistry I .....	5
Engl.	125 Written Comm. I .....	3
Mach. Des.	110 Engg. Drawing .....	2
Math.	175 College Algebra .....	3
Math.	190 Plane Trigonometry .....	3
	Air Science <i>or</i>	
	Military .....	1
	Physical Education .....	0

Total ..... 16 or 17

**SECOND SEMESTER**

	<i>Course</i>	<i>Sem. Hrs.</i>
Chem.	095 Chem. Seminar .....	0
Chem.	230 Chemistry II Rec. ....	3
Chem.	270 Qual. Analysis .....	3
Engl.	135 Written Comm. II .....	2
Math.	215 Anal. Geom. and Calc. I, ..	4
Sp.	105 Oral Comm. I .....	2
	Air Science <i>or</i>	
	Military .....	1
	Elective .....	2
	Physical Education .....	0

Total ..... 16 or 17

**SOPHOMORE**

Chem.	095 Chem. Seminar .....	0
Chem.	450 Quant. Analysis I .....	4
Math.	230 Anal. Geom. and Calc. II, ..	4
Mod. Lang.	110 Tech. German I .....	3
Phys.	130 Engg. Physics I .....	5
	Air Science <i>or</i>	
	Military .....	1
	Physical Education .....	0

Total ..... 16 or 17

Chem.	095 Chem. Seminar .....	0
Chem.	455 Quant. Analysis II .....	4
Math.	245 Anal. Geom. and Calc. III, ..	4
Mod. Lang.	120 Tech. German II .....	3
Phys.	140 Engg. Physics II .....	5
	Air Science <i>or</i>	
	Military .....	1
	Physical Education .....	0

Total ..... 16 or 17

**JUNIOR**

Chem.	095 Chem. Seminar .....	0
Chem.	510 Organic Chemistry I .....	5
Chem.	585 Phys. Chemistry I Rec. ..	3
Chem.	590 Phys. Chemistry I Lab. ..	2
Engl.	090 English Proficiency .....	0
Gen. Stud.	210 Introd. Soc. Sci. I .....	4
Mod. Lang.	125 Tech. German III .....	3

Total ..... 17

Chem.	095 Chem. Seminar .....	0
Chem.	515 Organic Chemistry II ....	5
Chem.	595 Phys. Chemistry II Rec., ..	3
Chem.	600 Phys. Chemistry II Lab., ..	2
Gen. Stud.	220 Introd. Soc. Sci. II .....	4
	Elective .....	3

Total ..... 17

**SENIOR**

Chem.	095 Chem. Seminar .....	0
Chem.	480 Instrumental Analysis ..	3
Chem. Engg.	450 Inorganic Technology* ....	2
Gen. Stud.	150 Biology I <i>or</i>	
Gen. Stud.	250 Intro. to Human. I .....	4
	Chemistry Elective .....	5
	Elective .....	3

Total ..... 17

Chem.	090 Inspection Trip .....	0
Chem.	095 Chem. Seminar .....	0
Chem.	405 Inorganic Chemistry .....	3
Chem.	700 Senior Research .....	3
Gen. Stud.	160 Biology II <i>or</i>	
Gen. Stud.	260 Introd. to Human. II .....	4
	Elective .....	7

Total ..... 17

Number of hours required for graduation: 132 (women) or 136 (men).

\* Chem. Engg. 455 may be substituted and taken in the second semester of the senior year.

Curriculum in Elementary Education  
B. S. in Elementary Education

FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Engl.	125	Written Comm. I .....	3	Art	190	Art for Elem. Schools ..	3
Gen. Stud.	110	Man's Phys. World I ....	4	Engl.	135	Written Comm. II .....	2
Psych.	310	General Psychology .....	3	Gen. Stud.	120	Man's Phys. World II ....	4
Sp.	105	Oral Comm. I .....	2	Phys. Ed.	136	Pers. and Comm. Health, ..	3
		Air Science or				Air Science or	
		Military .....	1			Military .....	1
		Elective .....	3			Elective .....	3
		Physical Education .....	0			Physical Education .....	0
Total .....			15 or 16	Total .....			15 or 16

SOPHOMORE

Art	192	Crafts for Elem. Schools, ..	3	Educ.	100	Educ. Psychology I .....	3
Educ.	300	Prin. of Elem. Educ. ....	3	Engl.	470	Literature for Children ..	3
Gen. Stud.	150	Biology I .....	4	Gen. Stud.	160	Biology II .....	4
Mus.	110	Music for Elem. Teachers .....	3	Phys. Ed.	280	Playground Activities ....	3
		Air Science or				Air Science or	
		Military .....	1			Military .....	1
		Elective .....	3			Elective .....	3
		Physical Education .....	0			Physical Education .....	0
Total .....			16 or 17	Total .....			16 or 17

JUNIOR

Educ.	350	Science for Elem. Schools .....	3	Educ.	105	Educ. Psychology II .....	3
Educ.	365	Arithmetic for Elem. Schools .....	3	Educ.	355	Lang. Arts for Elem. Schools .....	3
Engl.	090	English Proficiency .....	0	Educ.	360	Social Studies for Elem. Schools .....	3
Gen. Stud.	210	Introd. Soc. Sci. I .....	4	Gen. Stud.	220	Introd. Soc. Sci. II .....	4
Psych.	625	Psych. of Exc. Children, ..	3			Elective .....	3
		Elective .....	3				
Total .....			16	Total .....			16

SENIOR

Educ.	415	Educational Sociology ....	3	Educ.	390	Methods of Teach. Part. for Elem. Schools ..	6
Gen. Stud.	250	Intro. to Human. I .....	4	Gen. Stud.	260	Intro. to Human. II .....	4
		Elective .....	9			Elective .....	6
Total .....			16	Total .....			16

Number of hours required for graduation: 126 (women) or 130 (men).

NOTE: Electives must be chosen to include at least 24 semester hours in one of the following fields: art and music, biological science, English and speech, home economics, physical science and mathematics, social science. Courses in one of these fields used as a part of the 45 hour general education requirement may also be counted toward the requirement of 24 semester hours. The general studies course in the field of concentration, however, may be replaced by departmental courses in the field in order that there may be no duplication.

# Curriculum in Secondary Education

## B. S. in Secondary Education

### FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Engl.	125	Written Comm. I .....	3	Engl.	140	Written Comm. IIB .....	3
		Air Science <i>or</i>		Psych.	310	General Psychology .....	3
		Military .....	1	Sp.	105	Oral Comm. I .....	2
		Elective and Major .....	8			Air Science <i>or</i>	
		Physical Education .....	0			Military .....	1
		Physical Science .....	4			Elective and Major .....	3
						Physical Education .....	0
						Physical Science .....	4
Total .....			15 or 16	Total .....			15 or 16

### SOPHOMORE

Educ.	100	Educ. Psychology I .....	3	Educ.	105	Educ. Psychology II .....	3
		Air Science <i>or</i>				Air Science <i>or</i>	
		Military .....	1			Military .....	1
		Biological Science .....	4			Biological Science .....	4
		Elective and Major .....	9			Elective and Major .....	9
		Physical Education .....	0			Physical Education .....	0
Total .....			16 or 17	Total .....			16 or 17

### JUNIOR

Engl.	090	English Proficiency .....	0			Elective and Major .....	12
Educ.	120	Prin. Sec. Educ. ....	3			Social Science .....	4
		Elective and Major .....	9				
		Social Science .....	4				
Total .....			16	Total .....			16

### SENIOR

Educ.	415	Educational Sociology <i>or</i>		Educ.	165	Meth. and Tchg. Part.	
Educ.	420	Prin. Prac. Guid. <i>or</i>				in Sec. Schools .....	6
Educ.	455	Extraclass Activities .....	3			Elective and Major .....	6
		Elective and Major .....	9			Humanities .....	4
		Humanities .....	4				
Total .....			16	Total .....			16

Number of hours required for graduation: 126 (women) or 130 (men).

The following specific courses in each case will fulfill the selected major requirements and the biological science, humanities, physical science, and social science requirements. The majors are not necessarily identical with traditional academic majors. They may not be as specialized, since they may include courses from supporting areas in order to meet subject and field certification requirements. In general, by proper choice of electives, the student may qualify to teach in one or more fields in addition to the major.

**Biological Science:** Bact. 110; Bot. 110, 670 or 690; Chem. 110; Ent. 105, 110; Gen. Stud. 210, 220, 250, 260; Geog. 210; Zool. 110, 465, 650, or 665; twelve semester hours in bacteriology, botany, entomology, and zoology.

**Business Administration:** Acctg. 300, 310, 320 or 730; Bus. Adm. 360, 370, 380, 390, 405, 440; Econ. 110, 120, 130; Engl. 155; Gen. Stud. 110, 120, 150, 160, 250, 260; Govt. 255; Hist. 205; Law 295, 310; Math. 145; Soc. 250.

**Chemistry:** Bot. 110; Chem. 210, 230, 250, 450, 455, 505 or 511 and 512, 580 or 585; Gen. Stud. 210, 220, 250, 260; Geol. 110; Math. 175, 190, 215, 230, 245; Phys. 130, 140, 560; Zool. 110.

**Economics:** Acctg. 330; Econ. 110, 120, 130, 455, 470, 505; History 115, 130; Gen. Stud. 110, 120, 150, 160, 250, 260; Govt. 255; Math. 145 or 175, 320; Soc. 250; six semester hours in economics, six semester hours in American history, three semester hours in sociology.

**English:** Engl. 405, 410, or 476, 415 or 450, 505, 515, 555, 680, 690; Gen. Stud. 110, 120, 150, 160, 210, 220; Hist. 115, 130; two courses from Arch. 200, 285, Mus. 250; three semester hours of history or philosophy; four courses in English.

General science requirements may be met in any of the groups Biological Science, Chemistry, Geology, Geography, Physics, or Physical Science.



*Geography*: Chem. 210, 220; Econ. 110; Gen. Stud. 150, 160, 250, 260; Geog. 210, 220, 230, 705, 715, 725; Geol. 110, 410; Govt. 255; Math. 175, 190; Phys. 110, 120.

*Geology*: Bot. 110; Chem. 210, 230; Econ. 110; Gen. Stud. 250, 260; Geog. 210; Geol. 110, 405, 410, 415, 455, 495, 515; Govt. 255; Math. 175, 190, 215; Phys. 110, 120; Zool. 110.

*History and Government*: Econ. 110, 120; Engl. 215, 245; Gen. Stud. 110, 120, 150, 160; Govt. 255, 260 or 270; Hist. 115, 130, 175, 190; Math. 125; Soc. 250; three semester hours in economics, three semester hours in sociology; eighteen semester hours in government or twelve semester hours in history.

*Journalism*: Engl. 245; Gen. Stud. 110, 120, 150, 160, 250, 260; Geog. 210; Govt. 255; Hist. 220; Phil. 365; Tech. Journ. 050, 105, 115, 215, 225, 265, 295, 625; three semester hours in English, three semester hours in American history, nine semester hours in a modern language or three semester hours in English and six semester hours in social science; five semester hours in technical journalism.

*Mathematics*: Math. 175, 190, 215, 230, 245, 300, 320, 415, 525; three semester hours in mathematics; other courses to satisfy certification requirements in general education.

*Modern Languages*: Arch. 200; Engl. 215, 225, 245, 255; Gen. Stud. 110, 120, 150, 160, 210, 220; Hist. 115, 130; Mus. 250; six semester hours in English, six semester hours in history; twenty-four semester hours in one modern language.

*Physical Science*: Bot. 110; Chem. 210, 230, 250, 505; Gen. Stud. 210, 220, 250, 260; Geol. 110, 405; Math. 175, 190, 215, 230; Phys. 130, 140, 560; Zool. 110; one semester hour in mathematics, two semester hours in physics.

*Physics*: Bot. 110; Chem. 210, 230, 250, 505; Gen. Stud. 210, 220, 250, 260; Geol. 110; Math. 175, 190, 215, 230, 245; Phys. 130, 140, 410, 420, 432, 450, 460, 471, 480, 560; Zool. 110.

*Psychology*: Econ. 110, 120; Engl. 215, 245; Gen. Stud. 110, 120; Gen. Stud. 150, 160 or Zool. 110, 465; Govt. 255; Hist. 115, 130; Math. 125 or 175; Soc. 250; three semester hours in government, six semester hours in American history, three semester hours in sociology; eighteen semester hours in psychology beyond curricular requirements.

*Sociology*: Soc. 250, 625, 665, 675, 680; Gen. Stud. 110, 120, 150, 160, 250, 260; Hist. 115, 130; Econ. 110, 120; Govt. 255; Math. 125; three semester hours in economics; three semester hours in government; six semester hours in American History; ten semester hours in sociology.

*Speech*: Arch. 200; Engl. 215, 225, 245, 255; Gen. Stud. 110, 120, 150, 160, 210, 220; Hist. 115, 130; Mus. 250; Sp. 115, 135 or 155 or 285, 165, 176, 216, 255, 366 or 385, 436, 450, 465, 526, 535; six semester hours in a modern language.

**Curriculum in Music (Applied)***Bachelor of Music***Instrument Option****FRESHMAN**

FIRST SEMESTER				SECOND SEMESTER			
		<i>Course</i>	<i>Sem. Hrs.</i>			<i>Course</i>	<i>Sem. Hrs.</i>
Engl.	125	Written Comm. I .....	3	Engl.	140	Written Comm. IIB .....	3
Mus.	150	Theory of Music I .....	3	Mus.	155	Theory of Music II .....	3
Phys.	240	Physics for Musicians ..	2	Mus.	250	App. of Music .....	2
Sp.	105	Oral Comm. I .....	2	Psych.	310	General Psychology .....	3
		Air Science <i>or</i>				Air Science <i>or</i>	
		Military .....	1			Military .....	1
		Major Instrument .....	4			Major Instrument .....	4
		Minor Instrument .....	1			Minor Instrument .....	1
		Physical Education .....	0			Physical Education .....	0
Total .....			15 or 16	Total .....			16 or 17

**SOPHOMORE**

Gen. Stud.	110	Man's Phys. World I <i>or</i>		Gen. Stud.	120	Man's Phys. World II <i>or</i>	
Gen. Stud.	150	Biology I <i>or</i>		Gen. Stud.	160	Biology II <i>or</i>	
Gen. Stud.	210	Introd. Soc. Sci. I .....	4	Gen. Stud.	220	Introd. Soc. Sci. II .....	4
Mod. Lang.	130	German I <i>or</i>		Mod. Lang.	140	German II <i>or</i>	
Mod. Lang.	210	French I .....	3	Mod. Lang.	220	French II .....	3
Mus.	080	Piano Ensemble .....	0	Mus.	080	Piano Ensemble .....	0
Mus.	160	Theory of Music III .....	3	Mus.	165	Theory of Music IV .....	3
Mus.	270	Laboratory Orchestra ....	0	Mus.	270	Laboratory Orchestra ....	0
Mus.	335	Instrumental Ensemble ..	1	Mus.	335	Instrumental Ensemble ..	1
		Air Science <i>or</i>				Air Science <i>or</i>	
		Military .....	1			Military .....	1
		Major Instrument .....	4			Major Instrument .....	4
		Minor Instrument .....	1			Minor Instrument .....	1
		Physical Education .....	0			Physical Education .....	0
Total .....			16 or 17	Total .....			16 or 17

**JUNIOR**

Engl.	090	English Proficiency .....	0	Mus.	080	Piano Ensemble .....	0
Mod. Lang.	150	German III <i>or</i>		Mus.	175	Counterpoint II .....	2
Mod. Lang.	230	French III .....	3	Mus.	195	History of Music II .....	2
Mus.	080	Piano Ensemble .....	0	Mus.	222	Theory of Conducting ....	2
Mus.	170	Counterpoint I .....	3	Mus.	271	Laboratory Orchestra ....	1
Mus.	190	History of Music I .....	2	Mus.	320	Junior Recital .....	1
Mus.	270	Laboratory Orchestra ....	0	Mus.	335	Instrumental Ensemble ..	1
Mus.	335	Instrumental Ensemble ..	1			Elective .....	3
		Elective .....	4			Major Instrument .....	4
		Major Instrument .....	4				
Total .....			17	Total .....			16

**SENIOR**

Mus.	180	Music Form and		Mus.	186	Instr. and Orchest. II ..	2
		Analysis .....	2	Mus.	215	Composition II .....	2
Mus.	183	Instr. and Orchest. I ....	2	Mus.	325	Senior Recital .....	2
Mus.	210	Composition I .....	2	Mus.	335	Instrumental Ensemble ..	1
Mus.	335	Instrumental Ensemble ..	1	Mus.	430	Prac. Teach. in	
Mus.	425	Meth. and Mat. for				App. Music .....	1
		Studio .....	1			Elective .....	2
		Elective .....	2			Elective (Mus. Lit.) .....	2
		Elective (Mus. Lit.) .....	2			Major Instrument .....	4
		Major Instrument .....	4				
Total .....			16	Total .....			16

Number of hours required for graduation: 128 (women) or 132 (men).

Music organization to be selected on advice of the department. Recital attendance and music organization required each semester. Majors in organ elect courses, Mus. 208, Organ Registration, and Mus. 204, Service Playing. If piano or organ is not the major instrument, the student will elect piano as the minor instrument. Two hours practice per day required in major instrument; one hour per day, minor instrument.

**Curriculum in Music (Applied)***Bachelor of Music***Voice Option****FRESHMAN**

FIRST SEMESTER				SECOND SEMESTER			
		<i>Course</i>	<i>Sem. Hrs.</i>			<i>Course</i>	<i>Sem. Hrs.</i>
Engl.	125	Written Comm. I .....	3	Engl.	140	Written Comm. IIB .....	3
Mus.	150	Theory of Music I .....	3	Mus.	155	Theory of Music II .....	3
Mus.	275	Piano .....	1	Mus.	250	App. of Music .....	2
Mus.	279	Voice .....	4	Mus.	275	Piano .....	1
Phys.	240	Physics for Musicians ....	2	Mus.	279	Voice .....	4
Sp.	105	Oral Comm. I .....	2	Psych.	310	General Psychology .....	3
		Air Science <i>or</i>				Air Science <i>or</i>	
		Military .....	1			Military .....	1
		Physical Education .....	0			Physical Education .....	0
Total .....			15 or 16	Total .....			16 or 17

**SOPHOMORE**

Mod. Lang.	210	French I .....	3	Mod. Lang.	220	French II .....	3
Mus.	080	Piano Ensemble .....	0	Mus.	080	Piano Ensemble .....	0
Mus.	160	Theory of Music III .....	3	Mus.	165	Theory of Music IV .....	3
Mus.	275	Piano .....	1	Mus.	275	Piano .....	1
Mus.	279	Voice .....	4	Mus.	279	Voice .....	4
Mus.	330	Vocal Ensemble .....	1	Mus.	330	Vocal Ensemble .....	1
		Air Science <i>or</i>				Air Science <i>or</i>	
		Military .....	1			Military .....	1
		Elective (Literature) ....	3			Elective (Literature) ....	3
		Physical Education .....	0			Physical Education .....	0
Total .....			15 or 16	Total .....			15 or 16

**JUNIOR**

Engl.	090	English Proficiency .....	0	Gen. Stud.	120	Man's Phys. World II <i>or</i>	
Gen. Stud.	110	Man's Phys. World I <i>or</i>		Gen. Stud.	160	Biology II <i>or</i>	
Gen. Stud.	150	Biology I <i>or</i>		Gen. Stud.	220	Introd. Soc. Sci. II .....	4
Gen. Stud.	210	Introd. Soc. Sci. I .....	4	Mod. Lang.	140	German II .....	3
Mod. Lang.	130	German I .....	3	Mus.	080	Piano Ensemble .....	0
Mus.	080	Piano Ensemble .....	0	Mus.	175	Counterpoint II .....	2
Mus.	170	Counterpoint I .....	2	Mus.	195	History of Music II .....	2
Mus.	190	History of Music I .....	2	Mus.	273	Laboratory Choir .....	0
Mus.	273	Laboratory Choir .....	0	Mus.	279	Voice .....	4
Mus.	279	Voice .....	4	Mus.	320	Junior Recital .....	1
Mus.	330	Vocal Ensemble .....	1	Mus.	330	Vocal Ensemble .....	1
Total .....			16	Total .....			17

**SENIOR**

Mod. Lang.	150	German III <i>or</i>		Mod. Lang.	160	German IV <i>or</i>	
Mod. Lang.	230	French III .....	3	Mod. Lang.	240	French IV .....	3
Mus.	180	Musical Form and		Mus.	140	Prac. Teach. in	
		Analysis .....	2			App. Music .....	1
Mus.	210	Composition .....	2	Mus.	215	Composition II .....	2
Mus.	222	Theory of Conducting ....	2	Mus.	273	Laboratory Choir .....	1
Mus.	273	Laboratory Choir .....	1	Mus.	279	Voice .....	4
Mus.	279	Voice .....	4	Mus.	325	Senior Recital .....	2
Mus.	425	Meth. and Mat. for		Sp.	245	Acting and Rehearsal I, 2	
		Studio .....	1			Elective (Mus. Lit.) ....	2
		Elective (Mus. Lit.) ....	2				
Total .....			17	Total .....			17

Number of hours required for graduation: 128 (women) or 132 (men).

Two hours practice a day required in voice; one hour practice a day, piano.

Music organization to be selected on advice of the department. Recital attendance and participation in a music organization are required each semester.



**Curriculum in Music Education***B. S. in Music Education***Instrument Option****FRESHMAN**

FIRST SEMESTER				SECOND SEMESTER			
		<i>Course</i>	<i>Sem. Hrs.</i>			<i>Course</i>	<i>Sem. Hrs.</i>
Engl.	125	Written Comm. I .....	3	Engl.	140	Written Comm. IIB .....	3
Gen. Stud.	150	Biology I .....	4	Gen. Stud.	160	Biology II .....	4
Mus.	150	Theory of Music I .....	3	Mus.	155	Theory of Music II .....	3
Mus.	230	Orchestral Inst. I .....		Mus.	235	Orchestral Inst. II .....	
		(String) .....	1			(String) .....	1
Mus.	250	App. of Music .....	2	Mus.	275	Minor Applied, Piano ....	1
Mus.	275	Minor Applied, Piano ....	1	Sp.	105	Oral Comm. I .....	2
		Air Science or .....				Air Science or .....	
		Military .....	1			Military .....	1
		Major Applied .....	1			Major Applied .....	1
		Physical Education .....	0			Physical Education .....	0
Total .....			15 or 16	Total .....			15 or 16

**SOPHOMORE**

Gen. Stud.	210	Introd. Soc. Sci. I .....	4	Gen. Stud.	220	Introd. Soc. Sci. II .....	4
Mus.	080	Piano Ensemble .....	0	Mus.	080	Piano Ensemble .....	0
Mus.	160	Theory of Music III .....	3	Mus.	116	School Music I .....	3
Mus.	240	Orch. Inst. III .....		Mus.	165	Theory of Music IV .....	3
		(Woodwinds) .....	1	Mus.	245	Orch. Inst. IV (Brass) ..	1
Phys.	240	Physics for Musicians ....	2	Mus.	270	Laboratory Orchestra ....	0
Psych.	310	General Psychology .....	3	Educ.	100	Educ. Psychology I .....	3
		Air Science or .....				Air Science or .....	
		Military .....	1			Military .....	1
		Major Applied .....	1			Major Applied .....	1
		Minor Applied, Strings ..	1			Minor Applied, Strings ..	1
		Physical Education .....	0			Physical Education .....	0
Total .....			15 or 16	Total .....			16 or 17

**JUNIOR**

Engl.	090	English Proficiency .....	0	Educ.	246	Teach. Part. in Music ..	2
Gen. Stud.	250	Introd. to Human. I .....	4	Gen. Stud.	260	Introd. to Human. II ....	4
Mus.	080	Piano Ensemble .....	0	Mus.	080	Piano Ensemble .....	0
Mus.	121	School Music II .....	3	Mus.	132	Instrumental Methods ....	3
Mus.	170	Counterpoint I .....	2	Mus.	175	Counterpoint II .....	2
Mus.	190	History of Music I .....	2	Mus.	195	History of Music II .....	2
Mus.	247	Orch. Inst. V .....		Mus.	222	Theory of Conducting ....	2
		(Percussion) .....	1	Mus.	270	Laboratory Orchestra ....	0
Mus.	270	Laboratory Orchestra .....	0	Mus.	273	Laboratory Chorus .....	0
Mus.	273	Laboratory Chorus .....	0			Major Applied .....	1
Educ.	105	Educ. Psychology II .....	3			Minor Applied, .....	
		Major Applied .....	1			Woodwinds .....	1
		Minor Applied, .....					
		Woodwinds .....	1				
Total .....			17	Total .....			17

**SENIOR**

Educ.	120	Prin. of Sec. Educ. ....	3	Educ.	246	Teach. Part. in Music ..	2
Educ.	246	Teach. Part. in Music ..	2	Educ.	455	Extraclass Activities .....	3
Mus.	180	Music Form and .....		Mus.	186	Instr. and Orchest. II ..	2
		Analysis .....	2	Mus.	270	Laboratory Orchestra ....	1
Mus.	183	Instr. and Orchest. I ....	2	Mus.	273	Laboratory Chorus .....	1
Mus.	270	Laboratory Orchestra ....	1	Sp.	535	Dramatic Production I, ..	2
Mus.	273	Laboratory Chorus .....	1			Elective (Sociology) .....	3
Mus.	435	Tech. of Marching Band, ..	2			Major Applied .....	1
		Elective .....	2			Minor Applied, Brass ....	1
		Major Applied .....	1				
		Minor Applied, Brass ....	1				
Total .....			17	Total .....			16

Number of hours required for graduation: 128 (women) or 132 (men).

Substitution in voice or instrument may be made when the minor applied duplicates the major applied. Recital attendance and participation in a musical organization are required each semester.

# Curriculum in Music Education

## B. S. in Music Education

### Voice Option

#### FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Engl.	125	Written Comm. I .....	3	Engl.	140	Written Comm. IIB .....	3
Gen. Stud.	150	Biology I .....	4	Gen. Stud.	160	Biology II .....	4
Mus.	150	Theory of Music I .....	3	Mus.	155	Theory of Music II .....	3
Mus.	230	Orch. Inst. I (String) ..	1	Mus.	235	Orch. Inst. II (String) ..	1
Mus.	250	App. of Music .....	2	Mus.	275	Piano .....	1
Mus.	275	Piano .....	1	Mus.	279	Voice .....	1
Mus.	279	Voice .....	1	Sp.	105	Oral Comm. I .....	2
		Air Science or				Air Science or	
		Military .....	1			Military .....	1
		Physical Education .....	0			Physical Education .....	0
Total .....				15 or 16	Total .....		
					15 or 16		

#### SOPHOMORE

Gen. Stud.	210	Introd. Soc. Sci. I .....	4	Educ.	100	Educ. Psychology I .....	3
Mus.	080	Piano Ensemble .....	0	Gen. Stud.	220	Introd. Soc. Sci. II .....	4
Mus.	160	Theory of Music III .....	3	Mus.	080	Piano Ensemble .....	0
Mus.	240	Orch. Inst. III .....	1	Mus.	116	School Music I .....	3
		(Woodwinds) .....	1	Mus.	165	Theory of Music IV .....	3
Mus.	270	Laboratory Orchestra ....	0	Mus.	245	Orch. Inst. IV (Brass) ..	1
Mus.	273	Laboratory Choir .....	0	Mus.	270	Laboratory Orchestra ....	0
Mus.	275	Piano .....	1	Mus.	273	Laboratory Choir .....	0
Mus.	279	Voice .....	1	Mus.	275	Piano .....	1
Phys.	240	Physics for Musicians ..	2	Mus.	279	Voice .....	1
Psych.	310	General Psychology .....	3			Air Science or	
		Air Science or				Military .....	1
		Military .....	1			Physical Education .....	0
		Physical Education .....	0	Total .....			
Total .....				15 or 16	Total .....		
					16 or 17		

#### JUNIOR

Educ.	105	Educ. Psychology II .....	3	Educ.	246	Teach. Part. in Music ....	2
Engl.	090	English Proficiency .....	0	Gen. Stud.	260	Introd. to Human. II .....	4
Gen. Stud.	250	Introd. to Human. I .....	4	Mus.	080	Piano Ensemble .....	0
Mus.	080	Piano Ensemble .....	0	Mus.	132	Instrumental Methods ....	3
Mus.	121	School Music II .....	3	Mus.	175	Counterpoint II .....	2
Mus.	170	Counterpoint I .....	2	Mus.	195	History of Music II .....	2
Mus.	190	History of Music I .....	2	Mus.	225	Theory of Conducting ....	2
Mus.	247	Orch. Inst. V .....	1	Mus.	270	Laboratory Orchestra ....	0
		(Percussion) .....	1	Mus.	273	Laboratory Choir .....	0
Mus.	270	Laboratory Orchestra ....	0	Mus.	279	Voice .....	1
Mus.	273	Laboratory Choir .....	0			Music Minor (String) ....	1
Mus.	279	Voice .....	1	Total .....			
		Music Minor (String) ....	1	17			
Total .....				17	Total .....		
					17		

#### SENIOR

Educ.	120	Prin. of Sec. Educ. ....	3	Educ.	246	Teach. Part. in Music ....	2
Educ.	246	Teach. Part. in Music ....	2	Educ.	455	Extra-class Activities ....	3
Mus.	180	Musical Form and		Mus.	186	Instr. and Orchest. II ....	2
		Analysis .....	2	Mus.	270	Laboratory Orchestra ....	1
Mus.	183	Inst. and Orchest. I .....	2	Mus.	273	Laboratory Choir .....	1
Mus.	270	Laboratory Orchestra ....	1	Mus.	279	Voice .....	1
Mus.	273	Laboratory Choir .....	1	Sp.	535	Dramatic Production I ..	2
Mus.	279	Voice .....	1			Music Minor (Brass) ....	1
		Music Minor				Music Elective .....	4
		(Woodwind) .....	1	Total .....			
		Social Science Elective ..	3	17			
Total .....				16	Total .....		
					17		

Number of hours required for graduation: 128 (women) or 132 (men).

Recital attendance and participation in a musical organization are required each semester.

**Curriculum in Physical Education (Men)***B. S. in Physical Education***FRESHMAN**

FIRST SEMESTER				SECOND SEMESTER			
		<i>Course</i>	<i>Sem. Hrs.</i>			<i>Course</i>	<i>Sem. Hrs.</i>
Engl.	125	Written Comm. I .....	3	Engl.	135	Written Comm. II .....	2
Gen. Stud.	110	Man's Phys. World I ....	4	Gen. Stud.	120	Man's Phys. World II ..	4
Phys. Ed.	105	Introd. to Phys. Ed. ....	1	Phys. Ed.	110	History of Phys. Ed. ....	2
Phys. Ed.	115	Phys. Ed. Activities I ..	2	Phys. Ed.	120	Phys. Ed. Activities II ..	2
Psych.	310	General Psychology .....	3	Zool.	110	General Zoology .....	5
Sp.	105	Oral Comm. I .....	2			Air Science <i>or</i>	
		Air Science <i>or</i>				Military .....	1
		Military .....	1			Physical Education .....	0
		Physical Education .....	0				
Total .....			16	Total .....			16

**SOPHOMORE**

Gen. Stud.	210	Introd. Soc. Sci. I .....	4	Educ.	100	Educ. Psychology I .....	3
Phys. Ed.	125	Phys. Ed. Activities III, ..	2	Gen. Stud.	220	Introd. Soc. Sci. II .....	4
Phys. Ed.	130	Nat. and Fun. of Play ..	2	Phys. Ed.	290	Kinesiology .....	2
Phys. Ed.	136	Pers. and Comm. ....		Zool.	465	Human Physiology .....	4
		Hygiene .....	3			Air Science <i>or</i>	
Zool.	210	Human Anatomy .....	5			Military .....	1
		Air Science <i>or</i>		Phys. Ed.	275	Fund. of Rhythms .....	2
		Military .....	1			Physical Education .....	0
		Physical Education .....	0				
Total .....			16	Total .....			16

**JUNIOR**

Educ.	105	Educ. Psychology II .....	3	Educ.	120	Prin. of Sec. Educ. ....	3
Engl.	090	English Proficiency .....	0	Gen. Stud.	260	Introd. to Human. II .....	4
Gen. Stud.	250	Introd. to Human. I .....	4	Phys. Ed.	155	Athletic Injuries and	
Phys. Ed.	160	Health Exam. ....	3			First Aid .....	3
		Elective .....	2	Phys. Ed.	185	Swimming .....	1
		Sports Option* .....	4			Sports Option* .....	2
						Phys. Ed. Option† .....	2
Total .....			16	Total .....			15

**SENIOR**

Educ.	135	Meth. Teach. in Sec.		Educ.	150	Teach. Part. in Sec.	
		Sch. ....	3			Sch. ....	3
Phys. Ed.	165	Public School Program		Phys. Ed.	150	Admin. of Health and	
		in Phys. Education, ..	2			Physical Education ..	3
Phys. Ed.	170	Prac. Teach. in Phys.		Phys. Ed.	425	Community Recreation ..	2
		Ed. ....	2			Education elective .....	3
		Elective .....	8			Elective .....	4
			<hr/>				<hr/>
Total .....			15	Total .....			15

Number of hours required for graduation: 126.

\* Sports option to be chosen from Phys. Ed. 190, 195, 200, 205.

† Physical Education option to be chosen from Phys. Ed. 175, 210, 215, and course not selected in sports option.



# Curriculum in Physical Education (Women)

## B. S. in Physical Education

### FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Engl.	125	Written Comm. I .....	3	Engl.	135	Written Comm. II .....	2
Fds. Nutr.	130	Applied Nutrition .....	2	Gen. Stud.	120	Man's Phys. World II ....	4
Gen. Stud.	110	Man's Phys. World I .....	4	Phys. Ed.	055	Physical Education .....	0
Phys. Ed.	055	Physical Education .....	0	Phys. Ed.	065	Phys. Ed. Lectures .....	0
Phys. Ed.	065	Phys. Ed. Lectures .....	0	Phys. Ed.	270	Tumbling, Rec. Sports ..	2
Phys. Ed.	250	Phys. Ed. Orient. ....	1	Phys. Ed.	275	Fund. of Rhythms .....	2
Psych.	310	General Psychology .....	3	Zool.	110	General Zoology .....	5
Sp.	105	Oral Comm. I .....	2				
Total .....			15	Total .....			15

### SOPHOMORE

Bot.	190	Nat. and Dev. Plants .....	3	Educ.	105	Educ. Psychology II .....	3
Educ.	100	Educ. Psychology I .....	3	Phys. Ed.	055	Physical Education .....	0
Phys. Ed.	055	Physical Education .....	0	Phys. Ed.	065	Phys. Ed. Lectures .....	0
Phys. Ed.	065	Phys. Ed. Lectures .....	0	Phys. Ed.	175	Teaching Health .....	2
Phys. Ed.	136	Pers. and Comm. Hyg. ..	3	Phys. Ed.	280	Playground Activ. ....	3
Phys. Ed.	295	Team Sports I .....	2	Phys. Ed.	285	Individual Activ. ....	2
Zool.	210	Human Anatomy .....	5	Phys. Ed.	290	Kinesiology .....	2
				Zool.	465	Human Physiology .....	4
Total .....			16	Total .....			16

### JUNIOR

Educ.	120	Prin. of Sec. Educ. ....	3	Educ.	135	Methods of Teach. Sec.	
Engl.	090	English Proficiency .....	0			Sch. ....	3
Gen. Stud.	210	Introd. Soc. Sci. I .....	4	Gen. Stud.	220	Introd. Soc. Sci. II .....	4
Phys. Ed.	055	Physical Education .....	0	Phys. Ed.	055	Physical Education .....	0
Phys. Ed.	065	Phys. Ed. Lectures .....	0	Phys. Ed.	065	Phys. Ed. Lectures .....	0
Phys. Ed.	300	Team Sports II .....	2	Phys. Ed.	265	Rec. Leadership .....	2
Phys. Ed.	305	Health Exam. and		Phys. Ed.	315	Therapeut. and Massage,	3
		First Aid .....	3	Phys. Ed.	320	Folk, Tap, and Social	
Phys. Ed.	355	Prin. and Phil. Phys.				Dancing .....	2
		Educ. ....	3			Elective .....	2
Total .....			15	Total .....			16

### SENIOR

Gen. Stud.	250	Introd. to Human. I .....	4	Educ.	150	Teach. Part. in Sec.	
Phys. Ed.	065	Phys. Ed. Lectures .....	0			Sch. ....	3
Phys. Ed.	325	Modern Dance .....	2	Gen. Stud.	260	Introd. to Human. II .....	4
Phys. Ed.	330	Teach. and Adapt. of		Phys. Ed.	065	Phys. Ed. Lectures .....	0
		Phys. Educ. ....	3	Phys. Ed.	150	Admin. Health and	
		Education elective .....	3			Phys. Educ. ....	3
		Elective .....	4	Phys. Ed.	340	Swimming and Archery ..	2
						Elective .....	3
Total .....			16	Total .....			15

Number of hours required for graduation: 124.

**Curriculum in Physics***Bachelor of Science***FRESHMAN**

FIRST SEMESTER				SECOND SEMESTER			
		<i>Course</i>	<i>Sem. Hrs.</i>			<i>Course</i>	<i>Sem. Hrs.</i>
Chem.	210	Chemistry I .....	5	Chem.	230	Chemistry II Rec. ....	3
Engl.	125	Written Comm. I .....	3	Chem.	250	Chemistry II Lab. ....	2
Math.	175	College Algebra .....	3	Engl.	135	Written Comm. II .....	2
Math.	190	Plane Trigonometry .....	3	Hist.	205	American Ind. History ..	3
Phys.	740	Physics Colloquium .....	0	Math.	215	Anal. Geom. and Calc. I, ..	4
		Air Science <i>or</i>		Phys.	740	Physics Colloquium .....	0
		Military .....	1	Sp.	105	Oral Comm. I .....	2
		Physical Education .....	0			Air Science <i>or</i>	
						Military .....	1
						Physical Education .....	0
Total .....			14 or 15	Total .....			16 or 17

**SOPHOMORE**

Econ.	110	Economics I .....	3	Gen. Stud.	160	Biology II .....	4
Gen. Stud.	150	Biology I .....	4	Govt.	255	American Govt. <i>or</i>	
Math.	230	Anal. Geom. and Calc. II, ..	4	Psych.	310	General Psychology .....	3
Phys.	130	Engg. Physics I .....	5	Math.	245	Anal. Geom. and Calc. III, ..	4
Phys.	740	Physics Colloquium .....	0	Phys.	140	Engg. Physics II .....	5
		Air Science <i>or</i>		Phys.	740	Physics Colloquium .....	0
		Military .....	1			Air Science <i>or</i>	
		Physical Education .....	0			Military .....	1
						Physical Education .....	0
Total .....			16 or 17	Total .....			16 or 17

**JUNIOR**

Engl.	090	English Proficiency .....	0	Gen. Stud.	260	Intro. to Human. II .....	4
Gen. Stud.	250	Intro. to Human. I .....	4	Math.	620	Adv. Calculus II .....	3
Math.	600	Differential Equations ..	3	Phys.	434	Mechanics II .....	2
Phys.	410	Light .....	3	Phys.	471	Elec. and Magnetism ....	4
Phys.	420	Light Laboratory .....	1	Phys.	480	Elec. and Magnetism	
Phys.	432	Mechanics I .....	3			Lab. ....	1
Phys.	740	Physics Colloquium .....	0	Phys.	740	Physics Colloquium .....	0
		Elective .....	3			Elective .....	3
Total .....			17	Total .....			17

**SENIOR**

Math.	615	Adv. Calculus I .....	3	Phys.	450	Heat and Thermo. ....	3
Phys.	520	Electronic Physics I .....	3	Phys.	460	Heat Lab. ....	1
Phys.	522	Elec. Phys. Lab. ....	1	Phys.	575	Nuclear Physics .....	3
Phys.	560	Atomic Physics .....	3	Phys.	593	Modern Phys. Lab. II ....	1
Phys.	591	Modern Phys. Lab. I .....	1	Phys.	740	Physics Colloquium .....	0
Phys.	740	Physics Colloquium .....	0			Elective .....	9
		Elective .....	6				
Total .....			17	Total .....			17

Number of hours required for graduation: 130 (women) or 134 (men).

# Curriculum in Technical Journalism

## B. S. in Technical Journalism

### FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Engl.	125	Written Comm. I .....	3	Engl.	140	Written Comm. IIB .....	3
Gen. Stud.	110	Man's Phys. World I .....	4	Gen. Stud.	120	Man's Phys. World II ....	4
Sp.	105	Oral Comm. I .....	2	Psych.	310	General Psychology .....	3
Tech. Journ.	050	Tech. Journ. Lecture .....	0	Tech. Journ.	050	Tech. Journ. Lecture .....	0
		Air Science <i>or</i>				Air Science <i>or</i>	
		Military .....	1			Military .....	1
		Mod. Lang. <i>or</i>				Mod. Lang. <i>or</i> English ..	3
		Social Science .....	6			Option .....	2
		Physical Education .....	0			Physical Education .....	0
Total .....			15 or 16	Total .....			15 or 16

### SOPHOMORE

Gen. Stud.	150	Biology I .....	4	Gen. Stud.	160	Biology II .....	4
Tech. Journ.	050	Tech. Journ. Lecture ....	0	Tech. Journ.	050	Tech. Journ. Lecture ....	0
Tech. Journ.	105	Graphic Arts Survey ....	2	Tech. Journ.	225	Reporting II .....	3
Tech. Journ.	115	Typography Lab. ....	1			Air Science <i>or</i>	
Tech. Journ.	215	Reporting I .....	3			Military .....	1
		Air Science <i>or</i>				Elective .....	4
		Military .....	1			Option .....	4
		Elective .....	5			Physical Education .....	0
		Physical Education .....	0				
Total .....			15 or 16	Total .....			15 or 16

### JUNIOR

Engl.	090	English Proficiency .....	0	Engl.	245	American Literature I ..	3
Gen. Stud.	250	Intro. to Human. I .....	4	Gen. Stud.	260	Intro. to Human. II .....	4
Tech. Journ.	050	Tech. Journ. Lecture ....	0	Tech. Journ.	050	Tech. Journ. Lecture ....	0
Tech. Journ.	235	Rural Press <i>or</i>		Tech. Journ.	265	Editing .....	2
Tech. Journ.	245	Publ. Inf. Methods <i>or</i>		Tech. Journ.	405	Reporting III <i>or</i>	
Tech. Journ.	315	Radio and Television		Tech. Journ.	445	The Home Page .....	3
		News .....	2			Option and elective .....	3
Tech. Journ.	255	Prin. of Advertising .....	3				
Tech. Journ.	425	History of Journalism ....	3				
		Option .....	3				
Total .....			15	Total .....			15

### SENIOR

Tech. Journ.	050	Tech. Journ. Lecture .....	0	Tech. Journ.	050	Tech. Journ. Lecture ....	0
Tech. Journ.	465	Mag. Art. Writing .....	2	Tech. Journ.	485	Interp. of Cont. Aff. ....	3
Tech. Journ.	650	The Journalist in a				Option and elective .....	12
		Free Society .....	3				
		English elective .....	3				
		Option .....	7				
Total .....			15	Total .....			15

Number of hours required for graduation: 120 (women) or 124 (men).

Before graduation the student is required to have completed two months of vocational journalistic experience.

**Social Science Option:** The student must select fifteen hours of approved courses in a field such as political science, public relations, business administration, marketing, foreign affairs, or others.

**Technical Option:** The student must select twelve hours of approved courses in a field such as agriculture, engineering, architecture, music, home economics, science in industry, flood control, dairy industry, electrical engineering, food preparation, clothing design, industrial management, industrial psychology, metallurgy, milling, public health, radio and television techniques, secondary education, soil conservation, veterinary medicine, transportation, heavy construction or others.



**Preveterinary Curriculum****FRESHMAN**

FIRST SEMESTER				SECOND SEMESTER			
		<i>Course</i>	<i>Sem. Hrs.</i>			<i>Course</i>	<i>Sem. Hrs.</i>
Engl.	125	Written Comm. I .....	3	Chem.	230	Chemistry II Rec. ....	3
Chem.	210	Chemistry I .....	5	Chem.	250	Chemistry II Lab. ....	2
Sp.	105	Oral Comm. I .....	2	Engl.	135	Written Comm. II .....	2
		Air Science <i>or</i> .....		Zool.	110	General Zoology .....	5
		Military .....	1			Air Science <i>or</i> .....	
		Elective .....	2			Military .....	1
		Physical Education .....	0			Physical Education .....	0
		Social Science Elec. ....	4			Social Science Elec. ....	4
Total .....			16 or 17	Total .....			16 or 17

**SOPHOMORE**

Chem.	505	Organic Chemistry .....	5	An. Husb.	120	An. Husb. A .....	2
Phys.	220	Des. Physics .....	3	An. Husb.	127	Livestock Judging A ....	1
Zool.	420	Embryology .....	4	An. Husb.	405	Genetics .....	3
		Air Science <i>or</i> .....		Dairy Husb.	140	Elem. of Dairying .....	3
		Military .....	1	Poul. Husb.	104	Fm. Poul. Prod. Rec. ....	2
		Humanities elective .....	4	Poul. Husb.	105	Fm. Poul. Prod. Lab. ....	1
		Physical Education .....	0			Air Science <i>or</i> .....	
						Military .....	1
						Humanities elective .....	4
						Physical Education .....	0
Total .....			16 or 17	Total .....			16 or 17

Number of hours required for application to enter School of Veterinary Medicine:  
64 (women) or 68 (men).

Social science electives to be chosen from Econ. 110, Gen. Stud. 210, 220, Geog. 210, Govt. 255, Hist. 145, 160, 175, 190, Psych. 310.

Humanities electives to be chosen from Arch. 200, 285, Engl. 310, 320, Gen. Stud. 250, 260, Hist. 115, 130, Mus. 190, 195, 250, Phil. 365.

## AIR SCIENCE AND TACTICS

CHARLES H. WILKINS, *Head of Department*

Kansas state law, Section 76-436, Session Laws, 1945, stipulates that in land-grant colleges of this state all regularly enrolled male students who are physically qualified shall take military training during the freshman and sophomore years. This required Basic Course is offered by units of the Reserve Officers' Training Corps, Air Force ROTC, established at Kansas State College or by Army ROTC. The status of men who present evidence of previous military service or training in the armed forces or at another college will be evaluated by the dean of the school concerned. Their records may be accepted in lieu of all or part of the required two years of basic training. Nonveteran men who matriculate with twenty-five semester hours of advanced academic credits are excused from the second year of military training; those with fifty-nine hours are excused from both years, using other subjects to replace the hours involved. Any exemption from the Basic Course may bar the students from enrollment in the voluntary Advanced Course ROTC normally offered to selected juniors and seniors.

Whenever basic ROTC is excused for any reason, other subjects must be taken to replace the hours involved.

All students enrolled in the Basic Course are furnished free of charge complete uniform, texts, and other necessary equipment. These articles are the property of the United States and must be returned at the end of each school year or upon withdrawal from College. The value of any article not returned is chargeable to the student.

Kansas State College at present has an Air Force ROTC offering a four-year program. The first two years constitute the Basic Course, and successful completion of this work meets the requirements of Kansas state law. The third and fourth years constitute the Advanced Course in which enrollment is selective and voluntary. The student should consult the Department of Air Science and Tactics for conditions which govern selection for the Advanced Air ROTC in any of its programs.

Students enrolled in the Advanced Course may sign a Deferment Agreement which serves to exempt them from selective service induction in return for a promise to accept a reserve commission, if tendered upon completion of the course of instruction, and to serve on active duty for a period of two years, upon call by the Secretary of the Air Force.

Under present regulations, a student enrolled in the second-year Basic Air ROTC may also sign the Deferment Agreement and accept conditional enrollment in Advanced Air ROTC which will serve, within established quotas, to exempt him from selective service induction so long as he continues in college and satisfactorily pursues his academic work.

Under present regulations, freshmen in the first-year Basic Air ROTC are subject to screening by a board of officers after conclusion of the first semester with a view to selection for Deferment Agreement within established quotas. Those who give best promise as potential officer material may be enrolled subsequently in the Advanced Course, if College attendance in good standing is continued through the sophomore year.

In the Advanced Air ROTC all courses are three semester hours each. These hours are accepted as electives for degrees except where curricular limitations prevent their full use, in which case the remaining hours appear as electives in excess of requirements for graduation. The hours which may be used are as follows:

School of Agriculture, Curriculum in Agricultural Education, none; other curriculums, twelve semester hours.

School of Arts and Sciences, twelve semester hours.

School of Engineering and Architecture, Curriculum in Architecture, twelve semester hours; other curriculums, eight semester hours.

**SENIOR DIVISION AF ROTC****BASIC COURSES****112. Air Science IA.** 1 semester hour. First semester.

Introduction to the Air Force ROTC followed by the history of aviation (introductory), fundamentals of global geography and basic military training. Two hours of recitation and one hour of practical work a week.

**117. Air Science IB.** 1 semester hour. Second semester.

International tensions and security organizations, military instruments of national security, and basic military training. Two hours of recitation and one hour of practical work a week.

**120. Air Science IIA.** 1 semester hour. First semester.

Careers in the USAF, moral responsibilities of AF leaders, introduction to aerial warfare, targets, weapons and cadet non-commissioned officer training. Two hours of recitation and one hour of practical work a week. Prerequisite: Air Sci. 117.

**125. Air Science IIB.** 1 semester hour. Second semester.

Continuation of Air Sci. 120, with study in AF aircraft, bases, operations, and cadet non-commissioned officer training. Two hours of recitation and one hour of practical work a week. Prerequisite: Air Sci. 120.

**ADVANCED COURSES****206. Air Science IIIA.** 3 semester hours. First semester.

Introduction to Advanced AF ROTC followed by study of the AF commander and his staff; creative problem solving, communication in the AF, instruction in the AF and leadership laboratory. Four hours of recitation and one hour of practical work a week. Prerequisite: Air Sci. 125.

**212. Air Science IIIB.** 3 semester hours. Second semester.

Continuation of Air Sci. 206. Instruction in the AF, military justice system, air navigation, weather, air base functions and leadership laboratory. Four hours of recitation and one hour of practical work a week. Prerequisite: Air Sci. 206.

**222. Air Science IVA.** 3 semester hours. First semester.

Career guidance, moral responsibility of AF leaders, leadership and management, military aviation and the evolution of warfare and leadership management. Four hours of recitation and one hour of practical work a week. Prerequisite: Air Sci. 212.

**227. Air Science IVB.** 3 semester hours. Second semester.

Continuation of Air Science 222. Military aviation and evolution of warfare, military aspects of world political geography, briefing for commissioned service and leadership laboratory. Four hours of recitation and one hour of practical work a week.

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**ATHLETICS**

**LAURENCE A. MULLINS, *Head of Department***

Kansas State College is a member in good standing of the Missouri Valley Intercollegiate Athletic Association—otherwise known as the Big Seven Conference. The other members are University of Colorado, Iowa State College, University of Kansas, University of Missouri, University of Nebraska, and University of Oklahoma.

Kansas State College, as a member of the Conference, participates with member schools in football, basketball, baseball, track, tennis, golf, and wrestling. Intercollegiate competition is open to all men students and is coached by a staff who are specialists in the respective sports.



**BACTERIOLOGY**VERNON D. FOLTZ, *Head of Department*

For a minor, course 110 or equivalent, and 10 semester hours in the 400-799 group.

For a major, course 250 or equivalent, and a minimum of 21 semester hours in the 400-799 group.

## FOR UNDERGRADUATE CREDIT

**105. Practical Microbiology.** 2 semester hours. Summer.

Day to day aspects of microbiology; designed especially for high school teachers of science, biology, hygiene, home economics, vocational agriculture and physical education. Lectures supplemented with demonstrations illustrating (a) recent developments in microbiology and (b) simple exercises that may be carried out in high school laboratories.

**110. General Microbiology.** 3 semester hours. Each semester and summer.

Morphology, physiology, and biology; classification, culture, and distribution of microorganisms; principles of applied microbiology. One hour of recitation and six hours of laboratory a week. A general survey course for students not majoring in biological science. Prerequisite: Chem. 110 or 230.

**140. Agricultural Microbiology.** 3 semester hours. Each semester.

For students in the School of Agriculture. Students who expect to take Bact. 480 or 515 should take Bact. 110 or equivalent. Sterilization and disinfection; microbial analyses of water, milk, and soil. Two hours of recitation and three hours of laboratory a week. Prerequisite: Chem. 230.

**190. Water and Sewage Bacteriology.** 3 semester hours. Each semester.

Water purification, analyses of water supplies, role of microorganisms in sewage disposal. One hour of recitation and six hours of laboratory a week. For students in engineering curriculums. Prerequisite: Chem. 170.

**200. Public Health Bacteriology.** 3 semester hours. Second semester.

Application of bacteriology to the control of disease in the community, with emphasis on the means of spread of diseases, the impact of disease outbreaks on the functioning of the communal organization, man's fight to reduce disease in his population, and evaluation of known methods of control of disease.

**250. Bacteriology.** 5 semester hours. Each semester.

General characteristics and methods of cultivation and identification of bacteria and closely related organisms. Three hours of recitation and six hours of laboratory a week. Required of students majoring in biological science. Prerequisite: Chem. 110 or 230.

**270. Hematology.** 3 semester hours. First semester.

Characteristics and analyses of blood samples. For students in Medical Technology. One hour of recitation and six hours of laboratory a week. Prerequisite: Bact. 110 or 250.

**310. Veterinary Microbiology.** 3 semester hours. First semester.

Morphology, physiology, biology, and classification of microorganisms; cultural and staining technic; microbiology in dairy sanitation and inspection. One hour of recitation and six hours of laboratory a week. For students in School of Veterinary Medicine. Prerequisite: Chem. 655.

**340. Pathogenic Bacteriology and Virology.** 4 semester hours. Second semester.

Continuation of Bact. 310. Microorganisms and viruses which cause infectious diseases of domesticated animals. Two hours of recitation and six hours of laboratory a week. Prerequisite: Bact. 310.

**370. Veterinary Immunology.** 3 semester hours. First semester.

Principles of immunology; preparation of antisera, antigens, and vaccines; serodiagnosis of infectious diseases. One hour of recitation and six hours of laboratory a week. Prerequisite: Bact. 340.

## FOR UNDERGRADUATE AND GRADUATE CREDIT

**410. Bacteriological Technic.** 3 semester hours. Second semester.

Technic of laboratory manipulations; fundamental experiments and special experiments selected according to the interest of the student. Nine hours of laboratory a week. Prerequisite: Consent of instructor.

**440. Poultry Sanitation.** 3 semester hours. First semester.

Methods of control of poultry diseases. Two hours of recitation and three hours of laboratory a week. Prerequisite: Bact. 110 or equivalent.

**480. Soil Microbiology.** 3 semester hours. Second semester.

Microbial population of the soil and its role in soil fertility. Prerequisite: Bact. 110 or equivalent, Chem. 330.

**485. Soil Microbiology Laboratory.** 2 semester hours. Second semester.

Laboratory experiments illustrative of theories developed in Bact. 480. Six hours of laboratory a week. Prerequisite: Bact. 480 or concurrent enrollment.

**510. Dairy Bacteriology.** 3 semester hours. Second semester.

Bacteriology of milk and milk products. Prerequisite: Bact. 110 or equivalent.

**515. Dairy Bacteriology Laboratory.** 2 semester hours. Second semester.

Laboratory experiments illustrative of theories developed in Bact. 510. Six hours of laboratory a week. Prerequisite: Bact. 510 or concurrent enrollment.

**545. Microbiology of Foods.** 5 semester hours. First semester.

Microbial phenomena involved in the bacteriology and sanitation of foods, including food processing, microbial spoilage, food poisoning, and fermentations; microscopic and cultural analysis of fresh, processed, frozen, fermented, and spoiled foods, exclusive of dairy products. Three hours of recitation and six hours of laboratory a week. Prerequisite: Bact. 110 or equivalent.

**565. Public Health Bacteriology Laboratory.** 2 semester hours. Second semester.

Theory and practice of bacteriologic testing of water and sewage; microbiological phenomena involved in water and sewage treatment; disinfectants; bacteriologic examination of surfaces and air. Six hours of laboratory a week. Prerequisite: Bact. 110 or equivalent.

**610. Bacteriology of Human Diseases.** 5 semester hours. First semester.

Pathogenic bacteria and their role in human diseases. Three hours of recitation and six hours of laboratory a week. Prerequisite: Bact. 250 or equivalent.

**670. Immunology.** 5 semester hours. Second semester.

Principles of immunology; preparation, purification and standardization of biological products employed in human and veterinary medicine. Three hours of recitation and six hours of laboratory a week. Prerequisite: Bact. 610 or equivalent.

**675. Physiology of Microorganisms I.** 3 semester hours. First semester in odd-numbered years.

Chemistry and physics of microbial processes. Prerequisite: Eight semester hours in Bacteriology; Chem. 650.

**680. Physiology of Microorganisms II.** 3 semester hours. Second semester in even-numbered years.

Continuation of Bact. 675 with special emphasis on microbial metabolism and uses of microorganisms in industrial fermentations. Prerequisite: Bact. 675.



**710. Determinative Bacteriology.** 3 semester hours. Second semester.

Isolation and identification of unknown bacteria. One hour of recitation and six hours of laboratory a week. Prerequisite: Eight semester hours credit in bacteriology.

**745. Antibiotics.** 2 semester hours. First semester.

Development and exploitation of antibiotics in veterinary and human medicine and theories of the mode of action in livestock feeding; theories of antibiotics and effectiveness of individual antibiotics against microorganisms. Prerequisite: Bact. 340 or 610.

**750. Microbiological Assay Methods.** 3 semester hours. Second semester in odd-numbered years.

Theory and practice of the utilization of microorganisms for qualitative and quantitative determination of vitamins, amino acids, and antibiotics. One hour of recitation and six hours of laboratory a week. Prerequisite: Bact. 110 or equivalent; Chem. 435.

**790. Bacteriology Seminar.** 1 semester hour. Each semester.

Prerequisite: Consent of instructor.

**799. Problems in Bacteriology.** Credit to be arranged. Each semester and summer.

Work is offered in dairy, foods, poultry diseases, soils, physiology, and sanitation. Prerequisite: Background of courses needed for the problem to be undertaken.

## FOR GRADUATE CREDIT

**810. Virology.** 4 semester hours. Second semester.

Present-day knowledge relative to the role of ultramicroscopic infectious agents, including bacteriophage, in disease. Laboratory diagnosis of virus diseases, isolation, identification, and characterization of specific viruses. Two hours of recitation and six hours of laboratory a week. Prerequisite: Bact. 610 or equivalent.

**820. Genetics of Microorganisms.** 2 semester hours. First semester.

Reproduction, heredity, mutation, variation, adaptation, and natural selection in one-celled organisms; relationship of these processes to inheritance and growth in higher organisms. Prerequisite: Bact. 110 or equivalent; An. Husb. 405.

**830. Physiology of Microorganisms III.** 3 semester hours. First semester in even-numbered years.

Selected laboratory exercises demonstrating the fundamental principles and practices of bacterial physiology. One hour of recitation and six hours of laboratory a week. Prerequisite: Bact. 680 and consent of instructor.

**999. Research in Bacteriology.** Credit to be arranged. Each semester and summer.

Work is offered in the following fields: Dairy, foods, poultry diseases, soils, determinative, immunology, sanitary, and physiology. Prerequisite: Registration in the Graduate School with sufficient training to carry on the line of research to be undertaken.

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## BOTANY AND PLANT PATHOLOGY

STUART M. PADY, *Head of Department*

For a minor, the following courses should be completed: Nine credit hours of courses in the 400-799 group, in addition to 110.

For a major, in addition to the minor, the following courses should be completed: Ten or more credit hours in the 400-799 group, subsequent to the minor courses.



## FOR UNDERGRADUATE CREDIT

**110. General Botany.** 5 semester hours. Each semester and summer.

Plant groups and their evolutionary development. Physiology, anatomy, ecology, and identification of seed plants. Economic applications. Three hours of recitation and six hours of laboratory a week.

**150. Medical Botany.** 2 semester hours. First semester.

Stock-poisoning plants of the range; habitat, poisonous properties, and methods of control and elimination of native plants. One hour of recitation and three hours of laboratory a week. Prerequisite: High school botany or equivalent.

**190. Nature and Development of Plants.** 3 semester hours. Each semester and summer.

Structure, life processes, identification, classification, evolutionary development, geographical distribution, and economic importance of plants. Not open to students who have credit in Bot. 110.

**300. Elementary Plant Physiology I.** 3 semester hours. First semester.

A brief survey of the physiological processes of higher plants. Prerequisite: Bot. 110.

## FOR UNDERGRADUATE AND GRADUATE CREDIT

**410. Plant Pathology I.** 3 semester hours. First semester and summer.

Important diseases of crops and the organisms which cause them. Two hours of recitation and three hours of laboratory a week. Prerequisite: Bot. 110.

**420. Horticultural Crop Diseases.** 3 semester hours. Second semester.

Major diseases of fruit and vegetable crops and ornamental plants; their causes, symptoms, and control. One hour of recitation and six hours of laboratory a week. Prerequisite: Bot. 410.

**440. Field Crop Diseases.** 3 semester hours. Second semester.

Diseases of cereal and forage crops; their causes, life histories, symptoms, and control. One hour of recitation and six hours of laboratory a week. Prerequisite: Bot. 410. Offered in even-numbered years, alternating with Bot. 460.

**460. Disease Resistance in Plants.** 3 semester hours. Second semester.

Plant pathogens in relation to host plant; the cause of resistance; varieties of cereal, forage crops, fruits, and vegetables resistant to disease; breeding disease-resistant crops. Prerequisite: Bot. 410. Offered in odd-numbered years, alternating with Bot. 440.

**480. Virus Diseases of Plants.** 2 semester hours. First semester.

Economic importance, nature, transmission, effect on host, and control of virus plant diseases. Prerequisite: Bot. 410.

**490. Morphology of the Fungi.** 3 semester hours. First semester.

Structure of slime molds, moldlike bacteria, and fungi studied to determine taxonomic relationships. One hour of recitation and six hours of laboratory a week. Prerequisite: Bot. 110.

**500. Mycology.** 3 semester hours. Second semester.

Study of fungi with emphasis on structure identification, classification, phylogeny, and economic importance. One hour of recitation and six hours of laboratory a week. Prerequisite: Bot. 490. Offered in odd-numbered years alternating with Bot. 850.

**580. Anatomy of Higher Plants.** 3 semester hours. Second semester.

Structure and development of the various tissues and organs of seed plants. One hour of recitation and six hours of laboratory a week. Prerequisite: Bot. 110.

**600. Plant Physiology.** 4 semester hours. First semester.

Detailed consideration of the physiological processes of higher plants. Two hours of recitation and six hours of laboratory a week. Prerequisite: Bot. 110 and a course in organic chemistry.

**610. Plant Cytology.** 3 semester hours. First semester.

Structure, development, and functions of the plant cell, with special reference to chromosome behavior and its bearing on genetic results. One hour of recitation and six hours of laboratory a week. Prerequisite: Bot. 110 or Zool. 110.

**651. Paleobotany.** 3 semester hours. Second semester.

Fossil plants, their taxonomy and use in the recognition of geological strata. Two hours of recitation and two hours of laboratory a week. Prerequisite: Geol. 405.

**670. Plant Ecology.** 3 semester hours. Second semester.

Structure and dynamics of vegetation. Field trips. Prerequisite: Bot. 110.

**690. Taxonomic Botany of the Flowering Plants.** 3 semester hours. First semester.

Systems of classification, identification of plants in the field and in the laboratory, orders and families of plants. One hour of recitation and six hours of laboratory a week. Prerequisite: Bot. 110.

**700. Plant Growth and Development.** 2 semester hours. Second semester.

Current concepts of growth-regulating substances and their effects on growth, differentiation, and reproduction in higher plants. Prerequisite: Bot. 600 or consent of instructor.

**715. Light and Temperature Relations of Plants.** 2 semester hours. Second semester.

Current concepts of light-energy relations involved in photosynthesis, respiration, growth form, and photoperiodism, and of temperature relations including thermoperiodism. Prerequisite: Bot. 600 or consent of instructor.

**720. Botanical Microtechnic.** 3 semester hours. Second semester.

Preparation of plant materials for histological or cytological study. One hour of recitation and six hours of laboratory a week. Prerequisite: Bot. 110.

**730. Field Botany.** 3 semester hours. Summer.

Identification and classification of seed plants. One hour of recitation and six hours of laboratory a week. Prerequisite: Bot. 110.

**799. Problems in Botany.** Credit to be arranged. Each semester and summer.

Work is offered in anatomy, cytogenetics, cytology, ecology, microtechnic, morphology, mycology, pathology, physiology, and taxonomy. Prerequisite: Background of courses needed for the problem to be undertaken.

## FOR GRADUATE CREDIT

**800. Mineral Nutrition of Plants.** 2 semester hours. First semester.

Current interpretations of mineral nutrition of plants with emphasis on the absorption and transport of the macro and minor elements. Prerequisite: Bot. 600 or consent of instructor.

**820. Plant Physiological Technic.** 2 semester hours. Second semester.

Research methods and technic used in physiological research by botanists, agronomists, and horticulturists; analytical methods for fats, proteins, and carbohydrates. Six hours of laboratory a week. Prerequisite: Bot. 600.

**830. Recent Advances in Cytogenetics.** 3 semester hours. Second semester.

Chromosome structure, mechanics, and behavior; their significance for problems of genetics, evolution, and the origin of species. Two hours of recitation and three hours of laboratory a week. Prerequisite: Agron. 432 or Bot. 610 or Zool. 450.

**850. Plant Pathological Technic.** 3 semester hours. Second semester.

Technic in methods of isolation, culture and inoculation used in studying the causal organisms of plant diseases. One hour of recitation and



six hours of laboratory a week. Prerequisite: Bot. 110. Offered in even-numbered years alternating with Bot. 500.

**980. Botany Graduate Seminar.** 1 semester hour. Each semester.

Reports of investigational work or other matters of interest in the various branches of botany. Prerequisite: Consult head of department.

**999. Research in Botany.** Credit to be arranged. Each semester and summer.

Work is offered in anatomy, cytogenetics, cytology, ecology, micro-technic, morphology, mycology, pathology, physiology, and taxonomy. Prerequisite: Registration in the Graduate School with sufficient training to carry on the line of research to be undertaken.

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## BUSINESS ADMINISTRATION

SAMUEL T. KEIM, JR., *Head of Department*

The Curriculum in Business Administration offers professional training in business, including accounting, to students who expect to enter industry or commerce.

### CERTIFICATE OF CERTIFIED PUBLIC ACCOUNTANT

By act of the Kansas legislature, passed March 24, 1915, provision is made for the examination for the Certificate of Certified Public Accountant. A candidate, in order to be admitted to the examination, must submit evidence satisfactory to the Committee on Accountancy of graduation from a college or university recognized by the committee, and the completion of thirty or more semester hours, or the equivalent thereof, in the study of accounting, business law, economics, and finances of which at least twenty semester hours, or the equivalent thereof, shall be in the study of accounting. If not a college graduate meeting the above requirements, he must submit evidence of three years of public accounting experience approved by the Board of Examiners, in addition to the completion of a four-year high school course or its equivalent.

The examination is given in the theory of accounting, practice of accounting, auditing, and commercial law as affecting accountancy, and is held in May and November of each year. The questions are supplied by the American Institute of Accountants.

A candidate who passes the examination and is a college graduate meeting the above requirements must furnish evidence of having had two years of public accounting experience satisfactory to the Board of Examiners before the certificate is granted. If the candidate who passes the examination is not a college graduate, he must furnish evidence of having completed two years of experience in addition to the qualifying experience.

### COURSES IN BUSINESS ADMINISTRATION

#### FOR UNDERGRADUATE CREDIT

**020. Business Administration Orientation.** No credit. Each semester.

Orientation of freshmen in the curriculum in business administration; opportunities in business professions.

**030. Business Administration Lecture.** No credit. Each semester.

Discussion by staff and business men on general economic conditions and employment possibilities.

**140. Personal Finance.** 2 semester hours. Each semester. Summer in odd-numbered years.

Finance from the viewpoint of the individual. Principles and practices of credit buying, borrowing, saving and investing; purchase of government bonds, insurance, real estate, and annuities; problems of taxation and wills. Not open to students in Curriculum in Business Administration.



**150. Business Management.** 3 semester hours. First semester.

Analysis of management factors such as personnel, finance, accounting, production, and marketing. Not open to students in Curriculum in Business Administration.

## FOR UNDERGRADUATE AND GRADUATE CREDIT

**405. Business Organization and Finance.** 3 semester hours. Each semester and summer.

Organization and classification of business enterprises, their financial structure and internal management. Prerequisite: Econ. 110, 130; Acctg. 310 or 330.

**410. Advanced Business Finance.** 2 semester hours. First semester. Summer in odd-numbered years.

Advanced principles of finance with emphasis on promotion, refinancing, and reorganization of business enterprises. Prerequisite: Bus. Adm. 405.

**415. Small Business Operation.** 3 semester hours. Second semester.

Opportunities in business ownership; principles governing the starting of a small enterprise; importance, status, problems, and management of small business. Prerequisite: Econ. 110.

**420. Investments.** 3 semester hours. First semester and summer.

A study of investment institutions, and principles and practices from the individual viewpoint. Corporate, civil, foreign, real estate and farm securities are compared as to risk, return, and intrinsic value. Prerequisite: Bus. Adm. 405, Acctg. 310 or 330.

**425. Property Insurance.** 2 semester hours. First semester. Summer in odd-numbered years.

Fire, marine, automobile, title, credit insurance and corporate bonding; also other forms of property insurance. Prerequisite: Econ. 110.

**430. Life Insurance.** 2 semester hours. Second semester. Summer in even-numbered years.

Nature and uses of life insurance, kinds of policies, determination of premiums, reserves, surrender values, and dividends. Prerequisite: Econ. 110.

**435. Credits and Collections.** 2 semester hours. Second semester. Summer in even-numbered years.

A study of the fundamental principles involved in extending credit and an analysis of present collection practices. Prerequisite: Econ. 110.

**440. Marketing.** 3 semester hours. Each semester and summer.

A general survey of marketing from a social-economic point of view. A study of the institutional organization of the market and the functioning of marketing agencies in the distribution of goods and services. Prerequisite: Econ. 110.

**445. Retailing.** 3 semester hours. First semester. Summer in odd-numbered years.

An introduction to retailing from the management point of view. Study of retail store policies and organization. The operation of the buying and selling functions, merchandise control, store systems, personnel management, retail accounting, and expense control. Prerequisite: Bus. Adm. 440.

**450. Sales Management.** 3 semester hours. Second semester. Summer in even-numbered years.

From the point of view of the manufacturer or wholesaler, a study of management problems relating to sales—including sales programs, product and distribution policies, price policy, management of sales force, sales promotion, and market research. Prerequisite: Bus. Adm. 440.

**510. Business Administration Summary.** 2 semester hours. Each semester and summer.

A course summarizing all the business and economic courses pursued in the business administration curriculum. Case problems are studied which require application of the principles developed in the different courses. Prerequisite: Open only to graduating seniors in Business Administration.

### COURSES IN ACCOUNTING

(For Agricultural Economics, see School of Agriculture.)

#### FOR UNDERGRADUATE CREDIT

**300. Accounting I.** 3 semester hours. Each semester and summer.

Principles and structure of accounts designed to give power to analyze commercial accounts and statements; problems used as an application of principles to practice. Six hours of recitation and laboratory a week.

**310. Accounting II.** 3 semester hours. Each semester and summer.

Partnership and corporation accounting and problems, with special emphasis on payroll records and accounting. Six hours of recitation and laboratory a week. Prerequisite: Acctg. 300.

**320. Intermediate Accounting.** 3 semester hours. Each semester and summer.

Application of accounting principles to corporations. Working papers, statement analysis, and basic accounting theory. Prerequisite: Acctg. 310.

**330. Principles of Accounting.** 3 semester hours. Each semester and summer.

Principles of accounting; use of accounting records and statements for individual and corporate business organizations. Not open to students in Curriculum in Business Administration.

#### FOR UNDERGRADUATE AND GRADUATE CREDIT

**725. Institutional Accounting.** 2 semester hours. Second semester.

Accounting principles and their application to cafeteria, lunch and tea rooms, restaurants, dormitories, clubs, and other institutions. Two two-hour recitation and laboratory periods a week. Not open to students in Curriculum in Business Administration. Prerequisite: Inst. Mgt. 212.

**730. Cost Accounting.** 3 semester hours. Each semester and summer.

Allocation of production costs to determine financial results and guide the management of business enterprises. Prerequisite: Acctg. 310 or 330.

**735. Advanced Cost Accounting.** 2 semester hours. Second semester. Summer in odd-numbered years.

Standard distribution, estimated costs, and miscellaneous items. Prerequisite: Acctg. 730.

**740. Valuation Accounting.** 3 semester hours. Each semester. Summer in even-numbered years.

Valuation of balance sheet accounts. Prerequisite: Acctg. 320.

**745. Advanced Accounting.** 3 semester hours. First semester and summer.

Home office and branch accounting, consolidated statements, consolidations, mergers, and other special topics. Prerequisite: Acctg. 740 or concurrent enrollment.

**750. Governmental Accounting.** 2 semester hours. First semester. Summer in even-numbered years.

State and municipal accounts and accounts for public institutions. Prerequisite: Acctg. 730 or 740.

**755. Tax Accounting.** 3 semester hours. Second semester.

Accounting problems in federal and state income taxes, estate, gift, and other taxes. Prerequisite: Acctg. 730 or 740 or concurrent enrollment.



- 760. Specialized Accounting.** 3 semester hours. Second semester.  
Specialized statements, estates and trusts, and other special topics.  
Prerequisite: Acctg. 740.
- 765. Auditing I.** 3 semester hours. First semester. Summer in odd-numbered years.  
Theory and procedure used in simple balance sheet audits. A short audit case will be used. Prerequisite: Acctg. 740 and consent of instructor.
- 770. Auditing II.** 3 semester hours. Second semester.  
Theory and procedure used in more complex balance sheet and detailed audits. A long audit practice case and current literature will be used. Prerequisite: Acctg. 765 and consent of instructor.
- 775. Accounting Systems.** 3 semester hours. First semester.  
Function, design, and installation of systems for various types of business. Prerequisite: Acctg. 745 and consent of instructor.
- 780. C.P.A. Problems.** 3 semester hours. First semester.  
A study of problems given in various C.P.A. examinations. Prerequisite: Acctg. 745 and consent of instructor.
- 785. C.P.A. Review.** 3 semester hours. Second semester.  
Review of theory of accounts, commercial law, and auditing as given in C.P.A. examinations. Prerequisite: Acctg. 745 and consent of instructor.
- 798. Problems in Business Administration.** Credit to be arranged. Each semester and summer.  
Prerequisite: Background of courses needed for the problem to be undertaken.
- 799. Problems in Accounting.** Credit to be arranged. Each semester and summer.  
Prerequisite: Background of courses needed for the problem to be undertaken.

#### FOR GRADUATE CREDIT

- 998. Research in Business Administration.** Credit to be arranged. Each semester and summer.  
Prerequisite: Registration in the Graduate School, with sufficient training to carry on the line of research to be undertaken.
- 999. Research in Accounting.** Credit to be arranged. Each semester and summer.  
Prerequisite: Registration in the Graduate School, with sufficient training to carry on the line of research to be undertaken.

### COURSES IN TYPEWRITING AND SHORTHAND

#### FOR UNDERGRADUATE CREDIT

- 360. Typewriting I.** 3 semester hours. Each semester and summer.  
The technique of touch typewriting, care of the machine, and skill in operation.
- 370. Typewriting II.** 3 semester hours. Each semester and summer.  
Continuation of Typewriting I. Prerequisite: Bus. Adm. 360.
- 380. Shorthand I.** 3 semester hours. Each semester and summer.  
Introduction to Gregg shorthand, with additional practice.
- 390. Shorthand II.** 3 semester hours. Each semester and summer.  
Continuation of Shorthand I. Prerequisite: Bus. Adm. 380 or equivalent.



## CHEMISTRY

———, *Head of Department*

For a minor, the following courses should be completed: Chem. 210, 230, 250, 435, 505.

For a major, the student should enroll in the Curriculum in Chemistry. Completion of the Curriculum in Chemistry provides certification by the American Chemical Society.

Students who expect to teach chemistry in secondary schools may enroll in the Curriculum in Secondary Education with a major in Chemistry.

The courses marked \* cannot be used for credit toward M. S. or Ph. D. degrees in chemistry.

### COURSES IN GENERAL CHEMISTRY

#### FOR UNDERGRADUATE CREDIT

- ✓ **095. Industrial Chemistry Seminar.** R credit. Each semester.  
Special topics for undergraduates in the Curriculum in Chemistry.
- 110. General Chemistry.** 5 semester hours. Each semester and summer.  
Principal laws and theories of chemistry; important metallic and nonmetallic substances. Three hours of recitation and six hours of laboratory a week. Not open to students having credit in any college courses in inorganic chemistry.
- 140. Chemistry E-I.** 4 semester hours. Each semester and summer.  
Contents similar to Chem. 210 except special emphasis is given to applications in engineering. Three hours of recitation and three hours of laboratory a week. Not open to students who have credit in Chem. 210.
- 170. Chemistry E-II.** 4 semester hours. Each semester and summer.  
Continuation of Chem. 140. Three hours of recitation and three hours of laboratory a week. Prerequisite: Chem. 140 or 210. Not open to students who have credit in Chem. 230 or 250.
- ✓ **210. Chemistry I.** 5 semester hours. Each semester and summer.  
Beginning of the study of general chemistry. Three hours of recitation and six hours of laboratory a week. Not open to students who have credit in Chem. 110 or 140.
- 230. Chemistry II Recitation.** 3 semester hours. Each semester and summer.  
Completion of the study of general chemistry. Not open to students who have credit in Chem. 170. Prerequisite: Chem. 210.
- 250. Chemistry II Laboratory.** 2 semester hours. Each semester and summer.  
General principles of qualitative analysis. Six hours of laboratory. Not open to students who have credit in Chem. 170. Prerequisite: Chem. 230 or concurrent registration.
- 270. Qualitative Analysis.** 3 semester hours. Second semester.  
One hour of recitation and six hours of laboratory a week. Prerequisite: Chem. 230 or concurrent registration.
- 320. Introductory Organic and Biological Chemistry.** 5 semester hours.  
Second semester.  
For students in the Curriculum in Home Economics and Nursing. Three hours of lecture-recitation and six hours of laboratory a week. Prerequisite: Chem. 110.
- 399. Senior Research.** Credit to be arranged. Each semester and summer.  
Research may be done in one to three credit units in analytical, inorganic, organic, physical, or biochemistry. Required of seniors in the Curriculum in Chemistry. Prerequisite: Senior standing in Curriculum in Chemistry.

## FOR UNDERGRADUATE AND GRADUATE CREDIT

**785. Chemical Literature.** 1 or 2 semester hours. Each semester.

One hour of recitation and problem work in the library. Prerequisite: Chem. 516, 517, 600.

**799. Problems in Chemistry.** Credit to be arranged. Each semester and summer.

Problems may include classroom or laboratory work, and are offered in inorganic, analytical, organic, physical, agricultural chemistry, biochemistry, and animal nutrition. Not for thesis research. Prerequisite: Background of courses needed for the problem to be undertaken.

## FOR GRADUATE CREDIT

**800. Graduate Chemistry Seminar.** 0 to 1 semester hour. Each semester.

Seminar is offered in analytical, inorganic, organic, physical, and biochemistry.

**999. Research in Chemistry.** Credit to be arranged. Each semester and summer.

Work is offered in analytical chemistry, inorganic chemistry, organic chemistry, physical chemistry, agricultural chemistry, biochemistry, and animal nutrition. Prerequisite: Registration in the Graduate School with sufficient training to carry on the line of research to be undertaken.

## INORGANIC CHEMISTRY

## FOR UNDERGRADUATE AND GRADUATE CREDIT

**405. Inorganic Chemistry.** 3 semester hours. Second semester and alternate summers.

Facts of chemistry and their present theoretical interpretations; properties of the elements as a basis for methods of classification. Prerequisite: Chem. 250.

## FOR GRADUATE CREDIT

**820. Systematic Inorganic Chemistry.** 3 semester hours. First semester and summer.

A study of the elements with emphasis on the periodic table; use of modern theories to interpret the structure and properties of the elements and their compounds. Prerequisite: Chem. 595, 600.

**822. Chemistry of Metals I.** 3 semester hours. First semester and alternate summers.

Descriptive and theoretical chemistry of the common metals; periodic relationships, the metallic state, alloys, metallurgy and representative compounds. Prerequisite: Chem. 595, 600.

**824. Chemistry of Metals II.** 2 semester hours. Second semester and alternate summers.

Descriptive and theoretical chemistry of the inner transition and less familiar transition elements; preparation, classification and characterization of the elements. Prerequisite: Chem. 595, 600.

**826. Chemistry of Nonmetals.** 3 semester hours. Second semester and alternate summers.

Theory and properties of the nonmetallic elements with emphasis on their individual and group characteristics. Prerequisite: Chem. 595, 600.

## COURSES IN ANALYTICAL CHEMISTRY

## FOR UNDERGRADUATE AND GRADUATE CREDIT

**435.\* General Quantitative Analysis.** 4 semester hours. Each semester and summer.

General procedures of volumetric, gravimetric, and colorimetric analyses. Two hours of recitation and six hours of laboratory a week. Prerequisite: Chem. 250 or 270.

**442.\* Chemical Microscopy.** 2 semester hours. When scheduled or on request of a sufficient number.

Use of the microscope in qualitative and quantitative analyses as applied to inorganic substances and to vegetable and animal products. One hour of recitation and three hours of laboratory a week. Prerequisite: Chem. 330, 435.

**450.\* Quantitative Analysis I.** 4 semester hours. First semester and summer.

General procedures of volumetric analysis. Two hours of recitation and six hours of laboratory a week. Prerequisite: Chem. 250 or 270.

**455.\* Quantitative Analysis II.** 4 semester hours. Second semester and summer.

General procedures of gravimetric and colorimetric analyses. Two hours of recitation and six hours of laboratory a week. Prerequisite: Chem. 250 or 270.

**464. Qualitative Microanalysis.** 3 semester hours. Second semester.

Basic theories and techniques of qualitative microanalysis. One hour of recitation and six hours of laboratory a week. Prerequisite: Chem. 450, 455, 516, 517.

**474. Quantitative Microanalysis.** 2 semester hours. Summer.

Theories and techniques of quantitative microanalysis. Six hours of laboratory a week. Prerequisite: Chem. 450, 455, 516, 517.

**480. Instrumental Analysis.** 3 semester hours. Each semester and summer.

Theory and application of modern instruments in the field of chemistry. Laboratory practice in the use of optical and electrical instruments. Two hours of recitation and three hours of laboratory a week. Prerequisite: Chem. 585, 590.

**635. Radioactive Tracer Techniques.** 3 semester hours. When scheduled or on request of a sufficient number. (See Phys. 635.)

Chemistry and physics of radioactive substances in field of biological and physical science. Two hours of recitation and three hours of laboratory a week. Taught in cooperation with the Department of Physics. Prerequisite: Consent of instructors.

#### FOR GRADUATE CREDIT

**840. Systematic Analytical Chemistry.** 3 semester hours. Second semester and summer.

Theoretical aspects of modern analytical methods with emphasis on the chemical reactions involved. Prerequisite: Chem. 595, 600.

**842. Advanced Analytical Chemistry.** 3 semester hours. First semester and alternate summers.

Theory and properties of the nonmetallic elements with emphasis on their individual and group characteristics. Prerequisite: Chem. 595.

### COURSES IN ORGANIC CHEMISTRY

#### FOR UNDERGRADUATE CREDIT

**310. Organic Chemistry (Agr.).** 3 semester hours. Each semester and summer.

Fundamentals of organic chemistry with emphasis on fats, proteins, and carbohydrates. Prerequisite: Chem. 110 or 230.

**315. Organic Chemistry Laboratory (Agr.).** 2 semester hours. Each semester and summer.

Prerequisite: Chem. 310 or concurrent enrollment.

**330. General Organic Chemistry.** 5 semester hours. Each semester and summer.

General study of some of the more important classes of organic com-



pounds. Three hours of lecture-recitation and six hours of laboratory a week. Prerequisite: Chem. 110.

FOR UNDERGRADUATE AND GRADUATE CREDIT

**505.\* Organic Chemistry** (pre-med., pre-vet., and med. tech.). 5 semester hours. Each semester and summer.

Topics in aliphatic and aromatic chemistry of fundamental and physiological interest. Three hours of lecture-recitation and six hours of laboratory a week. Prerequisite: Chem. 250 or 270.

**511.\* Organic Chemistry I.** 3 semester hours. First semester.

Fundamental principles of organic chemistry; aliphatic compounds. For chemical and chemical engineering majors; recommended for pre-medical students. Prerequisite: Chem. 435 or 450 or 453. Chem. 512 should be taken concurrently.

**512.\* Organic Chemistry I Laboratory.** 2 semester hours. First semester.

Prerequisite: Chem. 511 or concurrent enrollment.

**516.\* Organic Chemistry II.** 3 semester hours. Second semester.

Continuation of Chem. 511; aromatic and polyfunctional compounds. Prerequisite: Chem. 511 and 512; Chem. 517 or concurrent enrollment.

**517.\* Organic Chemistry II Laboratory.** 2 semester hours. Second semester.

Prerequisite: Chem. 516 or concurrent enrollment.

**525. Qualitative Organic Analysis.** 3 semester hours. First semester and summer.

Characterization of organic compounds; separation and identification of components of mixtures. Prerequisite: Chem. 516 and 517.

FOR GRADUATE CREDIT

**860. Systematic Organic Chemistry.** 3 semester hours. First semester and alternate summers.

Advanced study of organic compounds and fundamental types of reactions. Prerequisite: Chem. 516 and 517.

**862. Advanced Organic Chemistry.** 3 semester hours. Second semester.

Continuation of Chem. 860. Prerequisite: Chem. 860.

**864. Heterocyclic Compounds.** 2 semester hours. Second semester and summers of alternate years.

Prerequisite: Chem. 860.

**866. Theoretical Organic Chemistry.** 3 semester hours. Second semester.

Mechanisms of organic reactions, methods of investigation, fundamental concepts. Prerequisite: Chem. 525, 860.

**868. Natural Products.** 3 semester hours. First semester.

Structure proofs and synthetic approaches to important natural products, such as terpenes, alkaloids, and plant pigments. Prerequisite: Chem. 525, 860.

**870. Stereochemistry.** 2 semester hours. First semester of alternate years.

Prerequisite: Chem. 860.

**872. Steroids and Polycyclic Compounds.** 2 semester hours. First semester of alternate years.

Prerequisite: Chem. 860.

COURSES IN PHYSICAL CHEMISTRY

FOR UNDERGRADUATE AND GRADUATE CREDIT

**580.\* Descriptive Physical Chemistry.** 3 semester hours. As scheduled or when requested by a sufficient number.

Elementary principles of physical chemistry without higher mathematical applications. Not open to students majoring in chemistry. Prerequisite: Chem. 110 and 310 or 330.

**585.\* Physical Chemistry I.** 3 semester hours. First semester.

Properties of matter in the gaseous, liquid, and solid state, elementary thermodynamics, solutions, atomic and molecular structure. Prerequisite: Math. 245 or 290, Phys. 120 or 140. Chem. 590 should be taken concurrently.

**590.\* Physical Chemistry I Laboratory.** 2 semester hours. First semester.

Six hours of laboratory a week. Prerequisite: Chem. 435 or 450 and 455, and 585 or concurrent registration.

**595.\* Physical Chemistry II.** 3 semester hours. Second semester.

Thermodynamics and chemical equilibrium, reaction kinetics, electrochemistry, etc. Prerequisite: Chem. 590; Chem. 600 or concurrent enrollment.

**600.\* Physical Chemistry II Laboratory.** 2 semester hours. Second semester.

Six hours of laboratory a week. Prerequisite: Chem. 595 or concurrent registration.

**610. Chemical Thermodynamics.** 3 semester hours. First semester and summer.

Prerequisite: Chem. 595.

**615. Chemical Statistical Thermodynamics.** 3 semester hours. Second semester.

Prerequisite: Chem. 610, Math. 600 or 615.

**620. Electrochemistry.** 3 semester hours. Second semester.

Fundamental theories of electrochemistry and their application. Two hours of recitation and three hours of laboratory a week. Prerequisite: Chem. 600.

**625. Colloid Chemistry.** 3 semester hours. First semester.

Prerequisite: Chem. 595.

## FOR GRADUATE CREDIT

**880. Systematic Physical Chemistry.** 3 semester hours. Second semester and alternate summers.

Prerequisite: Chem. 600.

**882. Chemical Kinetics.** 3 semester hours. Second semester.

Prerequisite: Chem. 595.

**884. Molecular Structure.** 3 semester hours. First semester.

Prerequisite: Chem. 880 or equivalent; Math. 600 or 615 or Phys. 430.

**886. Orbital and Bond Theory.** 3 semester hours. Second semester.

Prerequisite: Chem. 884.

**910. Advanced Radiochemistry.** 2 semester hours. When scheduled.

Prerequisite: Chem. 600, 635.

**915. Electronic Spectra of Molecules.** 3 semester hours.

Prerequisite: Chem. 886, Phys. 905, or consent of instructor.

**COURSES IN AGRICULTURAL AND BIOLOGICAL CHEMISTRY**

## FOR UNDERGRADUATE AND GRADUATE CREDIT

**488.\* Milk Chemistry.** 2 semester hours. When scheduled.

Two hours of lecture a week. Students who desire laboratory work in milk chemistry should enroll in Chem. 799. Prerequisite: Chem. 250 or 270, 310.

**495. Advanced Soil Chemistry.** 3 semester hours. Each semester.

Ionic exchange, electrodialysis, solutions, and colloid phenomena of soils. One hour of recitation and six hours of laboratory a week. Prerequisite: Chem. 585, 590, and an acceptable course in soils.



- 650.\* General Biochemistry.** 5 semester hours. Each semester and summer.  
Basic course not intended for students in the School of Veterinary Medicine or chemistry majors. Three hours of lecture and six hours of laboratory a week. Prerequisite: Chem. 310 or 330.
- 655.\* Physiological Chemistry.** 5 semester hours. First semester.  
Basic course primarily for students in the School of Veterinary Medicine. Three hours of lecture and six hours of laboratory a week. Prerequisite: Chem. 505.
- 660. Biochemistry.** 3 semester hours. First semester and summer.  
Basic course for senior and graduate students in chemistry. Three hours of lecture a week. Prerequisite: Chem. 516, 517.
- 665. Biochemistry Laboratory.** 2 semester hours. First semester and summer.  
Six hours of laboratory a week. Prerequisite: Chem. 660 or concurrent enrollment.
- 668.\* General Plant Biochemistry.** 3 semester hours. First semester.  
Occurrence and functions of organic compounds, such as enzymes, plant pigments, vitamins, and plant acids in plants. Two hours of lecture and three hours of laboratory a week. Prerequisite: Chem. 310 or 330.
- 671. Plant Biochemistry.** 3 semester hours. First semester.  
More advanced treatment of the material covered in Chem. 668. Two hours of lecture and three hours of laboratory a week. Prerequisite: Chem. 516, 517.
- 675.\* Biochemical Analysis.** 2 semester hours. Summer.  
Six hours of laboratory a week. Prerequisite: Chem. 435, 650.
- 680. Intermediary Metabolism.** 3 semester hours. Second semester and summer.  
Intermediary metabolism of carbohydrates, fats and proteins. Prerequisite: Chem. 650.
- 685. Hormones.** 2 semester hours. Summer.  
Prerequisite: Chem. 650.
- 690. Lipids.** 3 semester hours. Second semester of even-numbered years.  
Prerequisite: Chem. 330.
- 705. Vitamins.** 2 semester hours. Second semester and summer.  
Prerequisite: Chem. 650.
- 715. Enzyme Chemistry.** 2 semester hours. Second semester.  
Chemical nature of enzymes and their reactions. Prerequisite: Chem. 516, 517, 590, 650.
- 720. Enzyme Laboratory.** 2 semester hours. Second semester.  
Basic procedures for extraction, purification and crystallization of enzymes. Six hours of laboratory a week. Prerequisite: Chem. 715 or concurrent registration or consent of instructor.
- 730. Principles of Animal Nutrition.** 3 semester hours. Each semester.  
Metabolism of nutrients, nutrient requirements of animals, discussion of feeding and metabolism experiments with animals, measuring feeding values. Prerequisite: Chem. 310 and a course in biochemistry or physiology.
- 735. Advanced Animal Nutrition.** 3 semester hours. First semester in even-numbered years or when requested by a sufficient number.  
Energy metabolism, protein quality, interrelationships of nutrients. Prerequisite: Chem. 650, 730.
- 740. Animal Nutrition Techniques.** 2 semester hours. Second semester.  
Preparation of diet and care of animals used in the study of various nutritional problems. Six hours of laboratory a week. Prerequisite: An acceptable course in nutrition or Chem. 650.



## FOR GRADUATE CREDIT

**812. Proteins.** 2 semester hours. First semester of odd-numbered years. Prerequisite: Chem. 600, 650 or equivalent.

**890. Theoretical Biochemistry.** 2 semester hours. Second semester of even-numbered years and summers.

Prerequisite: Chem. 600, 650, or consent of instructor.

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## ECONOMICS AND SOCIOLOGY

GEORGE MONTGOMERY, *Head of Department*

The courses in economics are designed for students who wish to prepare themselves for the teaching profession, for research, or for positions with business firms or governmental agencies.

Courses in sociology are designed to prepare the student for the professions of teaching, social work, and social science research. These courses also provide the student with greater understanding of social phenomena, thereby enabling him to participate more effectively in the community.

Students wishing to major in Economics or Sociology will enroll in the Curriculum in Social Science (see page 116), or, if they intend to teach in the secondary schools, in the Curriculum in Secondary Education (see page 121).

(Courses in agricultural economics and rural sociology are offered by the School of Agriculture.)

(Courses in accounting and business administration are offered by the Department of Business Administration.)

### COURSES IN ECONOMICS

## FOR UNDERGRADUATE CREDIT

**110. Economics I.** 3 semester hours. Each semester and summer. Introductory study of the principles of economics.

**120. Economics II.** 3 semester hours. Each semester and summer. Continuation of Economics 110. Prerequisite: Econ. 110.

**130. Money and Banking.** 3 semester hours. Each semester and summer. Nature, principles and functions of money; development and operation of financial institutions in the American monetary system with emphasis on processes, problems, and policies of commercial banks in the United States. Prerequisite: Econ. 110.

## FOR UNDERGRADUATE AND GRADUATE CREDIT

**450. The United States in the World Economy.** 3 semester hours. Second semester and summer in even-numbered years.

Evolution of the international economic position of the United States from 1789, with emphasis on the development of the U. S. international economic position since World War I and including treatment of Kansas in the world economy since the 1880's. Prerequisite: Econ. 110.

**455. Labor Economics I.** 3 semester hours. Each semester and summer.

History and philosophy underlying trade union organization and collective bargaining; analysis of selected major issues in the field of industrial relations, including the problems of unemployment and inflation, concentration of economic and political power in unions and management, and other public policy questions. Prerequisite: Econ. 110; junior standing.

**460. Labor Economics II.** 3 semester hours. Each semester and summer.

History and philosophy underlying labor legislation. Appraisal and evaluation of the economic, political, and social implications of federal and state labor legislation. Emphasis is placed on such recent federal

statutes as the National Labor Relations Act and the Fair Labor Standards Act. Prerequisite: Econ. 455.

**465. Labor Management.** 2 semester hours. Each semester and summer.

Problems of management for foremen and supervisors. Procedure in settling labor disputes and grievances; handling of employees, survey of employees' protective legislation; employee and employer relationships of several typical American industries. Prerequisite: Junior standing.

**470. Public Finance.** 3 semester hours. Each semester and summer.

An analysis of federal, state, and local tax structures with a consideration of the principles and problems underlying specific revenue sources. Attention is given to problems of social security, intergovernmental fiscal relations, and tax shifting. Prerequisite: Econ. 110.

**476. Monetary, Credit, and Fiscal Policies.** 2 semester hours. Second semester.

An analytical study of the influence of monetary, banking, tax, public expenditures, and public debt policies on general business activity and the price level; the utilization of such policies to maintain a stable economy. Prerequisite: Econ. 130.

**480. Business Cycles.** 2 semester hours. First semester. Summer in odd-numbered years.

Types of business fluctuations; measurement of business cycles; theories of the causes of business cycles; proposals for stabilizing business activity; techniques of forecasting business activity. Prerequisite: Econ. 110.

**486. International Trade.** 3 semester hours. First semester and summer in even-numbered years.

Economic principles underlying international trade and finance; governmental policies toward international trade; procedures in exporting and importing. Prerequisite: Econ. 110.

**490. Principles of Transportation.** 3 semester hours. Second semester.

The historical development and economic importance of rail, motor, air, water, and pipe line transportation in the United States—routes, services, rates, public regulation. Prerequisite: Econ. 110.

**500. Economic Systems.** 2 semester hours. Each semester and summer.

A survey of economic systems, Marxian socialism and modern socialism, giving attention to English socialism, communism and to the essential characteristics of the free enterprise capitalistic system. Prerequisite: Econ. 110 and junior standing.

**505. Intermediate Economic Theory.** 3 semester hours. First semester and summer in odd-numbered years.

Review of economic principles; advanced study of value and distribution theory. Prerequisite: Econ. 120.

**510. Income and Employment Theory.** 3 semester hours. Second semester and summer in even-numbered years.

Nature of the concept of national income and techniques of measuring it; factors determining the levels of and composition of the national income; study of proposals for promoting a large and expanding national income. Prerequisite: Econ. 120.

**515. Introduction to Econometrics.** 3 semester hours. Second semester.

Analytical and quantitative methods used in economics. Applications to specific problems. Prerequisite: One course in college algebra or equivalent; one course in statistics; one course in economics; senior or graduate standing or consent of the instructor.

**795. Problems in Economics.** Credit to be arranged. Each semester and summer.

Advanced study on an individual basis is offered in money and banking, public finance, general economics, international trade, labor rela-



tions, transportation. Prerequisite: Background of courses needed for problem to be undertaken.

#### FOR GRADUATE CREDIT

**810. History of Economic Thought.** 3 semester hours. First semester.

Development of economic ideas and doctrines and the relation of these to conditions existing when they were formulated. Prerequisite: Econ. 110.

**830. Seminar in Economics.** 3 semester hours. Each semester.

Special topics in economic theory. Prerequisite: Graduate standing.

**995. Research in Economics.** Credit to be arranged. Each semester and summer.

Research is offered in money and banking, public finance, general economics, international trade, labor relations, transportation. Prerequisite: Registration in the Graduate School, with sufficient training to carry on the line of research to be undertaken.

### COURSES IN SOCIOLOGY

#### FOR UNDERGRADUATE CREDIT

**250. Sociology.** 3 semester hours. Each semester and summer.

Development, structure, and functioning of human groups; social and cultural patterns; and the principal social processes. Prerequisite: Sophomore standing.

**260. Courtship and Marriage.** 2 semester hours. Each semester.

Basic principles and problems which pertain to ideal family life.

**270. Introduction to Social Work.** 3 semester hours. Second semester.

A survey of the fields of social work, the relationship of social work to other social developments and vocational opportunities. Prerequisite: Soc. 250.

#### FOR UNDERGRADUATE AND GRADUATE CREDIT

**625. Social Pathology.** 3 semester hours. Each semester.

Problems of personal and social disorganization, such as adolescence, juvenile delinquency, crime, mental illness, unemployment, and family instability; methods of prevention and treatment. Prerequisite: Soc. 250.

**627. Criminology.** 3 semester hours. First semester in odd-numbered years.

Nature, extent, and causes of crime; programs for prevention and treatment. Prerequisite: Soc. 250.

**630. Sociology of the Family.** 3 semester hours. First semester.

Origin and development of marriage customs and systems of family organizations; the preparation for family life under present conditions. Prerequisite: Soc. 250.

**635. Community Organization and Leadership.** 3 semester hours. Second semester.

American community organization; special emphasis on community problems and planning. Prerequisite: Soc. 250.

**640. Population and Human Ecology.** 2 semester hours. First semester.

Early theories, policies, growth, composition, spatial aspects, movements, and population trends. Prerequisite: Six hours of sociology or economics or history.

**645. Urban Sociology.** 3 semester hours. First semester.

Growth, development, and structure of the city as determined by geographical, ecological, and social factors; relation of rural and urban communities; problems of the city and various approaches to their solution. Prerequisite: Soc. 250.



- 647. Industrial Sociology.** 3 semester hours. Second semester.  
Human relations in industry, interrelationships of industry and the social order. Prerequisite: Soc. 250.
- 650. Cultural Anthropology.** 3 semester hours. Each semester and summer.  
Human and social origins; origin, nature, and diffusion of culture; cultural backgrounds of social institutions. Prerequisite: Soc. 250.
- 655. Social Systems.** 3 semester hours. First semester.  
Comparison of social systems in the Orient, Middle East, Europe and the Americas. Prerequisite: Soc. 250.
- 657. Racial and Cultural Minorities.** 3 semester hours. Second semester.  
Racial and cultural groups; attitudes, prejudices, and conflicts; approaches to understanding and control of race and minority group relations. Prerequisite: Soc. 250.
- 660. Social Organization of the Great Plains.** 3 semester hours. First semester in odd-numbered years.  
The Great Plains as a cultural region; cultural adaptation, problems of the region, and forms of social organization. Prerequisite: Soc. 250 and three additional hours in sociology.
- 665. Methods in Social Research.** 3 semester hours. First semester.  
Development, use, and interpretation of findings of the case method, social survey, and other techniques of social investigation. Prerequisite: At least two courses in sociology.
- 670. Social Institutions.** 3 semester hours. Second semester.  
The development and character of the major social institutions in contemporary American society; functions, interrelationships, and trends. Prerequisite: Soc. 250.
- 675. Development of Social Thought.** 3 semester hours. First semester.  
Development of social thought from ancient civilization to the present. Prerequisite: Soc. 250.
- 680. Seminar in Sociology.** 2 semester hours. Second semester.  
Summarization and integration of courses in sociology. Prerequisite: Senior standing and nine hours of sociology.
- 797. Problems in Sociology.** Credit to be arranged. Each semester and summer.  
Prerequisite: Background of courses needed for the problem to be undertaken.

#### FOR GRADUATE CREDIT

- 997. Research in Sociology.** Credit to be arranged. Each semester and summer.  
Prerequisite: Registration in the Graduate School, with sufficient training to carry on the line of research to be undertaken.

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## EDUCATION

FINIS M. GREEN, *Head of Department*

The basic philosophy and objectives of the Department of Education are expressed by the departmental staff as follows: (1) We believe that the Department of Education at Kansas State College, Manhattan, is primarily responsible for the formal and informal activities and experiences that help to qualify a person to assume the responsibilities of a member of the educational profession. (2) We believe that professional education involves more than the achievement by its students of adequate knowledge and skill for the performance of their occupational duties. We conceive of professional education as including also the development of acceptable social and personal attitudes, ethical standards, ideals of service, and the acceptance of professional and social responsibility.

The implementation of our basic beliefs is to be achieved as the Department of Education gives primary consideration to the following objectives: (1) To prepare teachers for elementary schools and secondary schools; (2) to prepare elementary school principals, secondary school principals, and school superintendents; (3) to prepare guidance counselors and directors of guidance programs; (4) to give, within the resources of the department and college, preparation for work in the various areas of special education of exceptional children; (5) to provide educational consultative services within the limits of the competencies of the staff and the resources of the department; (6) to provide placement services; (7) to keep informed of conditions, needs, and developments in the above areas. Implicit in these statements of objectives are varying degrees of cooperation with other departments which naturally characterize the work of a teacher education unit in a multipurpose institution.

Kansas State College offers undergraduate curriculums and graduate programs for teachers so that they may qualify for these state certificates: Sixty-Hour Provisional, Degree Elementary, Elementary Principal Provisional, Elementary Principal Five-Year, Secondary, Administrator's Provisional, and Administrator's Five-Year.

Each candidate for an original teaching certificate and each candidate for a renewal of a teaching certificate should maintain a close working relationship with the Department of Education as he plans his preparation for teaching. In order to give additional counsel to students planning to teach at the secondary level, special advisers are available in the following subject fields: Agriculture, Art, Biological Science, Commerce, English, Home Economics, Industrial Arts, Mathematics, Music, Physical Education, Physical Science, Psychology, Social Science, and Speech.

The applicant for a teaching certificate is charged with the responsibility of (1) filing the regular application form; (2) providing an official transcript of college credits; (3) attaching correct fee to the application form; and (4) requesting that a recommendation signed by the head of the Department of Education be forwarded to the Director of Certification and College Accreditation, State Department of Public Instruction. The recommendation which is required will take into account these factors: health, both physical and mental; speech habits; general education; preparation in teaching fields; and preparation in professional education courses.

## **COURSES IN EDUCATION**

### **FOR UNDERGRADUATE CREDIT**

**090. Teacher Education Orientation.** No credit. Each semester and summer.

Required each semester of every student who expects at any time to qualify for a teacher's certificate.

**100. Educational Psychology I.** 3 semester hours. Each semester and summer.

Physical, intellectual, emotional, social, and personality development from conception to adulthood; understanding of these phases of development and their importance for education essential as background for those desiring to enter the teaching profession. Prerequisite: Psych. 310.

**105. Educational Psychology II.** 3 semester hours. Each semester and summer.

The learning process with special emphasis on the school environment, the teacher, and the evaluation of school learning. Prerequisite: Educ. 100; sophomore standing.

**110. Educational Psychology for Nurses.** 3 semester hours. First semester.

Psychology of human development and learning adapted for students in the Curriculum in Home Economics and Nursing. Not open to students who have credit in Educ. 105. Prerequisite: Psych. 310 and sophomore standing.



**120. Principles of Secondary Education.** 3 semester hours. Each semester and summer.

Junior and senior high school organization and objectives, their genesis and curriculum trends, characteristics of student population, and Kansas legal status and practice. Prerequisite: Educ. 105, junior standing, and a point average of 1.0 or better in all course work.

**135. Methods of Teaching in the Secondary School.** 3 semester hours. Each semester.

General principles of teaching applied to high school instruction; selection and organization of teaching materials, individual adaptation, organization, and management of classroom. Prerequisite: Educ. 120 and senior standing.

**150. Teaching Participation in the Secondary School.** Credit to be arranged. Each semester and summer.

Observation and teaching under direction of regular teachers in Manhattan junior and senior high schools, in other than vocational fields. Appointments must be arranged at time of registration and general arrangements made previous to semester. Prerequisite: Educ. 120, consent of instructor, and a point average of 1.5 or higher in all course work in the teaching fields.

**165. Methods and Teaching Participation in the Secondary School.** 6 semester hours. Each semester.

A combination of Educ. 135, 150. Prerequisite: Educ. 120, senior standing, and a point average of 1.5 or higher in all course work in the teaching fields.

**195. General Methods for Elementary Teachers.** 3 semester hours.

Fundamentals of teaching and classroom management in elementary schools to meet requirements for emergency and regular elementary certificates. Prerequisite: Psych. 310.

**225. Teaching Participation in Elementary Schools.** Credit to be arranged.

Observation and teaching in Manhattan elementary schools under direction of regular teachers, to meet elementary certificate requirements of those who wish to teach before finishing work for a degree from Kansas State College. Appointment must be made at the time of registration. Prerequisite: Psych. 310.

**240. Methods of Teaching Industrial Arts.** 3 semester hours. First semester.

Methods of teaching, lesson planning, organization of subject matter, and class projects applied to general shop work, woodworking, sheet metal, arc and oxyacetylene welding, machine shop practice, motor mechanics, and other industrial arts subjects. Prerequisite: Educ. 120 and consent of instructor.

**246. Teaching Participation in Music.** Credit to be arranged. Each semester and summer.

Observation and teaching under direction in the Manhattan schools. Appointments must be made at the time of registration for the semester and general arrangements made previous to the semester. Prerequisite: Educ. 105, Mus. 120.

**300. Principles of Elementary Education.** 3 semester hours. Each semester and summer.

An over-all view of the elementary school; organization, management, purposes, curriculum trends, and pupil characteristics. Prerequisite: Sophomore standing.

**350. Science for Elementary Schools.** 3 semester hours. Each semester and summer.

The relationships among nature, environment, and elementary science in their role in childhood education; resources and activities suitable to the elementary school. Prerequisite: Educ. 300 or consent of instructor.



**355. Language Arts for Elementary Schools.** 3 semester hours. Each semester and summer.

Modern trends in the teaching of reading, oral language, composition, writing, and spelling. Prerequisite: Educ. 300 or consent of instructor.

**360. Social Studies for Elementary Schools.** 3 semester hours. Each semester and summer.

Course of study content as a basis for consideration of modern classroom procedures; the objectives and problems in the teaching of social studies. Prerequisite: Educ. 300 or consent of instructor.

**365. Arithmetic for Elementary Schools.** 3 semester hours. Each semester and summer.

The teaching of arithmetic in the elementary schools, including the nature of arithmetical processes, curriculum, methods of instruction, instructional materials, and the evaluation of outcomes. Prerequisite: Educ. 300 or consent of instructor.

**390. Methods, Teaching Participation for Elementary Schools.** 6 semester hours. Each semester and summer.

Opportunities for consideration of teaching techniques, materials, and subject matter used by effective elementary school teachers; observation and teaching participation under the direction of competent elementary teachers. Prerequisite: Educ. 300.

FOR UNDERGRADUATE AND GRADUATE CREDIT

**405. Statistical Methods in Education and Psychology.** 3 semester hours. Each semester and summer.

Nature of measurement in education and psychology, organization of data, computation and interpretation of basic statistics, and sampling methods and theory. Prerequisite: Sophomore standing and six hours of education or psychology. Not open to students who have credit in Math. 320, 725.

**410. Educational Measurement.** 3 semester hours. First semester and summer.

Scientific measurement and evaluation of educational outcomes and their use as teaching tools. Prerequisite: Educ. 405; senior standing.

**415. Educational Sociology.** 3 semester hours. Each semester and summer.

A study to gain an understanding of the ways in which the school can effectively utilize the social process in developing and educating the individual and to show the interrelationships of such institutions as the family, the church, the play-groups, and the various youth-serving agencies with the school. Prerequisite: Educ. 120 or 300.

**420. Principles and Practices of Guidance.** 3 semester hours. Each semester and summer.

Need and nature of guidance; functions; personnel, their duties and relations; programs and evaluation of results. Prerequisite: Senior standing and Educ. 120 or 12 semester hours in psychology.

**430. Elementary School Administration.** 3 semester hours. Summer.

Aims and objectives of elementary education; organization and administration of the elementary school; pupil accounting duties and qualifications of staff; community relations and articulation with other schools. Prerequisite: Educ. 300 and teaching experience.

**440. Audio-visual Aids in Instruction.** 2 or 3 semester hours. Summer.

Principles and technics in the use of visual and audio-visual materials, operation and maintenance of equipment, and sources of supply. Prerequisite: Educ. 150 or concurrent enrollment.

**445. Curriculum Development.** 3 semester hours. Summer.

An overall view of the entire school curriculum, patterns of organization, outlining of instructional fields, and specific helps in curriculum development for administrators and classroom teachers. Prerequisite: Twelve hours of education; senior standing.

**450. Junior High School.** 2 or 3 semester hours. Summer.

Origin, objectives, program, and administration of the junior high school, and relations with lower and higher education units. Prerequisite: Teaching experience.

**455. Extra-class Activities.** 3 semester hours. Second semester and summer.

Organization, sponsorship, and objectives of clubs, publications, athletics, dramatics, musical organizations, assemblies, home room, and student council in junior and senior high school. Prerequisite: Educ. 120, senior standing and consent of instructor.

**460. Extension Organization and Policies.** 3 semester hours. Second semester.

Development and objectives of extension work; organization and administration of extension service, with special emphasis on extension service in Kansas. Prerequisite: Senior standing; juniors by consent of instructor.

**470. Music Supervision.** 2 semester hours. (See Mus. 415.)**485. Philosophy of Education.** 3 semester hours. Summer.

Distinctive functions or purposes of education in a democracy. Philosophy of education is analyzed in terms of the what, the why, and the how of education. Prerequisite: Twelve hours in education; senior standing.

**600. Research Methods and Treatment of Data.** 3 semester hours. First semester and summer.

Principles of research in education and psychology; nature, organization, and presentation of research data; basic statistical computations and interpretations; selection of research problems. Prerequisite: Six hours in education or psychology.

**625. Psychology of Exceptional Children.** 3 semester hours. (See Psych. 625.)**655. Mental Hygiene.** 3 semester hours. (See Psych. 655.)**730. Occupational Information.** 2 semester hours. (See Psych. 730.)**755. Guidance Practicum.** 3 semester hours. Each semester and summer.

Supervised experience in guidance services in secondary schools; preparation and use of pupil personal records, tests, provision and use of occupational and educational information, counseling, placement and follow-up, and use of school and community personnel and resources. Prerequisite: Educ. 410, 420, Psych. 685; senior standing.

**795. Problems in Education.** Credit to be arranged. Each semester and summer.

Work is offered in agricultural education, educational administration, educational measurement, educational psychology, educational sociology, extension education, guidance, home economics education teaching methods, statistical methods, and vocational education. Prerequisite: Background of courses needed for the problem to be undertaken.

## FOR GRADUATE CREDIT

**805. General School Administration.** 3 semester hours. First semester.

Basic philosophy and objectives of education and their application to national, state and local organization; including problems of policy making and general administration. Intended primarily for school administrators. Prerequisite: At least one year of teaching experience.

**815. Secondary School Administration.** 3 semester hours. Summer.

Aims and functions of junior and senior high schools and junior colleges; problems in the progress of studies, extra-class activities, pupil accounting, community relations and articulation with other schools. Prerequisite: At least one year of teaching experience.

**820. School Business and Finance.** 3 semester hours. Second semester and summer.

Professional preparation primarily for school administrators and



persons planning to enter that work; including problems of finance administration and support of schools at local, state, and federal levels. Prerequisite: At least one year of teaching experience.

**830. The School Plant.** 3 semester hours. Summer.

Determination and provisions of building and other plant needs by the local public school district, including planning, financing, construction and utilization. Prerequisite: At least one year of teaching experience.

**835. Supervision and Improvement of Instruction.** 3 semester hours. Summer.

A course designed for administrators, supervisors, and classroom teachers who wish to help themselves and others isolate and analyze teaching problems. Prerequisite: At least one year of teaching experience.

**840. Problems and Procedures in Educational Research.** 2 or 3 semester hours. Second semester and summer.

A study of successful research in education and psychology designed to develop skill in the discovery and planning of research problems and in the selection of appropriate methods and techniques for their solution. Prerequisite: Nine semester hours of graduate work.

**845. School-Public Relations.** 2 or 3 semester hours. Summer.

Interrelationships that should exist between the school and the community and the role of the teacher and administrator in such relationships. Agents, media, and administration needed to bring about school-community understanding and cooperation. Prerequisite: At least one year of teaching experience.

**850. Adult Education.** 2 or 3 semester hours.

Objectives, program, facilities, procedures, and problems of adult education in a community, emphasizing the relation of school administrators and extension staff to this work. Prerequisite: Psych. 310 or one year of field experience; approval of the instructor.

**855. Organization and Administration of the Guidance Program.** 3 semester hours. Summer.

Staff, facilities, tools, and techniques of the school and community in an organized guidance program. Primarily for persons working to qualify for the Counselor's Five-Year Certificate. Prerequisite: Educ. 420 and at least one year of teaching experience.

**860. Practicum in School Administration.** 3 to 6 semester hours. Each semester.

Supervised on-the-job experience in school administration. Prerequisite: Kansas School Administrator's Certificate.

**995. Research in Education.** Credit to be arranged. Each semester and summer.

Work is offered in agricultural education, educational administration, educational measurement, educational psychology, educational sociology, guidance, home economics education, teaching methods, statistical methods, and vocational education. Prerequisite: Registration in the Graduate School, with sufficient training to carry on the line of research to be undertaken.

## COURSES IN AGRICULTURAL EDUCATION

A. P. DAVIDSON, *Special Adviser*

### FOR UNDERGRADUATE CREDIT

**255. Methods of Teaching Agriculture.** 3 semester hours. Each semester.

Lesson plans; organization of materials and direction of class, laboratory and field instructional work in vocational agriculture; individual farming programs and class and group activities; coordination of farm mechanics work; administration, organization, and coordination of the



Future Farmers of America organization with the program of instruction in vocational agriculture. Prerequisite: Educ. 105.

**265. Teaching Participation in Agriculture.** 3 semester hours. Each semester.

Three weeks of observation and directed teaching in vocational agriculture classes in the Manhattan High School, and other high schools by arrangement; group study of classroom problems; lesson plans and presentation criticized by the college instructor and the vocational agriculture teacher. Prerequisite: Educ. 255.

FOR UNDERGRADUATE AND GRADUATE CREDIT

**505. Vocational Education.** 3 semester hours. Each semester and summer.

Provision for vocational education in Kansas and other states and countries; principles underlying such education; relation of vocational education to the community, county, state, and nation. Prerequisite: Educ. 105.

**510. Teaching Part-time and Adult Classes in Agriculture.** 3 semester hours.

Organization and preparation of materials, and methods used in teaching part-time and adult classes in vocational education in agriculture for young farmers and adults. Departments are visited for evaluation of programs and results. Prerequisite: Educ. 505.

**515. Technics in Agricultural Education.** 3 semester hours.

Teaching in the field of vocational education in agriculture; the agricultural curriculum; courses of study; farming programs and supervision; laboratory and field instruction; sources, selection, preparation, and use of audio-visual instructional material. One hour of recitation and six hours of laboratory a week. Prerequisite: Educ. 505.

**520. Administration and Supervision of Secondary Schools.** 2 semester hours.

Problems of organization, administration, and supervision which cover the complete program of an administrative head of a school system in a small city. Designed for principals of rural high schools and superintendents of small city systems. Prerequisite: Educ. 120.

**525. Administration and Supervision of Vocational Education.** 2 semester hours.

Objectives, curriculum organization and content, administrative and supervisory problems from the viewpoint of the city superintendent; leadership needs which must be met in a school system which offers vocational education. Problem basis of treatment is used. Prerequisite: Educ. 120 or 805.

**530. Project Method in Agricultural Education.** 2 semester hours.

Intensive treatment of values, analysis, accounting, supervision, types, results, records, and reports of projects. Conducted on the problem basis. Prerequisite: Educ. 265.

**535. Problems in Evening School Classes.** 2 semester hours.

Problems in organization, curriculum, and methods of teaching evening schools and classes sponsored by the national Vocational Education Act. Designed for teachers in service. Prerequisite: Graduate standing and one year of experience teaching vocational agriculture.

**540. Organization and Conduct of Group Activities.** 2 semester hours.

Fundamentals and principles on which productive class projects should be organized; research and field work in class project study. Prerequisite: Educ. 505.

**555. Community Problems in Vocational Agriculture.** 2 semester hours.

Methods, organization, and conduct of club work, junior project work, class and community projects in general. Conducted on the problem basis and designed specifically for teachers, supervisors, and directors of agricultural work. Prerequisite: Consult instructor.

**560. Organization Problems in Teaching Farm Mechanics.** 2 semester hours.

Analysis of the farm mechanics course of study; needs and interests of boys; learning difficulties; skills and technical knowledge required; correlation with agriculture; application of laws of learning to the teaching process; determination of objectives. Prerequisite: Educ. 265.

## FOR GRADUATE CREDIT

**905. Statistical Methods in Agricultural Education.** 2 semester hours.

Less comprehensive treatment of topics covered in Educ. 405, with emphasis on the special needs of vocational agriculture teachers. Not open to students who have credit in Math. 320, 625, or 730.

**910. Problems in Part-time Classes.** 2 semester hours.

Organization, curriculum, and methods of teaching part-time classes sponsored by the national Vocational Education Act. Designed for teachers in service. Prerequisite: One year of experience teaching vocational agriculture.

**915. Workshop in the Teaching of Vocational Agriculture.** 2 or 3 semester hours. Summer.

Securing and organizing information and planning teaching activities which will help the beginning vocational agriculture teacher. Prerequisite: Graduation from the curriculum in Agricultural Education.

**920. Workshop in the Vocational Agriculture Curriculum I.** 2 or 3 semester hours. Summer.

Curriculum problems; planning local programs of vocational agriculture; developing facilities and plans for meeting current and advanced problems in the teaching of vocational agriculture. Prerequisite: One year of teaching vocational agriculture.

**925. Workshop in the Vocational Agriculture Curriculum II.** 2 or 3 semester hours. Summer.

A continuation of Educ. 920. Prerequisite: Educ. 920 or consent of instructor.

**COURSES IN HOME ECONOMICS EDUCATION**

LUCILE RUST, *Special Adviser*

## FOR UNDERGRADUATE CREDIT

**275. Methods of Teaching Home Economics.** 3 semester hours. Each semester and summer.

The selection, organization, and presentation of courses and lessons in home economics for high school pupils. Prerequisite: Clo. Text. 450, Fds. Nutr. 110, 240; Educ. 105 or concurrent enrollment.

**285. Methods of Teaching for Dietetic Students.** 3 semester hours. Second semester.

Principles of teaching applied to selection, organization, and development of subject matter for individual and courses taught by dietitians. Prerequisite: Inst. Mgt. 220 or Fds. Nutr. 516, or concurrent enrollment.

**295. Teaching Participation in Home Economics.** 3 to 5 semester hours. Each semester and summer.

Supervised observation and teaching carried on in the Home Economics classes of the Manhattan High School and other selected state high schools. Prerequisite: Completion of one home project and Educ. 275.

## FOR UNDERGRADUATE AND GRADUATE CREDIT

**575. Vocational Home Economics Curriculum.** 3 semester hours. Each semester and summer.

Philosophy and principles of vocational education as applied to home economics; characteristics of the high school vocational home economics curriculum; planning and supervising the home project program; spon-



soring the F. H. A. chapter; and developing teaching guides for the various courses. Prerequisite: Educ. 275 or concurrent enrollment.

**585. Methods in Adult Homemaking Classes.** 1 to 3 semester hours. Summer.

Principles of teaching applied to adult classes; a demonstration class in one or more phases of homemaking. Prerequisite: Educ. 275 or equivalent.

**595. Extension Methods for Home Economics.** 3 semester hours. Second semester.

Recommended methods for extension work; application of these methods to subjects in Home Economics. Prerequisite: Senior standing; juniors by consent of instructor.

FOR GRADUATE CREDIT

**930. Organization and Presentation of Home Economics.** Credit to be arranged. Each semester and summer.

**935. Research in Organization and Presentation of Home Economics.** Credit to be arranged. Each semester and summer.

Individual research problems in phases of organization and administration for home economics. May be chosen as the basis for thesis for the master's degree. The nature of the problem will depend upon the student's major interest.

**940. Supervision in Home Economics.** 2 semester hours. Second semester and summer.

Problems met by a supervisor or director of home economics in the public schools; standardization of work; relation of supervisor to teacher; modernization of plant and equipment; and course of study. Prerequisite: Educ. 295 and experience in teaching home economics.

**945. Seminar in Home Economics.** 2 or 3 semester hours. Second semester and summer.

Recent trends in home economics education. Prerequisite: Educ. 295 and experience in teaching home economics.

## ENGLISH

EARLE R. DAVIS, *Head of Department*

A major program may be selected with emphasis upon either English or American language and literature. The general requirement is thirty semester hours subsequent to Engl. 125 and 135 or 140. Specific requirements for English emphasis include one course from each of the following groups: (1) Engl. 405, 465; (2) Engl. 495, 520; (3) Engl. 525, 555, 565, 576; (4) Engl. 536, 540, 626, 636; (5) Engl. 580. Specific requirements for American emphasis include eighteen hours of work in courses listed under American. Engl. 590 and 623 must be selected.

Students preparing to teach English on the secondary school level should note the curriculum requirements. The department offers service courses beyond the freshman level: Engl. 155, 165, 435, 444. General education courses aiming at introductory appreciation are: Engl. 145, 150, 310, 320. Many curriculums require basic English or American literature. In general it is proper to substitute an advanced course in either field, if the student so elects, to satisfy his requirement. (An advanced course in English literature may be substituted for Engl. 215 or 225; American for American, that is for Engl. 245 or 255.) A minor program should include 15 hours beyond the freshman level. Nine of these hours must be selected from courses numbering 400 or more.

### COURSES IN ENGLISH

FOR UNDERGRADUATE CREDIT

**025. Remedial English.** 0 credit. Each semester and summer.

Required of juniors and seniors who have twice failed English Proficiency.



**090. English Proficiency.** Each semester and summer.

An examination to test the ability of the prospective graduate to write an expository essay logical in form and acceptable in grammar and diction. Required for graduation in all schools. Prerequisite: Junior standing.

**115. Written Communications IA.** 3 semester hours. Each semester and summer.

For students whose English entrance tests are not satisfactory. Five hours of recitation a week.

**125. Written Communications I.** 3 semester hours. Each semester and summer.

Prerequisite: Satisfactory entrance test.

**135. Written Communications II.** 2 semester hours. Each semester and summer.

Prerequisite: Engl. 115 or 125.

**140. Written Communications IIB.** 3 semester hours. Each semester and summer.

Not open to students who have credit in Engl. 135. Prerequisite: Engl. 115 or 125.

**145. Introduction to Fiction.** 2 semester hours. Each semester.

Selected novels from world literature, with emphasis on the present. Prerequisite: Satisfactory entrance test in English.

**150. Introduction to Drama.** 2 semester hours. Each semester.

Appreciation of great plays. Prerequisite: Satisfactory entrance test for Engl. 125.

**155. Commercial Correspondence.** 3 semester hours. Each semester and summer.

Writing of adjustment, credit, collection, and sales letters; principles of effective commercial writing. Prerequisite: Engl. 135.

**165. Written and Oral Salesmanship.** 3 semester hours. Each semester.

Writing of follow-up systems of sales letters; composition and display of circular material and catalogues; principles of advertising and psychology of selling; sales talks; actual sales practice with commercial concerns. Prerequisite: Engl. 135.

**215. English Literature I.** 3 semester hours. Each semester and summer.

Prerequisite: Engl. 135.

**225. English Literature II.** 3 semester hours. Each semester and summer.

Prerequisite: Engl. 135.

**271. English Bible.** 3 semester hours. Each semester and summer.

Prerequisite: Engl. 215.

**310. Books and Men I.** 3 semester hours. First semester.

Introduction to great world classics from present to past: Hemingway and Homer; Lewis, Dickens, and Chaucer; Warren and Shakespeare.

**320. Books and Men II.** 3 semester hours. Second semester.

Continuation of Engl. 310: Faulkner, Conrad, and Maugham; Huxley, Swift, and Voltaire; Shaw, the Bible, and Dante.

## FOR UNDERGRADUATE AND GRADUATE CREDIT

**405. Modern English Grammar.** 3 semester hours. Each semester and summer.

English etymology, parts of speech, inflection, syntax, and modern usage. For graduate credit, reports on problems in modern grammar and usage. Prerequisite: Engl. 135.

**415. Advanced Composition I.** 3 semester hours. First semester.

Subjects selected from the student's particular field of work; expository

tion of mechanisms, processes, and general expository writing. Prerequisite: Engl. 135 or 140.

**425. Advanced Composition II.** 3 semester hours. Second semester.

Narrative writing both in its relation to the other forms of composition and as an independent form. Direction and criticism of thesis work are offered to graduate students. Prerequisite: Engl. 135 or 140.

**435. Technical Reports.** 1 semester hour. Each semester.

Organization and writing of technical reports to accompany certain courses in engineering specified by heads of engineering departments. Prerequisite: Engl. 135 or 140.

**444. Scientific Report Writing.** 2 semester hours. Each semester.

Preparation of scientific reports in engineering, chemistry, physics, geology, and other technical fields. Letters of authorization and submittal. Adaptation of written reports for oral presentation or for publication in technical journals. Prerequisite: Junior standing in technical field.

**450. Creative Writing.** 3 semester hours. Each semester.

Writing and manuscript market study. Prerequisite: Engl. 425 or permission of the instructor.

**465. History of the English Language.** 3 semester hours. First semester.

Nature of language and its development; English language and its use in the United States. Prerequisite: For undergraduate, consent of the instructor; for graduate, Engl. 225.

**470. Literature for Children.** 3 semester hours. First semester and summer.

Selecting, reading, and evaluating books for children; training in story-telling and oral reading; selection of records correlated with literature. For teachers of elementary grades and students of child guidance. Prerequisite: Engl. 135. For graduate credit, reports arranged in conference with the instructor.

**476. Literature for Adolescents.** 3 semester hours. Second semester and summer.

Selecting, reading, and evaluating books for adolescents; training in oral reading and selection of records correlated with literature. For teachers in the junior and senior high schools and students of guidance for adolescents. Prerequisite: Engl. 215. For graduate credit, reports arranged in conference with instructor.

**495. Chaucer.** 3 semester hours. First semester.

Prerequisite: Engl. 215.

**505. English Survey I.** 2 semester hours. First semester.

History of English literature from Anglo-Saxon times down to the close of the Elizabethan period. Prerequisite: Engl. 225.

**515. English Survey II.** 2 semester hours. Second semester.

Rise of Puritanism and its influence on English literature; classical movement; romanticism and its development. Prerequisite: Engl. 225.

**520. Arthurian Legends in Medieval English Literature.** 3 semester hours. Second semester.

Chronicles, religious work, romances, and tales from the literature between 1066 and 1500, excluding Chaucer. Prerequisite: Engl. 215.

**525. Seventeenth Century Poetry and Prose.** 3 semester hours. First semester.

A survey of the principal nondramatic writers, apart from Milton, 1600-1660, with emphasis on Donne and the Metaphysicals. Prerequisite: Engl. 215.

**536. Eighteenth Century I. The Enlightenment.** 3 semester hours. First semester.

The age of Dryden, Pope, and Swift, including masterpieces of poetry, drama, fiction, and satire. Prerequisite: Engl. 215.



- 540. Eighteenth Century II.** The Enlightenment. 3 semester hours. Second semester.  
The age of Johnson and rise of Romanticism, including masterpieces of poetry, drama, fiction, and biography. Prerequisite: Engl. 215.
- 555. Shakespearean Drama I.** 3 semester hours. First semester.  
Life and times of Shakespeare; five of Shakespeare's tragedies: Macbeth or Othello, Hamlet, King Lear, Romeo and Juliet, and Coriolanus. Prerequisite: Engl. 215.
- 565. Shakespearean Drama II.** 3 semester hours. Second semester.  
Five of Shakespeare's comedies: The Winter's Tale, As You Like It, Twelfth Night, Cymbeline, and The Tempest; collateral reading of earlier, contemporary, and Shakespearean comedy; present-day criticism of Shakespeare. Prerequisite: Engl. 215.
- 576. Milton and the Restoration.** 3 semester hours. Second semester.  
Prerequisite: Engl. 215.
- 580. Literary Criticism.** 3 semester hours. First semester.  
Major points of view in modern literary theory with backgrounds in earlier criticism; practice in the critical analysis and judgment of literary examples. Prerequisite: Engl. 225 or 255.
- 585. Wordsworth, Shelley, and Keats.** 3 semester hours. First semester.  
Prerequisite: Engl. 215.
- 595. Browning and Tennyson.** 3 semester hours. Second semester.  
Prerequisite: Engl. 215.
- 626. English Novel I.** 3 semester hours. First semester.  
Survey of British fiction from Defoe and Fielding to Austen and Scott. Prerequisite: Engl. 215 or consent of instructor.
- 636. English Novel II.** 3 semester hours. Second semester.  
Survey of British fiction from Dickens and Thackeray to Galsworthy and Bennett. Prerequisite: Engl. 225 or consent of instructor.
- 640. Biography.** 3 semester hours. First semester.  
Biographical writing from antiquity to the present time, including Plato, Plutarch, Boswell, Trevelyan, Lockhardt, Forster, and Freeman. Prerequisite: Engl. 225.
- 646. Twentieth Century English Novel.** 3 semester hours. Second semester.  
British fiction from Conrad and Joyce to Greene and Waugh. Prerequisite: Engl. 225 or consent of instructor.
- 667. Twentieth Century English Poetry.** 3 semester hours. First semester.  
Development of English poetry from Hardy and Yeats to the present time. Prerequisite: Engl. 225 or 255.
- 799. Problems in English.** Credit to be arranged. Each semester and summer.  
Work offered in: Chaucer and Shakespeare, classical epics, Midwestern literature, modern drama and fiction, novel and short story, old and middle English, romantic revival, sketch and column writing, and scientific report writing. Prerequisite: Background of courses needed for problem to be undertaken.

## FOR GRADUATE CREDIT

- 805. Bibliography and Methods of Research.** 1 semester hour. Second semester.  
Prerequisite: Graduate standing.
- 999. Research in English.** Credit to be arranged. Each semester and summer.  
Work offered in: Chaucer and Shakespeare, classical epics, Midwestern literature, modern drama and fiction, novel and short story, old and middle English, sketch and column writing, and scientific report writing. Prerequisite: Registration in the Graduate School with sufficient training to carry on the line of research to be undertaken.



**COURSES IN AMERICAN****FOR UNDERGRADUATE CREDIT**

**245. American Literature I.** 3 semester hours. Each semester and summer.  
Prerequisite: Engl. 135 or 140.

**255. American Literature II.** 3 semester hours. Each semester and summer.  
Prerequisite: Engl. 135 or 140.

**FOR UNDERGRADUATE AND GRADUATE CREDIT**

**410. Modern American Usage.** 3 semester hours. Summer.

American grammar and usage as reflected in modern speech and writing. Supplementary to Engl. 405 for teachers and candidates for teaching. Prerequisite: Engl. 135 or 140.

**440. American Books and Themes.** 3 semester hours. Second semester.

Examination of American ideals and their illustration in great American books and writers. Prerequisite: Engl. 135 or 140.

**480. American Short Story.** 3 semester hours. Second semester and summer.

The sketches and stories of Irving, Hawthorne, Poe, and their successors, to Hemingway and Faulkner. The short story as literature. Prerequisite: Engl. 225 or 255.

**590. Romanticism in America.** 3 semester hours. First semester and summer.

Prose and poetry of Emerson and Thoreau, transcendentalism, the romanticism of Hawthorne, Poe, and Melville. Prerequisite: Engl. 225 or 255.

**610. Hawthorne and Melville.** 2 semester hours. Second semester.

Prerequisite: Engl. 225.

**615. American Folklore and Folk Literature.** 3 semester hours. Each semester and summer.

Folk tales, heroes, ballads, with the literature developed from folk beginnings; Mark Twain, Bret Harte, Carl Sandburg, Stephen Vincent Benet, Mark Connally. Prerequisite: Engl. 215.

**621. Mark Twain and Walt Whitman.** 2 semester hours. First semester.

Prerequisite: Engl. 255.

**623. American Realism.** 3 semester hours. Second semester.

Origins, conscious definition, and development of realism through DeForest, Howells, Twain, James, and their successors. Prerequisite: Engl. 255.

**624. Henry James and William Faulkner.** 2 semester hours. Second semester.

Prerequisite: Engl. 255.

**650. American Theater Triumphant.** 3 semester hours. Second semester and summer.

Ascendancy of American drama from O'Neill and Anderson to Miller and Williams. Prerequisite: Engl. 225 or 255.

**666. Twentieth Century American Poetry.** 3 semester hours. First semester and summer.

Development of American poetry from Robinson and Frost to Eliot and the present time. Prerequisite: Engl. 225 or 255.

**670. Twentieth Century American Novel.** 3 semester hours. First semester and summer.

Modern American novel from Dreiser to Hemingway. Prerequisite: Engl. 225 or 255.

**680. American Survey I.** 2 semester hours. First semester.

History of American literature from the colonials to the Civil War. Prerequisite: Engl. 255.

**690. American Survey II.** 2 semester hours. Second semester.

History of American literature from Whitman to the present. Prerequisite: Engl. 255.

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**GENERAL STUDIES**

(Formerly Comprehensive Courses)

EARL E. EDGAR, *Head of Department*

The courses in general studies are designed to introduce the student to the major areas of human knowledge: (1) Physical Science, (2) Biological Science, (3) Social Science, and (4) the Humanities. Each course is expected to integrate and tie together the component parts of the area covered, and is designed for students who are not planning to specialize in that area of study. Thus curriculums which require introductory courses in one or more of the four areas are not expected to include the general studies course in that area. The general studies courses are intended to be not only introductory in nature, but also terminal, in the sense that the student who is required to take a particular general studies course is not ordinarily required to take more courses in the same area. The following descriptions explain in more detail the content of the courses.

**110. Man's Physical World I.** 4 semester hours. First semester.

Prerequisite: High school mathematics as required for admission in curriculum in which student is enrolled.

**120. Man's Physical World II.** 4 semester hours. Second semester.

Prerequisite: Gen. Stud. 110.

These courses cover all the nonliving phases of man's total environment. They are designed to provide students with a brief working knowledge of the subject matter of the physical science fields commonly designated as astronomy, geology, physics and chemistry. They are formulated on the concept that the fundamental building units of the universe are atoms, parts of atoms, and combinations of atoms. The physics and chemistry of the universe of stars and galaxies are basic to astronomy, in which we have a superlative example of the vastness of space. The physics and chemistry of the earth's rocks and minerals are basic to geology, and in geologic history we have an example of the vast expanse of past time. The ultimate objective is to give the student an integrated picture of the physical world in which man lives.

**150. Biology I.** 4 semester hours. Each semester.**160. Biology II.** 4 semester hours. Each semester.

Prerequisite: Gen. Stud. 150.

Fundamental relationships between plants and animals and other environmental factors. The structure of representative plants and animals, including man, is presented in some detail so that growth, food manufacture and utilization, reproduction, digestion, assimilation, circulation, respiration, and other life processes may be understood and their importance appreciated; also the relationship of structure to heredity and behavior. Principles which govern the classification and identification of various plants and animals are studied. The economic importance, both positive and negative, of plants and animals is considered; the relation of lower plants and animals to food production, food destruction, disease in lower plants and animals, and how these ravages may be controlled; the utilization, propagation, and conservation of plants and animals useful to man; and finally, a detailed study of man himself—his anatomy, functioning, heredity, and future as a member of the community and the nation. Life is interpreted as an integrative process which results in a dynamic whole.

**210. Introductory Social Science I.** 4 semester hours. Each semester.



**220. Introductory Social Science II.** 4 semester hours. Each semester.

Prerequisite: Gen. Stud. 210.

An integrated study of society by examining the social influences in their totality as they bear upon man-in-society. Social institutions and processes are considered with the purpose of helping the student to comprehend them intelligently. Social relationships and issues are studied in a manner to encourage the student to develop his ability to apply critical and objective thinking to meeting the social problems arising from conditions in his community, nation, and the world. Emphasis is placed upon the responsibility of the student as a future citizen in a democratic society in making decisions which determine social policy.

**250. Introduction to Humanities I.** 4 semester hours. Each semester.**260. Introduction to Humanities II.** 4 semester hours. Each semester.

Prerequisite: Gen. Stud. 250.

An orientation to the world's cultures, approached from the standpoints of each culture's history, philosophy and religion, literature, music, art, and architecture. Emphasis is laid upon the outstanding phases of western culture and civilization from primitive times until the present day. Primary attention is directed to the following phases of culture: (1) Primitive Phase: Simple culture of the Stone Age, and complex cultures of Egyptians, Babylonians, and ancient Americans; (2) Classical Phase: Cultures of Semites, Persians, Indians, Chinese, Greeks and Romans; (3) Post-Classical or Medieval Phase: Cultures of Europeans, Byzantines, Moslems, Hindus, and Confucians; (4) Modern Phase of European Culture; Developments; Renaissance, Reformation, scientific revolution, baroque art, Age of Reason, Romantic Age, and revolutions; industrial, social, and political; (5) Recent and contemporary Age of Culture: Industry, invention, and science; world contacts; new knowledge, doctrines, policies, philosophies; developments in literature, art, architecture, etc.; cultural interdependence. One hour of lecture and three hours of recitation a week each semester.

## FOR UNDERGRADUATE AND GRADUATE CREDIT

**400. Workshop in Biological Sciences.** 3 semester hours. Summer.

Field trips and laboratory study of field-collected materials; study of biological communities in the field; inter-play of plants, animals, bacteria, insects, and geology in an area, with stress on fundamental principles of biological phenomena. Especially designed for teachers of biology or general science. Graduate credit only in the minor field of study for majors in education. Prerequisite: 5 hours each of botany and zoology, or equivalent.

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## GEOLOGY AND GEOGRAPHY

JOSEPH R. CHELIKOWSKY, *Head of Department*

For a minor, the following courses should be completed: 110, 405, 410, and 415.

For a major, the student should enroll in the Curriculum in Geology.

### COURSES IN GEOLOGY

#### FOR UNDERGRADUATE CREDIT

**110. General Geology.** 3 semester hours. Each semester and summer.

Structural and dynamic features of the earth; the rock-forming minerals; the rocks and their decay; a short history of the earth. Three or four field trips during the semester.

**120. Engineering Geology.** 4 semester hours. Each semester.

General principles of geology and their application to engineering problems. Three hours of recitation and three hours of laboratory a week. Prerequisite: Chem. 110 or equivalent.



## FOR UNDERGRADUATE AND GRADUATE CREDIT

**405. Historical Geology.** 4 semester hours. Each semester.

Physical and biological events through which the earth has gone. Three hours of recitation and three hours of laboratory a week. Prerequisite: Geol. 110.

**410. Geomorphology.** 4 semester hours. Each semester.

Various landforms and their evolution; geologic interpretation of landscapes, especially of features in the United States; interpretation of topographic maps. Three hours of recitation and three hours of laboratory a week. Prerequisite: Geol. 110.

**415. Crystallography and Mineralogy.** 4 semester hours. Each semester.

The fundamentals of crystallography and its use in mineral identification; physical and chemical mineralogy. Two hours of recitation and six hours of laboratory a week. Prerequisite: Chem. 110.

**420. Lithology.** 2 semester hours. Each semester.

Hand specimen identification of 100-150 common igneous, sedimentary, and metamorphic rocks. Classification of each rock group especially adapted for use in field identification. Prerequisite: Geol. 110 or 415.

**425. Field Methods in Geology.** 3 semester hours. First semester.

Construction of geologic maps, including a complete map of the Manhattan area; application of field methods to the problems of geology. One hour of recitation and six hours of laboratory a week. Prerequisite: Geol. 405.

**435. Field Geology.** Credit to be arranged. Summer.

Opportunity is offered students to do field work in the Rocky Mountains. Students interested should consult the head of the department.

**445. Aerial Photogeology.** 3 semester hours. Second semester.

Interpretation and use of aerial photographs; conical perspective; oblique mapping methods; characteristics of vertical photographs; stereoscopic contouring methods; and adjustment of geologic, cultural, and topographic detail. One hour of recitation and six hours of laboratory a week. Prerequisite: Geol. 410.

**455. Invertebrate Paleontology.** 4 semester hours. First semester.

Evolution and geologic history of the invertebrate animals. Three hours of recitation and three hours of laboratory a week. Prerequisite: Geol. 405.

**465. Vertebrate Paleontology.** 3 semester hours. Second semester.

Evolution, geologic history, and classification of the vertebrates. Prerequisite: Geol. 405 or ten hours of zoology.

**475. Micropaleontology.** 3 semester hours. First semester.

Preparation, identification, and use of microscopic fossils. One hour of recitation and six hours of laboratory a week. Prerequisite: Geol. 405 and junior standing.

**485. Index Fossils.** 2 semester hours. Second semester.

Identification of those fossil plants and animals of value in the age correlation of the sedimentary rocks of North America. Six hours of laboratory a week. Prerequisite: Geol. 455.

**495. Stratigraphic Geology.** 4 semester hours. First semester.

Description, classification, and correlation of stratigraphic units, with emphasis on those of Kansas. Three hours of recitation and three hours of laboratory a week. Prerequisite: Geol. 405.

**497. Pleistocene Geology.** 2 semester hours. First semester.

Pleistocene stratigraphy and its development in North America; correlation of European and North American Pleistocene rocks. Two hours of recitation a week and one field trip a semester. Prerequisite: Geol. 410, 495.

**515. Structural Geology.** 4 semester hours. First semester.

Mechanics of the earth's crust, interrelation of structures found in the earth. Three hours of recitation and three hours of laboratory a week. Prerequisite: Geol. 405, 415.

**517. Regional Geology.** 4 semester hours. Second semester.

Structure and the stratigraphy of the major tectonic units of North America. Three hours of recitation and three hours of laboratory a week. Prerequisite: Geol. 495, 515.

**535. Petroleum Geology.** 4 semester hours. Second semester.

Origin, migration, and accumulation of petroleum, stratigraphy, and structure of important fields. Three hours of recitation and three hours of laboratory a week. Prerequisite: Geol. 405.

**545. Economic Geology.** 4 semester hours. Second semester.

Origin and mode of occurrence of nonmetallic minerals, including coal and petroleum, and of metallic mineral deposits. Three hours of recitation and three hours of laboratory a week. Prerequisite: Geol. 405, 415.

**555. Geology of Subsurface Water.** 4 semester hours. Second semester.

Three hours of recitation and three hours of laboratory a week. Prerequisite: Geol. 405.

**565. Applied Geology.** 3 semester hours. First semester.

Geology applied to the science of engineering, particularly highway engineering. Prerequisite: Geol. 425.

**575. Optical Mineralogy.** 4 semester hours. First semester.

Polarizing microscope used to identify crystal fragments, powders, sediments, and thin sections; optical methods of microscopic research. Two hours of recitation and six hours of laboratory a week. Prerequisite: Geol. 415.

**580. Goniometry and Crystal Drawing.** 2 semester hours. Second semester.

Measurements, calculations, projections, and drawings of crystals. Measurements will be made with contact and optical goniometers and the universal stage microscope. Six hours of laboratory a week. Prerequisite: Geol. 575 and senior standing.

**585. Sedimentary Petrology.** 5 semester hours. Second semester.

Mineralogy and origin of soils and other sediments, their transportation, deposition, and transformation. Three hours of recitation and six hours of laboratory a week. Prerequisite: Geol. 575.

**595. Petrology.** 5 semester hours. First semester.

Petrology and petrography of igneous and metamorphic rocks. Three hours of recitation and six hours of laboratory a week. Prerequisite: Geol. 575.

**605. Mineragraphy.** 4 semester hours. Second semester.

Study of the ore minerals chiefly by means of the reflecting microscope. Two hours of recitation and six hours of laboratory a week. Prerequisite: Geol. 545, 575.

**615. Binocular Examination of Well Cuttings.** 2 semester hours. First semester.

Description and identification of fragments of rocks and minerals using the binocular microscope; logging sample data; subsurface correlation by sample examination. Six hours of laboratory a week. Prerequisite: Geol. 405, 415.

**625. Electric Well Logs.** 2 semester hours. Second semester.

Review of electrically recorded well logging methods: Interpretation, stratigraphic correlation, graphic representation, and construction of subsurface geologic maps from log data. Six hours of laboratory per week. Prerequisite: Geol. 535.

**635. Conservation of Mineral and Water Resources.** 3 semester hours. Second semester.

Prerequisite: Geol. 110, 415.



**645. Geologic Literature.** 3 semester hours. First semester.

Current geologic literature and history of geology. Prerequisite: Geol. 405, 415.

**655. Geologic Reports and Illustrations.** 2 semester hours. Second semester.

Collection, evaluation, and organization of materials to be presented in a geologic report and the techniques of preparing the illustrations therefor. Six hours of laboratory a week. Prerequisite: Geology majors with senior or graduate standing.

**799. Problems in Geology.** Credit to be arranged. Each semester and summer.

Work is offered in mineralogy, paleontology, stratigraphy, structural geology, sedimentary petrology. Prerequisite: Background of courses needed for problem to be undertaken.

## FOR GRADUATE CREDIT

**810. Clay Mineralogy.** 3 semester hours.

Geologic occurrences, physical properties, atomic structures and the identification of clay minerals, including thermal analytical methods and the study of X-ray diffraction patterns. Two hours of recitation and three hours of laboratory a week. Prerequisite: Geol. 585.

**999. Research in Geology.** Credit to be arranged. Each semester and summer.

Work is offered in mineralogy, paleontology, stratigraphy, structural geology, and sedimentary petrology. Prerequisite: Registration in the Graduate School, with sufficient training to carry on the line of research to be undertaken.

## COURSES IN GEOGRAPHY

## FOR UNDERGRADUATE CREDIT

**210. Principles of Geography.** 3 semester hours. Each semester and summer.

Introductory course in college geography; relationships between human activities and environment.

**220. Geography of Kansas.** 2 semester hours. Each semester and summer.

The agricultural, manufacturing, and population distribution in Kansas, as based on the physical resources of climate, soils, landform, water, and minerals.

**230. Cartography.** 3 semester hours. Second semester.

Methods of constructing projections, and of representing landscape features and geography data by means of maps and graphs; techniques in lettering, scales, symbolization, block diagram construction, simple map drafting, and reproduction. One hour of recitation and six hours of laboratory a week. Prerequisite: Geol. 110 or Geog. 210.

## FOR UNDERGRADUATE AND GRADUATE CREDIT

**705. Political Geography.** 3 semester hours. First semester and summer.

Natural resources and geographic factors related to Kansas. Prerequisite: Geog. 210.

**715. Geography of the Western Hemisphere.** 3 semester hours. Second semester.

The geography of North America and South America and its European background. Prerequisite: Geog. 210.

**725. Geography of the Eastern Hemisphere.** 3 semester hours. First semester.

The geography of Africa, Asia, and Australia. Prerequisite: Geog. 210.



## HISTORY, GOVERNMENT, AND PHILOSOPHY

FRED L. PARRISH, *Head of Department*

Students who plan to major in history, or government, or philosophy should enroll in the Curriculum in Social Science. They should select the elective courses in their major, their options in economics and sociology, and their courses in modern language, with the advice of this department.

Students who plan to teach history and government in secondary schools are to complete the following courses: Hist. 115, 130, 175, 190, and at least six hours of government including course 255. They should enroll in the Curriculum in Secondary Education.

**History.** For a minor, students who plan to teach are to complete the courses listed above; those not planning to teach may substitute certain approved courses for the fulfillment of the minor.

For the major, in addition to the minor, twelve hours of advanced courses are to be completed.

**Government.** In addition to the general value of furthering active and competent citizenship, government courses are designed to meet the needs of students who are interested in such vocational areas as law, public administration, social science teaching, civil service and foreign service.

For the minor, courses 255, 270, and six additional hours of government are to be completed.

For the major, in addition to a minor, twelve hours of advanced courses are to be completed.

**Philosophy.** Work in philosophy is recommended especially for two groups of students: (1) Those who because of breadth of interest find it inadvisable to choose a major from among the various special disciplines; and, (2) those who, having declared a major in some special area, wish to supplement their formal curriculum with studies of a more general and cultural nature.

For the minor, course 365 or 380 and nine additional hours of philosophy are to be completed.

For the major, in addition to the minor, courses 755, 760, and three additional hours from advanced courses are to be completed.

### COURSES IN HISTORY

#### FOR UNDERGRADUATE CREDIT

**115. Civilization I.** 3 semester hours. Each semester and summer.

Civilization of the world to 1650, with emphasis on Western civilization.

**130. Civilization II.** 3 semester hours. Each semester and summer.

Civilization of the world since 1650, with emphasis on Western civilization.

**145. Contemporary World History.** 2 semester hours. Each semester and summer.

World developments since 1930.

**160. Current History.** 1 semester hour. Each semester.

May not be taken more than two semesters for credit.

**175. United States Before 1865.** 3 semester hours. Each semester and summer.

The significant forces, movements, and personalities in the development of American life before 1865.

**190. United States Since 1865.** 3 semester hours. Each semester and summer.

The significant forces, movements, and personalities in the development of American life since 1865.

**205. American Industrial History.** 3 semester hours. Each semester and summer.

Development of American economic growth from colonial beginnings

to the present; manufacturing, commerce, finance, labor, and agriculture. Not open to students who have credit in Hist. 190.

**220. History of Kansas.** 2 semester hours.

Land, people, problems, and growth of culture in the development of Kansas.

FOR UNDERGRADUATE AND GRADUATE CREDIT

**405. Early Americas.** 3 semester hours. First semester and alternate summers.

Indians in North, South, and Central America before 1492; impact of Europeans upon aboriginal cultures; rise and development of European institutions in the American environment. Prerequisite: Three hours of American history or junior standing.

**415. American Thought and Institutions.** 3 semester hours. Second semester.

Cultural traditions, traits, and patterns in the life of Americans of the colonial and republican periods. Prerequisite: Six hours of American history or junior standing.

**425. Sectionalism, War, and Reconstruction.** 2 semester hours.

Development of sectionalism in the United States from 1830 to 1890. Prerequisite: Three hours of American history or junior standing.

**435. Trans-Mississippi West.** 3 semester hours. Each semester and summer.

Environmental factors, peoples, settlements, and institutions of the United States west of the Mississippi River. Prerequisite: Hist. 175 or 190 or junior standing.

**445. New American Nation.** 3 semester hours. Each semester and summer.

Recent and contemporary history. Problems of the new nation from the Spanish-American War to the present. Prerequisite: Three hours of American history or junior standing.

**455. Representative Americans.** 2 semester hours.

Lives of outstanding Americans. Prerequisite: Hist. 175 or 190 or junior standing.

**465. Advanced Economic History of the United States.** 2 semester hours. Alternate years in second semester.

Analysis of the agricultural and industrial developments in the United States. Prerequisite: Hist. 205 or 190 or junior standing.

**475. American Diplomatic History.** 3 semester hours. Second semester and alternate summers.

Development of the foreign policy of the United States from 1763 to the present. Prerequisite: Three hours of American history or junior standing.

**485. Latin-American Nations.** 3 semester hours. Second semester and alternate summers.

Economic, social, and political progress of the Latin-American nations, especially Argentina, Brazil, Chile, and Mexico, from the time of independence down to contemporary developments. Prerequisite: Three hours of American history or junior standing.

**495. History and Culture of Greece.** 3 semester hours. First semester, alternate years.

A study of the political evolution of ancient Greece, its social and economic structure; the gradual development of Hellenic culture and its diffusion throughout the Mediterranean world and the Near East. Prerequisite: Hist. 115 or Gen. Stud. 250.

**505. History and Culture of Rome.** 3 semester hours. Second semester, alternate years.

A study of the constitutional development of ancient Rome, its agrarian and social problems, the fall of the republic and growth of



world empire; Rome's contribution to classical culture and its influence on the modern world. Prerequisite: Hist. 115 or Gen. Stud. 250.

**515. Medieval Europe.** 3 semester hours. Alternate years. First semester and summer.

Cultural and historical developments in Europe and the Near East from the decline of the Roman Empire to the Renaissance in Western Europe. Prerequisite: Hist. 115, or Gen. Stud. 250, or junior standing.

**525. Medieval and Tudor England.** 3 semester hours. Alternate years: First semester.

Celtic, Roman, and Teutonic Britain; early monarchies, feudal age; rise of the modern state. Prerequisite: Hist. 115 or junior standing.

**535. Renaissance and Enlightenment.** 3 semester hours. Second semester and summers.

Rise of human, religious revolt, the Enlightenment, growth of nationalism and European empires from 1600 to 1800. Prerequisite: Hist. 130 or junior standing.

**545. Revolutionary Europe.** 3 semester hours. First semester.

Industrialism, imperialism, French Revolution, reaction, reform, liberalism, and political unification; covering the period 1789-1870. Prerequisite: Hist. 130 or junior standing.

**555. Europe Since 1870.** 3 semester hours. Second semester and summer.

History of the political, social, economic, and international developments. Prerequisite: Three hours of European history or junior standing.

**565. Modern England.** 3 semester hours. First semester.

Political, economic, and cultural history of modern and contemporary Britain. Prerequisite: Three hours of European history or junior standing.

**575. British Empire and Commonwealth.** 2 semester hours.

Political, economic, and cultural history of modern and contemporary Britain. Prerequisite: Three hours of European history or junior standing.

**585. Russia and the Soviet Union.** 3 semester hours. Each semester and summer.

Imperial Russia and the new regime since the Revolution of 1917. Prerequisite: Three hours of European history or junior standing.

**595. Far East.** 3 semester hours. First semester and alternate summers.

Modern and contemporary Chinese, Japanese and other peoples of Eastern Asia and the western Pacific areas. Historical and cultural background; internal developments; international relations since the first peace treaties with the Western Powers. Prerequisite: Hist. 115, or Gen. Stud. 250, or junior standing.

**605. History of Religions.** 3 semester hours. Second semester and alternate summers.

Development of the world's living religions, the relation of each religion to its natural and cultural environment; dominant concepts, leaders, and historic growth which characterize each. Prerequisite: Hist. 115, or Gen. Stud. 250, or junior standing.

**615. History of Marriage and the Family.** 3 semester hours. First semester.

History of marriage and the family from primitive times to the present; marriage customs, position of women, child training; the modern home; recent changes and tendencies. Prerequisite: Three hours of history or junior standing.

**625. Historical Method and Bibliography.** 2 semester hours. Each semester and summer.

Survey of historical works; methods in writing history, historical articles or theses. Required of graduate majors in history. Prerequisite: Consent of instructor and Hist. 115, 130, 175, 190.



**790. Readings in History.** 1 to 3 semester hours. Each semester and summer.

Students will read primary and secondary materials on subjects selected by the student with the approval of the instructor. Discussions of reading will take place at varying intervals. Open to graduate students and seniors majoring in history.

**793. Seminar in History, Government, and Philosophy.** 2 to 5 semester hours.

Prerequisite: Consent of instructor and five hours of credit basic to the field involved.

**797. Problems in History.** Credit to be arranged. Each semester and summer.

For students who desire to pursue subject matter beyond the field of a specific course. Prerequisite: Background of courses needed for problem to be undertaken.

#### FOR GRADUATE CREDIT

**995. Research in History.** Credit to be arranged. Each semester and summer.

Work is offered in: United States, Latin American, European, and Asiatic history. Prerequisite: Registration in the Graduate School, with sufficient training to carry on the line of research to be undertaken.

### COURSES IN PHILOSOPHY

#### FOR UNDERGRADUATE CREDIT

**365. Elementary Logic.** 3 semester hours. First semester and summer.

A study of correct thinking, its principles and conditions, in relation to observation, biases, prejudices, scientific induction, systematic deductive inference, sophistry, fallacies and propaganda.

**380. Philosophy of Science I.** 3 semester hours. Second semester.

A survey of methods, attitudes, and institutions identified with science, together with their implications for a working philosophy of life.

#### FOR UNDERGRADUATE AND GRADUATE CREDIT

**750. Oriental Philosophies.** 2 semester hours.

Study of representative Chinese and Indian thinkers. Emphasis will be placed on basic assumptions, methods of reasoning, and ways of life associated with each. Prerequisite: Junior standing.

**755. Early Western Philosophy.** 3 semester hours. First semester.

History of and readings in western philosophy from Thales to Thomas Aquinas. Prerequisite: Junior standing.

**760. Modern Western Philosophy.** 3 semester hours. Second semester.

History of and readings in western philosophy from Francis Bacon to Hegel. Prerequisite: Junior standing.

**762. American Philosophy.** 3 semester hours.

American philosophical theory from Transcendentalism and Evolutionism to present-day realisms, idealism, and pragmatism. Prerequisite: One course in American literature, or American history, or philosophy.

**765. Philosophical Ideas in Literature.** 3 semester hours.

An introduction to philosophical thought through selections from the masterpieces of world literature. Prerequisite: Engl. 215 or Gen. Stud. 250; or consent of instructor.

**770. Contemporary World-Views.** 3 semester hours. Alternate years: First semester.

Study of representative idealist and naturalist philosophies and examination of their corresponding conflicts in practical affairs. Prerequisite: Junior standing.

**775. Ethics.** 2 semester hours. Second semester and summer.

Theories of conduct; ideas of right and wrong; what makes an act good or bad; the good life. Prerequisite: Junior standing.

**780. Contemporary Social Philosophies.** 3 semester hours. Alternate years: Second semester and summer.

A comparative study of the principles and practices associated with contemporary economic and social systems. Prerequisite: Junior standing.

**785. Recent Political Philosophies.** 2 semester hours. Alternate years: Second semester.

Comparative study of the basic philosophical concepts and arguments underlying the political systems of democratic states in relation to the systems of soviet and fascist states. Prerequisite: Junior standing.

**792. Readings in Philosophy.** 1-3 semester hours. Each semester and summer.

Students will read primary and secondary materials on a subject selected by the student with the approval of the instructor. Discussions of readings will take place at varying intervals. Open to graduate students and seniors majoring in philosophy.

**793. Seminar.** (See History section.)

**799. Problems in Philosophy.** Credit to be arranged. Each semester and summer.

For students who desire to pursue subject matter beyond the field of a specific course. Prerequisite: Background of courses needed for problem to be undertaken.

## COURSES IN GOVERNMENT

### FOR UNDERGRADUATE CREDIT

**255. American Government.** 3 semester hours. Each semester and summer.

National and state government, with emphasis on constitutional principles and basic structure.

**260. Federal Government in Action.** 3 semester hours. Each semester and summer.

Functions and services of American government in modern society. Prerequisite: Govt. 255 or equivalent.

**265. State and Local Government.** 3 semester hours. Each semester and summer.

Government of American states and subdivisions.

**270. Contemporary Government.** 3 semester hours. Each semester and summer.

Comparative treatment, emphasizing the democracies of the United States, Great Britain, and Canada.

**275. Constitutional Democracy in America I.** 3 semester hours. First semester.

An introduction to the main currents of thought relating to the origins, nature, and development of democratic institutions in America.

**280. Constitutional Democracy in America II.** 3 semester hours. Second semester.

Continuation of Govt. 275.

**285. Effective Citizenship.** 2 semester hours.

Observation and participation in processes of government and civic and political organizations.

### FOR UNDERGRADUATE AND GRADUATE CREDIT

**655. International Relations.** 2 semester hours. Alternate years: First semester and summer.

Recent and contemporary international problems; work of interna-



tional organizations. Prerequisite: Govt. 255 or Gen. Stud. 210, 220, or equivalent.

**660. International Law.** 2 semester hours. Alternate years: First semester.

Nature and scope of international law; factors which contribute to its growth; tendencies in the development of the law today. Prerequisite: Govt. 255 or Gen. Stud. 210, 220, or equivalent.

**665. International Organization.** 2 semester hours. Alternate years: Second semester.

The theory and structure of international institutions. The explanation of their establishment and evolution, and an appraisal of their value and effectiveness in our contemporary world society. Prerequisite: Govt. 255 or Gen. Stud. 210, 220, or equivalent.

**670. Comparative Government.** 2 semester hours. Second semester and summer.

Analysis of major governments of continental Europe. Prerequisite: Govt. 270.

**675. State and Local Politics and Administration.** 2 semester hours. Second semester.

A study of political and administrative processes at the state and local levels with particular attention to the problems, attitudes, and pressures affecting those processes. Prerequisite: Junior standing or consent of instructor.

**690. City Government.** 3 semester hours. First semester and summer.

Government and administration of American cities. Prerequisite: Govt. 255 or junior standing.

**705. Federal Politics and Administration.** 2 semester hours. First semester and summer.

A study of the political and administrative processes at the national level with particular attention to the underlying pressures and organizational problems influencing those processes. Prerequisite: Junior standing or consent of instructor.

**708. Political Economy and the Democratic State.** 3 semester hours. Each semester and summer.

An examination of the interrelationships of the individual, the state, and economic institutions. The effect of the changing pattern of these interrelationships upon democracy will be examined. Prerequisite: Junior standing or consent of instructor.

**711. American Political Ideas.** 3 semester hours.

Major political ideas underlying the American Union, the doctrine of rights, the nature of union, liberty and property, democracy, and recent trends. Prerequisite: Govt. 255 or Gen. Stud. 220.

**718. Political Parties and Pressure Groups.** 2 semester hours. Alternate years: First semester.

Growth and tendencies of interest groups in the United States; development of the American party system. Prerequisite: Govt. 255 or Gen. Stud. 210, 220, or equivalent.

**720. Government and Business.** 2 semester hours. Alternate years: First semester.

Relationships between governmental and business organizations. Prerequisite: Govt. 255 or Gen. Stud. 210, 220, or equivalent.

**730. Constitutional Law.** 3 semester hours. Second semester.

Development of the government of the United States through judicial interpretation of the Constitution. Case method used. Prerequisite: Govt. 255 or Gen. Stud. 210, 220, or equivalent.

**791. Readings in Government.** 1 to 3 semester hours. Each semester and summer.

Students will read primary and secondary materials on subjects se-



lected by the student with the approval of the instructor. Discussions of reading will take place at varying intervals. Open to graduate students and seniors majoring in government.

**793. Seminar.** (See History section.)

**798. Problems in Government.** Credit to be arranged. Each semester and summer.

For students who desire to pursue subject matter beyond the field of a specific course. Prerequisite: Background of courses needed for problem to be undertaken.

FOR GRADUATE CREDIT

**997. Research in Government.** Credit to be arranged. Each semester and summer.

Prerequisite: Registration in the Graduate School, with sufficient training to carry on the line of research to be undertaken.

**COURSES IN LAW**

FOR UNDERGRADUATE CREDIT

**295. Business Law I.** 3 semester hours. Each semester and summer.

Contracts, agency, and sales. Not open to those who have credit in Law 325.

**310. Business Law II.** 3 semester hours. Each semester and summer.

Negotiable instruments, partnerships, and corporations.

**325. Law for Engineers.** 2 semester hours. Each semester.

Case study of such rules of law as will prove most useful to engineers and architects; law of contracts. Not open to those who have credit in Law 295.

FOR UNDERGRADUATE AND GRADUATE CREDIT

**735. Land Law.** 2 semester hours. Second semester.

Interests and rights in land; methods by which such interests and rights are acquired and protected; relation of landlord and tenant and that of mortgagor and mortgagee, developed by study of Kansas cases.

**LIBRARY ECONOMICS**

WILLIAM E. BAEHR, *Head of Department*

FOR UNDERGRADUATE CREDIT

**110. Introduction to Bibliography.** 1 semester hour. First semester.

Principles and content of general and special bibliography. Prerequisite: Junior standing.

**402. Book Selection and Reference.** 3 semester hours. Summer.

Materials and techniques of reference work, principles of evaluation and selection of books for young people, sources of information about books and reading interests.

**420. Cataloguing and Classification.** 3 semester hours. Summer.

Fundamentals of the Dewey Decimal Classification and the basic cataloguing techniques necessary for organizing a school library collection.

**442. School Library Administration.** 2 semester hours. Summer.

Methods of developing the library as an integral part of the school: organizing the library, public relations, personnel, and routine involved in the acquisition, care, and circulation of materials.

## MATHEMATICS

RALPH G. SANGER, *Head of Department*

In all curriculums in which college algebra is required, students take a proficiency test in algebra within the first two weeks of their enrollment in any course in algebra. Results of this test determine whether a student shall be required to take intermediate algebra to qualify for college algebra.

For a minor in mathematics the following courses should be completed: 175, 190, 215, 230, 245, or 175, 190, 260, 275, 290, and preferably 600. For a minor in statistics the following courses should be completed: 175, 190, 215, 230, 320, 340, 725, or 175, 190, 260, 275, 320, 340, and 725.

For a major in mathematics, in addition to the minor, the following courses should be completed: 110 (if equivalent work not taken in high school), 600, and three additional courses (not statistics) from courses numbered 401 to 799, normally chosen from 415, 525, 615, 620. For a major in statistics, in addition to the work for a minor, 245 or 290, 600, 615, 745, and six semester hours from among the 700 courses in statistics.

Any course will be offered any term on the request of a sufficient number of students. Information concerning additional courses offered during the summer term may be had on writing to the department.

### FOR UNDERGRADUATE CREDIT

**010. Elementary Algebra.** 1 entrance unit. Each semester.  
Four hours of recitation a week.

**030. Plane Geometry.** 1 entrance unit. Each semester.  
Four hours of recitation a week.

**050. Intermediate Algebra.** 0 credit. Each semester and summer.  
Review of elementary algebra; topics preparatory to Math. 175. Three hours of recitation a week. Prerequisite: One unit of high school algebra.

**110. Solid Geometry.** 2 semester hours. First semester.  
Prerequisite: Plane geometry and one unit of high school algebra.

**125. Mathematics in Human Affairs.** 3 semester hours. Each semester.  
No credit is given for this course if credit has been obtained in any other college course in mathematics. Completion of this course does not satisfy prerequisite requirements in any other course in mathematics.

**130. Mathematics in Agriculture.** 3 semester hours. Each semester.  
A course designed for students in the School of Agriculture. No credit is given for this course if credit has been obtained in any other college course in mathematics. Completion of this course does not satisfy prerequisite requirements in any other course in mathematics.

**145. General Algebra.** 5 semester hours. Each semester.  
Prerequisite: One unit of high school algebra. Not open to students with credit in Math. 175. For students in the Curriculum in Business Administration.

**160. Mathematics of Finance.** 3 semester hours. First semester.  
Prerequisite: Acctg. 300, Math. 145.

**175. College Algebra.** 3 semester hours. Each semester and summer.  
Prerequisite: Plane geometry and satisfactory placement test score in algebra. Students with one and one-half entrance units of algebra should normally be eligible for this course.

**190. Plane Trigonometry.** 3 semester hours. Each semester and summer.  
Prerequisite: Plane geometry and one and one-half units of high school algebra.

**215. Analytic Geometry and Calculus I.** 4 semester hours. Each semester and summer.

Analytic geometry, differential and integral calculus of polynomials.  
Prerequisite: Math. 175, 190.



- 230. Analytic Geometry and Calculus II.** 4 semester hours. Each semester and summer.  
Continuation of Math. 215 to include transcendental functions. Prerequisite: Math. 215.
- 245. Analytic Geometry and Calculus III.** 4 semester hours. Each semester and summer.  
Continuation of Math. 230 to include functions of more than one variable; series. Prerequisite: Math. 230.
- 260. Plane Analytic Geometry.** 4 semester hours.  
Prerequisite: Math. 175, 190.
- 275. Calculus I.** 4 semester hours. Each semester.  
Prerequisite: Math. 260.
- 290. Calculus II.** 4 semester hours. Each semester.  
Prerequisite: Math. 275.
- 300. Mathematics for Teachers.** 2 semester hours. Second semester and summer in even-numbered years.  
A course designed to provide teachers with a firm foundation of the concepts used in arithmetic, algebra and geometry. Completion of this course does not satisfy prerequisite requirements for any other course in mathematics. Prerequisite: One unit of high school mathematics.
- 320. Elements of Statistics.** 3 semester hours. Each semester and summer.  
A basic course in probability and statistics for students of economics, biology, and science. Not open to students who have credit in Educ. 405. Prerequisite: Math. 145.
- 340. Applied Elementary Statistics.** 2 semester hours. Second semester.  
Continuation of Math. 320 with introduction to sampling techniques and theory; introductory multiple and curvilinear correlation, and applications in biology, psychology, economics, and engineering. Prerequisite: Math. 320.
- 360. Differential Equations for Engineers.** 2 semester hours. Each semester.  
Prerequisite: Math. 245 or 290.

#### FOR UNDERGRADUATE AND GRADUATE CREDIT

- 415. Theory of Equations.** 3 semester hours. First semester.  
Prerequisite: Math. 245 or 290.
- 430. Theory of Numbers.** 3 semester hours. When scheduled or on request of a sufficient number of students.  
Prerequisite: Math. 230 or 275.
- 445. Foundations of Mathematics.** 3 semester hours. When scheduled or on request of a sufficient number of students.  
Postulates used in development of geometry and algebra. Prerequisite: Math. 245 or 290.
- 450. Introduction to Modern Algebra.** 3 semester hours. When scheduled or on request of a sufficient number of students.  
Simpler concepts in the theory of numbers, groups, rings, integral domains, fields, polynomials over a field, determinants, and matrices. Prerequisite: Math. 245 or 290.
- 455. Abstract Algebra I.** 3 semester hours. First semester; alternate years.  
Prerequisite: Math. 415, 600.
- 465. Abstract Algebra II.** 3 semester hours. Second semester; alternate years.  
Continuation of Math. 455. Prerequisite: Math. 455.
- 475. Structure of Abstract Algebras.** 3 semester hours. Second semester; alternate years.  
An introduction to linear algebras over various fields. The algebra of classes. Prerequisite: Math. 455 or 485.



- 485. Introduction to Theory of Matrices.** 3 semester hours. First semester; alternate years.  
Prerequisite: Math. 415, 600.
- 510. History of Mathematics.** 3 semester hours. When scheduled or on request of a sufficient number of students.  
Prerequisite: Math. 215 or 260.
- 525. College Geometry.** 3 semester hours. Second semester.  
Properties of a triangle and its circles, harmonic ranges and pencils, inversion, poles and polars. Prerequisite: Math. 215 or 260.
- 560. Higher Geometry I.** 3 semester hours. First semester; alternate years.  
An introduction to the projective geometry of one and two dimensions. Prerequisite: Math. 415.
- 575. Higher Geometry II.** 3 semester hours. Second semester; alternate years.  
An introduction to the differential geometry of curves and surfaces. Prerequisite: Math. 600.
- 580. Elementary Topology I.** 3 semester hours. First semester; alternate years.  
Cardinal and ordinal numbers, general topological spaces, homeomorphic invariants of point sets, metrization, structure of Peano continua. Prerequisite: Math. 600, 615, 620.
- 585. Elementary Topology II.** 3 semester hours. Second semester; alternate years.  
Continuation of Math. 580. Prerequisite: Math. 580.
- 600. Differential Equations.** 3 semester hours. Each semester and summer.  
Prerequisite: Math. 245 or 290.
- 605. Elementary Partial Differential Equations.** 3 semester hours. First semester; alternate years.  
Solution of partial differential equations; applications to problems of physics and engineering. Prerequisite: Math. 360 or 600.
- 610. Differential Equations of Mathematical Physics.** 3 semester hours. Second semester; alternate years.  
Solution of Legendre's, Bessel's, and other differential equations including the properties and uses of the solutions. Prerequisite: Math. 360 or 600.
- 615. Advanced Calculus I.** 3 semester hours. First semester.  
Partial differentiation with applications to the geometry of three dimensions, envelopes, maxima and minima of functions of several variables, series. Prerequisite: Math. 245 or 290.
- 620. Advanced Calculus II.** 3 semester hours. Second semester.  
Line integrals, improper integrals, beta and gamma functions; integrals dependent on a parameter, elliptic integrals, uniform convergence of series and integrals. Prerequisite: Math. 245 or 290 and preferably Math. 360 or 600.
- 625. Vector Analysis.** 3 semester hours. Second semester; alternate years.  
Methods of vector algebra and geometry, with applications, and the elements of tensors. Prerequisite: Math. 360 or 600.
- 630. Fourier Series.** 3 semester hours. Second semester; alternate years.  
Prerequisite: Math. 360 or 600.
- 635. Operational Methods.** 3 semester hours. First semester; alternate years.  
Selected topics from Heaviside's operational calculus, Laplace transforms. Prerequisite: Math. 360 or 600.

**642. Numerical Methods I.** 3 semester hours. First semester, alternate years.

Solution of algebraic and transcendental equations with emphasis on linear algebraic systems. Applications of finite differences to interpolation, numerical differentiation, and integration. Introduction to desk calculator, I. B. M. equipment, analog computer. Prerequisite: Math. 360 or 600; and one of 605, 610, 615, 620, 630, 635.

**644. Numerical Methods II.** 3 semester hours. Second semester, alternate years.

Numerical methods for solving ordinary and partial differential equations. Matrix inversion with applications. Method of least squares. Use of orthogonal polynomials. Prerequisite: Math. 642.

**650. Advanced Differential Equations I.** 3 semester hours. First semester; alternate years.

Special topics such as the equations of Legendre, Bessel, and Riccati, with applications. Prerequisite: Math. 360 or 600 and 615 or 620.

**655. Advanced Differential Equations II.** 3 semester hours. Second semester; alternate years.

Boundary value problems associated with differential equations; their relations to integral equations. Prerequisite: Math. 650.

**660. Theory of Functions of a Complex Variable I.** 3 semester hours. First semester; alternate years.

Prerequisite: Math. 360 or 600, and 615 or 620.

**665. Theory of Functions of a Complex Variable II.** 3 semester hours. Second semester; alternate years.

Prerequisite: Math. 660.

**675. Calculus of Variations.** 3 semester hours. When scheduled or on request of a sufficient number of students.

Necessary and sufficient conditions for an extreme value; applications to geometry and mechanics. Prerequisite: Math. 600, 620.

**685. Tensor Analysis.** 3 semester hours. When scheduled or on request of a sufficient number of students.

Introduction to theory of tensors with applications to geometry, relativity, and applied mathematics. Prerequisite: Math. 615, 625.

**690. Theory of Functions of a Real Variable I.** 3 semester hours. First semester; alternate years.

Real number systems, theory of measure, theories of integration. Prerequisite: Math. 600, 615, 620.

**695. Theory of Functions of a Real Variable II.** 3 semester hours. Second semester; alternate years.

Continuation of Math. 690. Prerequisite: Math. 690.

**705. Probability.** 3 semester hours. When scheduled or on request of a sufficient number of students.

Basic laws and concepts; mathematical expectation; distribution functions for normal, binomial, and Poisson populations; and applications. Prerequisite: Math. 245 or 290.

**725. Statistical Methods I.** 3 semester hours. First semester.

Development of proficiency in statistical technics appropriate to sampling studies; the chi-square test, confidence intervals, t-test linear regression, and analysis of variance. Prerequisite: Junior standing.

**730. Statistical Methods II.** 3 semester hours. Second semester.

Further study of analysis of variance; technic and applications of covariance, multiple and curvilinear regression and introduction to designing of experiments. Prerequisite: Math. 725 or consent of the instructor.

**745. Mathematical Statistics I.** 3 semester hours. First semester.

Mathematical discussion of statistical methods, frequency distributions; mean values; moments; normal, binomial, and Poisson distribu-



tions. Topics in large sample theory, two variable frequency distributions, linear correlation and regression. Prerequisite: Math. 245 or 290.

**750. Mathematical Statistics II.** 3 semester hours. Second semester.

Method of least squares; multiple regression; small sample theory; chi-square, t, and F distributions; testing statistical hypotheses. Prerequisite: Math. 745.

**765. Sample Survey Methods.** 3 semester hours. Second semester; alternate years.

Design, mechanics, and analysis of sample survey investigations in the social sciences. Prerequisite: Math. 725 or consent of instructor.

**775. Designing Experiments.** 3 semester hours. Second semester.

The planning of experiments in the fields of biological science so they will be efficient and will yield data which can be analyzed statistically. Randomized blocks, Latin squares, split-plots, and lattices. Prerequisite: Math. 725.

**785. Statistical Quality Control.** 3 semester hours. When scheduled or on request of a sufficient number of students.

Elementary treatment of practical methods of analysis of data to estimate uniformity or nonuniformity of the quality of a manufactured product. Discussion of control charts and sampling acceptance plans. Prerequisite: Math. 175 or equivalent.

**799. Topics in Mathematics.** Credit to be arranged. Each semester and summer.

Prerequisite: Background of courses needed for topic to be undertaken and consent of instructor.

FOR GRADUATE CREDIT

**999. Research in Mathematics.** Credit to be arranged. Each semester and summer.

Prerequisite: Registration in the Graduate School, with sufficient training to carry on the line of research to be undertaken and consent of instructor.

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## MILITARY SCIENCE AND TACTICS

WILLIAM W. HARVEY, JR., *Head of Department*

Kansas state law, Section 76-436, Session Laws, 1945, stipulates that in land-grant colleges of this state all regularly enrolled male students who are physically qualified shall take military training during the freshman and sophomore years. This required Basic Course is offered by units of the Reserve Officers Training Corps (Army ROTC) established at Kansas State College. The status of men who present evidence of previous military service or training in the armed forces or at another college will be evaluated by the dean of the School concerned. Their records may be accepted in lieu of all or part of the required two years of basic training. Nonveteran men who matriculate with 25 semester hours of advanced academic credits are excused from the second year of military training; those with 59 hours are excused from both years. Any exemption from the Basic Course may bar the students from enrollment in the voluntary Advanced Course ROTC, normally offered to selected juniors and seniors.

Whenever basic ROTC is excused for any reason, other subjects must be taken to replace the hours involved.

All students enrolled in the Basic Course, except those in the Veterinary unit, are furnished free of charge complete uniform, texts, and other necessary equipment. These articles are the property of the United States and must be returned at the end of each school year or upon withdrawal from College. The value of any article not returned is chargeable to the student.



Kansas State College has an Army ROTC which offers the General Military Science curriculum to undergraduates and a veterinary program for students in the School of Veterinary Medicine.

The General Military Science curriculum is designed to give all students who complete the four-year program the basic knowledge and skills necessary to all officers in the U. S. Army, and the historical background requisite for a proper understanding of the Army and its relation to the nation. Specialization in a particular branch will come after graduation and commissioning. The first two years constitute the Basic Course, and successful completion of this work fulfills the requirements of Kansas state law. The third and fourth years constitute the Advanced Course, in which enrollment is selective and voluntary. Students should consult the Department of Military Science and Tactics for conditions which govern selection for the Advanced Course.

Students enrolled in the Advanced Course must sign a Deferment Agreement which serves to exempt them from selective service induction in return for a promise to accept a reserve commission, if tendered upon completion of the course of instruction, and to serve on active duty for a period of two years, upon call by the Secretary of the Army.

Under present regulations, a student enrolled in the second-year Basic ROTC may also sign the Deferment Agreement and accept conditional enrollment in Advanced ROTC which will serve, within established quotas, to exempt him from selective service induction so long as he continues in college and satisfactorily pursues his academic work.

Under present regulations, freshmen in the first-year Basic ROTC are subject to screening by a board of officers after conclusion of the first semester with a view to selection for Deferment Agreement within established quotas. Those who give best promise as potential officer material may be enrolled subsequently in the Advanced Course, if College attendance in good standing is continued through the sophomore year.

In the Advanced ROTC, except in the School of Veterinary Medicine, all courses are three semester hours each. In the School of Veterinary Medicine all courses are one semester hour each. These hours are accepted as electives for degrees except where curricular limitations prevent their full use, in which case the remaining hours appear as electives in excess of requirements for graduation. The hours which may be used are as follows:

School of Agriculture, Curriculum in Agricultural Education, none; other curriculums, 12 semester hours.

School of Arts and Sciences, 12 semester hours.

School of Engineering and Architecture, Curriculum in Architecture, 12 semester hours; other curriculums, 8 semester hours.

School of Veterinary Medicine, 2 or 3 semester hours.

## SENIOR DIVISION, ROTC

### BASIC COURSES

#### FOR UNDERGRADUATE CREDIT

#### **110. Military IA.** 1 semester hour. First semester.

Individual weapons and marksmanship; organization of the Army and ROTC; school of the soldier and exercise of command. Two hours of recitation and the equivalent of approximately one hour of practical work per week.

#### **115. Military IB.** 1 semester hour. Second semester.

American military history; school of the soldier and exercise of command. Two hours of recitation and the equivalent of approximately one hour of practical work per week. Prerequisite: Mil. Sci. 110.

#### **131. Military IIA.** 1 semester hour. First semester.

Crew-served weapons and gunnery; school of the soldier and exercise of command. Two hours of recitation and the equivalent of approximately one hour of practical work a week. Prerequisite: Mil. Sci. 115.

**141. Military IIB.** 1 semester hour. Second semester.

Crew-served weapons and gunnery; map and aerial photograph reading; school of the soldier and exercise of command. Two hours of recitation and the equivalent of approximately one hour of practical work a week. Prerequisite: Mil. Sci. 131.

## ADVANCED COURSES

**256. Military IIIA.** 3 semester hours. First semester.

Fire commands; tactics of rifle squad, camouflage; tactics of rifle company; village fighting; tactics of heavy weapons company; communication in the Infantry Division; school of the soldier and exercise of command. Four hours of recitation and the equivalent of approximately one hour of practical work a week. Prerequisite: Mil. Sci. 141.

**266. Military IIIB.** 3 semester hours. Second semester.

Organization, function, and mission of the arms and services; military teaching methods; first aid and military sanitation; rifle marksmanship; leadership; school of the soldier and exercise of command. Four hours of recitation and the equivalent of approximately one hour of practical work a week. Prerequisite: Mil. Sci. 256.

**276. Military IVA.** 3 semester hours. First semester.

Military administration; military justice; training management; motor transportation; troop movements; supply and evacuation; the role of the United States in world affairs and the present world situation; school of the soldier and exercise of command. Four hours of recitation and the equivalent of approximately one hour of practical work a week. Prerequisite: Mil. Sci. 266.

**286. Military IVB.** 3 semester hours. Second semester.

Command and staff; estimate of the situation and combat orders; military intelligence; the military team; leadership; officer indoctrination; school of the soldier and exercise of command. Four hours of recitation and the equivalent of approximately one hour of practical work a week. Prerequisite: Mil. Sci. 276.

**350. Veterinary IVA.** 1 semester hour. First semester.

Military leadership; food products inspection. Prerequisite: Mil. Sci. 345.

**355. Veterinary IVB.** 1 semester hour. Second semester.

Veterinary aspects of atomic warfare; veterinary aspects of chemical warfare; organized reserve corps. One hour of recitation a week. Prerequisite: Mil. Sci. 350.

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## MODERN LANGUAGES

FRITZ MOORE, *Head of Department*

For a minor, 18 hours in a single language should be completed.

For a major, 30 hours in a single language should be completed.

Students who have had German, French, or Spanish in high school may not duplicate that work for college credit. One year of a language in high school is, as a rule, equivalent to one semester in college. In doubtful cases, the head of the department should be consulted.

## FOR UNDERGRADUATE CREDIT

**110. Technical German I.** 3 semester hours. First semester.**120. Technical German II.** 3 semester hours. Second semester.

Prerequisite: Mod. Lang. 110 or equivalent.

**125. Technical German III.** 3 semester hours. First semester.

Prerequisite: Mod. Lang. 120 or 140 or equivalent.



- 130. German I.** 3 semester hours. Each semester and summer.  
**140. German II.** 3 semester hours. Each semester and summer.  
Prerequisite: Mod. Lang. 130 or equivalent.  
**150. German III.** 3 semester hours. First semester and summer.  
Prerequisite: Mod. Lang. 140 or equivalent.  
**160. German IV.** 3 semester hours. Second semester.  
Prerequisite: Mod. Lang. 150 or equivalent.  
**170. German V.** 3 semester hours. First or second semester.  
Prerequisite: Mod. Lang. 160 or equivalent.  
**190. Russian I.** 3 semester hours. First semester.  
Prerequisite: Six hours of some other foreign language.  
**195. Russian II.** 3 semester hours. Second semester.  
Prerequisite: Mod. Lang. 190.  
**210. French I.** 3 semester hours. Each semester and summer.  
**220. French II.** 3 semester hours. Each semester and summer.  
Prerequisite: Mod. Lang. 210 or equivalent.  
**230. French III.** 3 semester hours. First semester and summer.  
Prerequisite: Mod. Lang. 220 or equivalent.  
**240. French IV.** 3 semester hours. Second semester.  
Prerequisite: Mod. Lang. 230 or equivalent.  
**250. French V.** 3 semester hours. First or second semester.  
Prerequisite: Mod. Lang. 240 or equivalent.  
**260. French Composition and Conversation.** 3 semester hours. First semester.  
Prerequisite: Mod. Lang. 240.  
**270. Advanced French Composition and Conversation.** 3 semester hours.  
Second semester.  
Prerequisite: Mod. Lang. 260 or equivalent.  
**300. Spanish I.** 3 semester hours. Each semester and summer.  
**310. Spanish II.** 3 semester hours. Each semester and summer.  
Prerequisite: Mod. Lang. 300 or equivalent.  
**320. Spanish III.** 3 semester hours. First semester and summer.  
Prerequisite: Mod. Lang. 310 or equivalent.  
**330. Spanish IV.** 3 semester hours. Second semester.  
Prerequisite: Mod. Lang. 320 or equivalent.  
**340. Spanish V.** 3 semester hours. First or second semester.  
Prerequisite: Mod. Lang. 330 or equivalent.  
**350. Spanish Composition and Conversation.** 3 semester hours. First semester.  
Prerequisite: Mod. Lang. 330 or equivalent.  
**360. Advanced Spanish Composition and Conversation.** 3 semester hours.  
Second semester.  
Prerequisite: Mod. Lang. 350 or equivalent.  
**380. Italian I.** 3 semester hours. First semester.  
**385. Italian II.** 3 semester hours. Second semester.  
Prerequisite: Mod. Lang. 380 or equivalent.

## FOR UNDERGRADUATE AND GRADUATE CREDIT

- 405. Schiller.** 3 semester hours. First or second semester.  
Prerequisite: Mod. Lang. 170 or equivalent.  
**420. Goethe.** 3 semester hours. First or second semester.  
Prerequisite: Mod. Lang. 170 or equivalent.



- 435. German Drama I.** 3 semester hours. First or second semester.  
Prerequisite: Twenty-four hours of college German or equivalent.
- 450. German Drama II.** 3 semester hours. First or second semester.  
Prerequisite: Twenty-four hours of college German or equivalent.
- 465. Survey of German Literature I.** 3 semester hours. First or second semester.  
Prerequisite: Thirty hours of college German or equivalent.
- 480. Survey of German Literature II.** 3 semester hours. First or second semester.  
Prerequisite: Thirty hours of college German or equivalent.
- 520. French Novel.** 3 semester hours. First or second semester.  
Prerequisite: Mod. Lang. 250 or equivalent.
- 540. French Drama.** 3 semester hours. First or second semester.  
Prerequisite: Mod. Lang. 250 or equivalent.
- 560. Moliere.** 3 semester hours. First or second semester.  
Prerequisite: Twenty-one hours of college French or equivalent.
- 580. Contemporary French Literature.** 3 semester hours. First or second semester.  
Prerequisite: Twenty-one hours of college French or equivalent.
- 610. Spanish Novel.** 3 semester hours. First or second semester.  
Prerequisite: Fifteen hours of college Spanish or equivalent.
- 620. Spanish Drama.** 3 semester hours. First or second semester.  
Prerequisite: Fifteen hours of college Spanish or equivalent.
- 645. Spanish-American Literature.** 3 semester hours. First or second semester.  
Prerequisite: Eighteen hours of college Spanish or equivalent.
- 650. Cervantes.** 3 semester hours. First or second semester.  
Prerequisite: Twenty-one hours of college Spanish or equivalent.
- 655. Spanish-American Novel.** 3 semester hours. First or second semester.  
Prerequisite: Eighteen hours of college Spanish or equivalent.
- 660. Contemporary Spanish Literature.** 3 semester hours. First or second semester.  
Prerequisite: Twenty-one hours of college Spanish or equivalent.
- 750. Introduction to Philology.** 2 semester hours. First or second semester.  
Prerequisite: Thirty hours in modern languages or equivalent.
- 799. Problems in Modern Languages.** Credit to be arranged. Each semester and summer.  
Prerequisite: Background of courses needed for problem to be undertaken.

## FOR GRADUATE CREDIT

- 999. Research in Modern Languages.** Credit to be arranged.  
Prerequisite: Registration in the Graduate School, with sufficient training to carry on the line of research to be undertaken.

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**MUSIC**

LUTHER O. LEAVENGOOD, *Head of Department*

A major program of music in the Curriculum in Humanities may be selected with emphasis on theory, composition, or history and literature. The general requirement is thirty semester hours subsequent to Mus. 105, 150, and 155. Specific requirements for Music are: Instrument or Voice, eight

hours; Mus. 160, 165, 180, 190, 195, 250, and ten elective hours. This major is not intended to prepare students to teach music as a major field in the public schools of Kansas.

Prerequisites for students taking a thirty-hour major in music in the Curriculum in Humanities are the same as for candidates for the Bachelor of Science degree in Music Education.

For a minor, the following courses are required: Mus. 080 (2 semesters), 105, 150, 155, 230, 235, 240, 245, 275, or instrument courses (4 hours), 279 (4 hours).

Students who intend to be certified to teach music in the public schools of Kansas as a secondary teaching subject only must take in addition to the courses required for a minor in music the following courses: For grade supervisors and choral directors, Mus. 116, 121, and two years in a choral organization; for band and orchestra directors, Mus. 121, 132, and two years in band or orchestra.

Courses in music are available to any student enrolled in the College, subject to the prerequisites listed under course descriptions. Courses in applied music do not require prerequisites for the nonmusic major, but such students should have some knowledge of notation and fundamentals of music. This elective credit in applied music, however, cannot be used later toward a music degree unless it meets the requirements of that course. (See course requirements.) No more than two credits a semester will be granted for applied music as an elective.

### Requirements for Entrance and Graduation

Students planning to major in the curriculums in music education or applied music must take an examination for musical aptitude.

Preliminary examinations in piano must be taken by all students majoring in music regardless of what curriculum is selected.

The above examinations are compulsory before any enrollment is made. For dates of examinations, consult the Calendar.

### General Information

Regular attendance at student and faculty recitals, choral and orchestral concerts, and the artist series is required of all music majors. Recital cards are kept, and seventy-five percent attendance is required for graduation.

All students enrolled in music must have the consent of their instructor in order to perform in public or on the radio.

Practice room privileges are covered by the fees for private lessons for students who are regularly enrolled in College. All others must pay the fee stated following Mus. 900.

The various courses in Voice or Instrument are divided into grades. Students majoring in either the Curriculum in Applied Music or the Curriculum in Music Education must satisfy the following requirements for entrance in order to receive credit for the work and complete the grade indicated under each major before graduation.

### Curriculum in Applied Music

*Piano Majors:* Students majoring in piano must pass grade 6 upon entrance and complete grade 10 by the end of the senior year.

*Voice Majors:* Students majoring in voice must pass grade 2 of the voice curriculum and grade 2 of the piano curriculum upon entrance and complete grade 6 in voice and grade 4 in piano by the end of the senior year.

*Organ Majors:* Students majoring in organ must pass grade 6 of the piano curriculum upon entrance and complete grade 4 of the organ curriculum by the end of the senior year.

*String Majors:* Students majoring in stringed instruments must pass grade 6 upon entrance and complete grade 10 by the end of the senior year.

*Woodwind and Brass Majors:* Students majoring in woodwind or brass instruments must pass grade 4 upon their major instrument upon entrance and complete grade 8 by the end of the senior year. In addition, all instru-



mental majors must pass grade 1 in piano for entrance and complete grade 3 by the end of the senior year.

### Curriculum in Music Education

*Piano Majors:* Students majoring in piano must pass grade 3 in the piano upon entrance and complete grade 7 by the end of the senior year.

*Voice Majors:* No specific entrance requirement. However, a student should possess the ability to sing in time and in tune. Students majoring in voice must pass grade 2 in piano. For graduation voice majors must complete grade 4 of the voice curriculum and grade 4 of the piano curriculum.

*Organ Majors:* Students majoring in organ must pass grade 6 of the piano curriculum upon entrance and complete grade 2 of the organ curriculum by the end of the senior year.

*String Majors:* Students majoring in stringed instruments must pass grade 3 upon their major instrument and grade 1 of the piano curriculum upon entrance. They must complete grade 7 of the major instrument and grade 3 of the piano curriculum by the end of the senior year.

*Woodwind and Brass Majors:* Students majoring in woodwind or brass instruments must pass grade 1 upon their major instrument and grade 1 of the piano curriculum upon entrance. They must complete grade 5 of the major instrument and grade 3 of the piano curriculum by the end of the senior year.

Outlines of each of the curriculums in music may be secured upon request from the head of the Department of Music. In each case, the major instrument should be specified.

## COURSES IN THE THEORY OF MUSIC

### FOR UNDERGRADUATE CREDIT

- 105. Music Fundamentals.** 2 semester hours. First semester and summer.  
Elementary instruction in the theory of music. Three hours of recitation a week. Not open to students in music curriculums.
- 110. Music for Elementary Teachers.** 3 semester hours. Second semester and summer. Prerequisite: Mus. 105.
- 116. School Music I.** 3 semester hours. Each semester and summer.  
Methods and materials for teaching music in kindergarten, primary, and intermediate grades. Prerequisite: Mus. 155 or consent of instructor.
- 121. School Music II.** 3 semester hours. Each semester and summer.  
Methods and teaching materials suitable for junior and senior high school. Prerequisite: Mus. 116 or consent of instructor.
- 132. Instrumental Methods.** 3 semester hours. First semester and summer.  
Organization of the instrumental music program in the grades, the junior and senior high schools. Methods and materials for instrumental classes.
- 150. Theory of Music I.** 3 semester hours. First semester and summer.  
An integrated course comprising ear training, sight singing, keyboard assignments and the principles of diatonic harmony. Five hours of recitation a week.
- 155. Theory of Music II.** 3 semester hours. Second semester and summer.  
Continuation of Mus. 150. Five hours of recitation a week. Prerequisite: Mus. 150.
- 160. Theory of Music III.** 3 semester hours. First semester and summer.  
Intensified study of chord connections; choral harmonization; non-harmonic tones and chromatic harmony; continuation of integrated work in ear training and keyboard harmony; clef transpositions. Five hours of recitation a week. Prerequisite: Mus. 155.



- 165. Theory of Music IV.** 3 semester hours. Second semester and summer.  
Continuation of Mus. 160. Five hours of recitation a week. Prerequisite: Mus. 160.
- 170. Counterpoint I.** 2 semester hours. First semester and summer.  
Devices of counterpoint and imitation leading to the writing of short contrapuntal compositions in two voices. Analysis of choral preludes and inventions. Prerequisite: Mus. 165.
- 175. Counterpoint II.** 2 semester hours. Second semester and summer.  
A continuation of Mus. 170. Contrapuntal composition in three or four voices. Analysis of the fugue. Prerequisite: Mus. 170.
- 180. Musical Form and Analysis.** 2 semester hours. Each semester and summer.  
Forms used in composition; the music of Bach, Haydn, Mozart, Beethoven, Schumann, Chopin, Brahms, Wagner, and others. Prerequisite: Mus. 165.
- 183. Instrumentation and Orchestration I.** 2 semester hours. First semester and summer.  
Instruments of the band and orchestra studies with relation to tone, color, range, and function. Prerequisite: Mus. 165.
- 186. Instrumentation and Orchestration II.** 2 semester hours. Second semester and summer.  
Simple and familiar compositions scored for ensemble, including full orchestra. Prerequisite: Mus. 183.
- 190. History of Music I.** 2 semester hours. First semester and summer.  
Chronological study of significant musical trends; the influence of cultural forces upon musical developments; the contributions of individual composers.
- 195. History of Music II.** 2 semester hours. Second semester and summer.  
Continuation of Mus. 190. Prerequisite: Mus. 190.
- 210. Composition I.** 2 semester hours. First semester and summer.  
Composition in the small forms for piano, voice, and instruments. Development of style conception. Prerequisite: Mus. 175 and concurrent enrollment in Mus. 180.
- 215. Composition II.** 2 semester hours. Second semester and summer.  
Continuation of Mus. 210 with emphasis on more complex treatment of the small forms and compound forms. Prerequisite: Mus. 210.
- 222. Theory of Conducting.** 2 semester hours. First semester and summer.  
Basic meters and the proper methods of executing each; introduction to score reading and transposition. Prerequisite: Mus. 165.
- 230. Orchestral Instruments I.** 1 semester hour. Each semester and summer.  
Methods of tone production of instruments of the orchestra. Two hours of laboratory a week.
- 235. Orchestral Instruments II.** 1 semester hour. Each semester and summer.  
Continuation of Mus. 230. Two hours of recitation and one hour of laboratory a week.
- 240. Orchestral Instruments III.** 1 semester hour. Each semester and summer.  
Continuation of Mus. 235. Two hours of recitation and one hour of laboratory a week.
- 245. Orchestral Instruments IV.** 1 semester hour. Each semester and summer.  
Continuation of Mus. 240. Two hours of recitation and one hour of laboratory a week.

**247. Orchestral Instruments V.** 1 semester hour. Second semester and summer.

Continuation of Mus. 245. Two hours of recitation and one hour of laboratory a week.

**250. Appreciation of Music.** 2 semester hours. Each semester and summer.

A study of musical materials, forms, and styles that will enable the listener to enjoy more fully the music which he may hear at concerts, in broadcasts, and on records.

**255. Broadcast Musical Programs.** 2 semester hours. Each semester and summer.

Planning and arranging broadcasts of musical programs; copyright law as applied to musical broadcasts; theme, transitional background, and incidental music; microphone technic applied to music. Three hours of recitation a week. Prerequisite: Sp. 275 or equivalent.

FOR UNDERGRADUATE AND GRADUATE CREDIT

**411. Workshop in School Music.** 1 to 3 semester hours. Summer.

Operetta and octavo music, unison to eight part, sacred and secular, accompanied and unaccompanied; organization and rehearsal of choral groups. Prerequisite: Mus. 121 and senior standing.

**415. Music Supervision.** 2 semester hours. (See Educ. 470.) Second semester and summer.

Organization, administration, and supervision of music in public schools; materials, methods, organizations, public performances, and festivals. Prerequisite: Mus. 125.

**425. Methods and Materials for the Studio.** 1 semester hour. Each semester.

Methods of teaching fundamentals technic; selection of teaching materials, and outlining of courses of study. For students in the Curriculum in Music (Applied); taught in separate divisions for voice, piano, organ, and violin. Two hours of recitation a week.

**430. Practice Teaching in Applied Music.** 1 semester hour. Second semester.

Practice teaching in private classes for students in the curriculum of Applied Music. Prerequisite: Mus. 425.

**435. Techniques of the Marching Band.** 2 semester hours. First semester.

Band instrumentation; problems of the band on the field, the drum major. Prerequisite: Mus. 132, 247.

**440. Advanced Conducting.** 2 semester hours. Summer.

Score reading, crosscuing, development of left hand technique. Prerequisite: Mus. 222 and consent of instructor.

**445. Ensemble.** 1 semester hour. Each semester and summer.

A graduate course in ensemble techniques and materials. Prerequisite: Consent of instructor.

**455. Psychology of Music.** 3 semester hours. Summer.

Physical and emotional appeal of music, perceptual and musical organization of sound and rhythm; psychology of listening, performing, and composing with a review of experimental studies in these areas; measurement and diagnosis of musical abilities; musical personality. Prerequisite: Psych. 310.

**465. Seminar in Music Education.** 3 semester hours. First semester.

Special phases of music education adapted to need of the student enrolled. Prerequisite: Mus. 125.

**475. Choral Problems.** Credit to be arranged. Summer.

Sight reading, octavo, cantata, and operetta literature for junior and senior high school; problems concerned with the production and staging of choral programs and operettas. Prerequisite: Senior standing.



**515. Advanced Theory I.** 3 semester hours. First semester.

Combination of harmony, counterpoint, and form as used in compositions in their historical setting. Prerequisite: Mus. 165, 180.

**525. Advanced Theory II.** 3 semester hours. Second semester.

Modern chord structures, atonality, polytonality, form used in contemporary compositions. Prerequisite: Mus. 165, 180.

**545. Organ Registration.** 2 semester hours. First semester.

Study of organ specifications and construction as they apply to the practice of the combination of tone. Four hours of recitation a week. Prerequisite: Two semesters of organ or equivalent playing ability.

**555. Service Playing.** 2 semester hours. Second semester.

Problems in playing services in the various liturgical and nonliturgical churches. Four hours of recitation a week. Prerequisite: Two semesters of organ or equivalent playing ability.

**565. Advanced Instrumental Methods.** 2 semester hours. Second semester.

Methods, repertoire, conducting, contest, interpretation, individual instruction, and ensembles. Prerequisite: Mus. 130, 135.

**605. The Opera.** 2 semester hours. First semester.

Survey of the history of opera from 1600 to the present, with a detailed study of a number of the most important operas. Prerequisite: Mus. 195 or Gen. Stud. 132 or equivalent.

**615. Baroque Music: Bach and Handel.** 2 semester hours. Second semester.

Study of the music of the Baroque period, c. 1600-1750, with emphasis on the music of Bach and Handel. Prerequisite: Mus. 165 and Gen. Stud. 260 or equivalent.

**625. The Symphony.** 2 semester hours. Summer.

History of the symphony from 1750 to the present, including a survey of pre-symphonic orchestral literature. Prerequisite: Senior standing.

**635. Music in History.** 3 semester hours. First semester and summer.

Historical developments of music; its relationship to architecture, painting, sculpture, fine arts; its relationship to political, economic, social, and religious life. Prerequisite: Senior standing.

**645. Music Literature I.** 2 semester hours. First semester and summer.

Style characteristics of music as revealed through a careful analysis of the music of different periods.

**655. Music Literature II.** 2 semester hours. Second semester and summer.

Continuation of Mus. 645. Prerequisite: Mus. 645.

**665. Pedagogy of Music Theory.** 2 semester hours. Summer.

The high school theory course, its objects and content; ear-training techniques and development of creative work; music history and appreciation in a high school program. Prerequisite: Mus. 165.

**675. Techniques and Materials of Instrumental Music.** 1 semester hour. Summer.

Prerequisite: Mus. 132 or consent of instructor.

**680. Dance Band I.** 2 semester hours. First semester and summer.

Historical and theoretical aspects of dance band playing; problems relating to the organization, presentation and supervision of high school dance bands; listening to and playing of all styles of dance band literature. Prerequisite: Junior standing or consent of instructor.

**685. Dance Band II.** 2 semester hours. Second semester and summer.

Continuation of the study of styles; rehearsal techniques, orchestration, modern chordal structure, improvisation, selection of music and rhythmic training. Prerequisite: Junior standing or consent of instructor.



**799. Problems in Music.** Credit to be arranged. Each semester and summer.

Prerequisite: Background of courses needed for problem to be undertaken.

FOR GRADUATE CREDIT

**999. Research in Music.** Credit to be arranged. Each semester and summer.

Prerequisite: Registration in the Graduate School, with sufficient training to carry on the line of research to be undertaken.

**COURSES IN APPLIED MUSIC**

FOR UNDERGRADUATE CREDIT

**080. Piano Ensemble.** 0 credit. Each semester. One hour of recitation a week.

Required of students enrolled in the music curriculums.

**090. Recital Attendance.** 0 credit. Each semester.

**271. Laboratory Orchestra.** 1 semester hour. Each semester.

**274. Laboratory Choir.** 1 semester hour. Each semester.

**275. Piano.** 0 to 4 semester hours; maximum of 32 hours allowed. Each semester and summer.

For fees, see table following Mus. 900.

**277. Organ.** 0 to 4 semester hours; maximum of 32 hours allowed. Each semester and summer.

For fees, see table following Mus. 900.

**279. Voice.** 0 to 4 semester hours; maximum of 32 hours allowed. Each semester and summer.

For fees, see table following Mus. 900.

**283. Violin.** 0 to 4 semester hours; maximum of 32 hours allowed. Each semester and summer.

For fees, see table following Mus. 900.

**286. Viola.** 0 to 4 semester hours; maximum of 32 hours allowed. Each semester and summer.

For fees, see table following Mus. 900.

**289. Violoncello.** 0 to 4 semester hours; maximum of 32 hours allowed. Each semester and summer.

For fees, see table following Mus. 900.

**291. Double Bass.** 0 to 4 semester hours; maximum of 32 hours allowed. Each semester and summer.

For fees, see table following Mus. 900.

**293. Flute.** 0 to 4 semester hours; maximum of 32 hours allowed. Each semester and summer.

For fees, see table following Mus. 900.

**296. Oboe.** 0 to 4 semester hours; maximum of 32 hours allowed. Each semester and summer.

For fees, see table following Mus. 900.

**298. Clarinet.** 0 to 4 semester hours; maximum of 32 hours allowed. Each semester and summer.

For fees, see table following Mus. 900.

**301. Bassoon.** 0 to 4 semester hours; maximum of 32 hours allowed. Each semester and summer.

For fees, see table following Mus. 900.

**303. Saxophone.** 0 to 4 semester hours; maximum of 32 hours allowed. Each semester and summer.

For fees, see table following Mus. 900.

- 306. French Horn.** 0 to 4 semester hours; maximum of 32 hours allowed.  
Each semester and summer.  
For fees, see table following Mus. 900.
- 308. Trumpet.** 0 to 4 semester hours; maximum of 32 hours allowed.  
Each semester and summer.  
For fees, see table following Mus. 900.
- 311. Trombone.** 0 to 4 semester hours; maximum of 32 hours allowed.  
Each semester and summer.  
For fees, see table following Mus. 900.
- 313. Tuba.** 0 to 4 semester hours; maximum of 32 hours allowed. Each semester and summer.  
For fees, see table following Mus. 900.
- 316. Percussion.** 0 to 4 semester hours; maximum of 32 hours allowed.  
Each semester and summer.  
For fees, see table following Mus. 900.
- 320. Junior Recital.** 1 semester hour. Second semester.  
A joint solo recital appearance. For students in the Curriculum in Applied Music.
- 325. Senior Recital.** 2 semester hours. Second semester.  
An individual solo recital appearance. For students in the Curriculum in Applied Music.
- 330. Vocal Ensemble.** 1 semester hour. Each semester and summer. Two hours of laboratory a week.  
Elective for students of superior vocal talent.
- 335. Instrumental Ensemble.** 1 semester hour. Each semester and summer. Three hours of laboratory a week.  
Elective for selected students.
- 350. A Cappella Choir.** 1 semester hour. Each semester.  
Membership by tryouts; open to all students.
- 360. College Chorus.** 1 semester hour. Each semester.  
Membership by tryouts; open to all students.
- 365. Kansas State Singers.** 1 semester hour. Each semester.  
Membership by tryouts; open to all students.
- 370. Orchestra.** 1 semester hour. Each semester.  
Membership by tryouts; open to all students.
- 375. Band.** 1 semester hour. Each semester.  
Membership by tryouts; open to all students.

#### FOR GRADUATE CREDIT

- 900. Applied Music.** Credit to be arranged. Each semester and summer.  
Prerequisite: Consent of instructor.

### FEES IN MUSIC

#### Enrolled College Students

- Voice, Piano, Organ, Violin, Violoncello, and all other instruments:  
Two 30-minute lessons each week for a semester including two hours practice room daily—\$35.  
One 30-minute lesson each week for a semester including one hour practice room daily—\$17.50.  
Single lesson rate—\$1.50.

#### Persons Not College Students

- Voice, Piano, Organ, Violin, Violoncello, and all other instruments:  
Two 30-minute lessons each week for a semester—\$42.  
One 30-minute lesson each week for a semester—\$23.

Single lesson rate—\$2.

Practice room, one hour daily for a semester—\$3.

Practice room, two hours daily for a semester—\$5.

Practice room, per additional hour daily for a semester—\$2.50.

Organ rent, one hour daily for a semester—\$10.

Lessons scheduled on legal holidays which are observed by the College will not be made up.

Lessons which fall on school holidays will be made up at the convenience of the teacher.

Instructors are not required to arrange to make up lessons missed by students. In cases of illness or other physical disabilities, however, the instructor may arrange for the make up of lessons.

Lessons missed because of the instructor's absence will be made up.

## PHYSICAL EDUCATION

THOMAS M. EVANS, *Head of Department*

Each student receives a physical examination before enrollment in courses in the Department of Physical Education. Students should take courses 010 for men and 055 for women to satisfy the physical education requirement. Transfer students who enter this College with 15, 25, 44, or 59 hours of credit are excused from one, two, three, or four semesters, respectively, of Phys. Ed. 010 or 055.

For a major, a student should enroll in one of the curriculums in Physical Education.

### COURSES IN PHYSICAL EDUCATION FOR MEN

#### FOR UNDERGRADUATE CREDIT

**010. Physical Education M.** 0 credit. Each semester and summer.

Activities offered: Athletic sports, apparatus work, boxing, calisthenics, individual physical education, swimming, tumbling, and wrestling.

**105. Introduction to Physical Education.** 1 semester hour. First semester.

Introductory survey of the field and study of the principles of health and physical education.

**110. History of Physical Education.** 2 semester hours. First semester.

Prerequisite: Phys. Ed. 105.

**115. Physical Education Activities I.** 2 semester hours. First semester.

Practice and teaching methods of soccer, volleyball, gymnasium games; boxing and wrestling. Six hours of laboratory a week.

**120. Physical Education Activities II.** 2 semester hours. Second semester.

Theory and practice of calisthenics, the gymnastic lesson, and tumbling. Six hours of laboratory a week.

**125. Physical Education Activities III.** 2 semester hours. First semester.

Graded exercises on gymnasium apparatus, rhythms, and pyramids. Six hours of laboratory a week.

**130. Nature and Function of Play.** 2 semester hours. First semester.

Theoretical explanations of play; age and sex characteristics which influence play; values of play to individual and community. Prerequisite: Psych. 310.

**155. Athletic Injuries and First Aid.** 3 semester hours. Second semester and summer.

Standard and advanced Red Cross First Aid certificates given for successful completion of work. Principles and practice of massage, taping, and care of minor athletic injuries. Prerequisite: Zool. 210.

**160. Health Examinations.** 3 semester hours. First semester.

Methods of giving health examinations; postural deviations; corrective exercise. Prerequisite: Phys. Ed. 145.



**165. Public School Program in Physical Education.** 2 semester hours. Second semester.

Educational, health, and recreative significance and content of the school program; types of activities to be used in grades and high school. Prerequisite: Senior standing.

**170. Practice Teaching in Physical Education.** 2 semester hours. Second semester.

Supervised students assist in physical education classes and officiate in intramural games. Six hours of laboratory a week.

**185. Swimming M.** 1 semester hour. Second semester and summer.

Theory and practice of various swimming strokes, diving, treading water, and floating. Methods of teaching swimming. Three hours of laboratory a week. Prerequisite: One semester of swimming or passing Red Cross intermediate swimmer's test.

**190. Technics of Football.** 2 semester hours. Second semester.

Study of rules, theory, and practice; methods of coaching.

**195. Technics of Basketball.** 2 semester hours. First semester.

Study of rules, theory, and practice; methods of coaching.

**200. Technics of Baseball.** 2 semester hours. First semester.

Study of rules, theory, and practice; methods of coaching.

**205. Technics of Track and Field.** 2 semester hours. Second semester.

Study of rules, theory, and practice; methods of coaching.

**210. Tennis and Golf.** 1 semester hour. Second semester.

Study of rules, theory, and practice; methods of coaching.

**215. Sports Officiating.** 1 semester hour. First semester.

Principles and practices of officiating athletic games.

FOR UNDERGRADUATE AND GRADUATE CREDIT

**425. Community Recreation.** 2 semester hours. Second semester and summer.

A study of organization and activities of club work for youth, camping, playgrounds, and indoor recreation centers. Prerequisite: Phys. Ed. 130, Psych. 310.

**445. Physiology of Exercise.** 2 semester hours. Second semester and summer.

Effects of exercise on the tissues, systems, and organs of the body. Prerequisite: Zool. 465.

**465. Tests and Measurements in Physical Education.** 3 semester hours. First semester and summer.

A study of capacity, achievement, knowledge, and skill tests, for purposes of classification and measurement of school progress. Prerequisite: Educ. 405.

**485. Curriculum Construction in Physical Education.** 2 semester hours. Second semester and summer.

A study of materials, problems, and guiding principles involved in curriculum construction. Prerequisite: Phys. Ed. 165 or equivalent.

**505. Administration of Physical Education in Colleges and Universities.** 2 semester hours. First semester and summer.

**525. Advanced Methods of Teaching Physical Education.** 2 semester hours. Second semester and summer.

Prerequisite: Phys. Ed. 105 or equivalent.

**545. Seminar in Physical Education.** Credit to be arranged.

Recent trends and problems in physical education. Prerequisite: Senior standing and consent of instructor.

**565. Seminar in Health Education.** Credit to be arranged.

Recent trends and problems in health education. Prerequisite: Phys. Ed. 150 and consent of instructor.

## FOR GRADUATE CREDIT

**820. Supervision of Physical Education.** 2 semester hours. Second semester and summer.

A study of the objectives, organization, and methods of supervision for elementary and secondary schools. Prerequisite: Educ. 150, Phys. Ed. 150.

**840. Administration of School Health Education Program.** 2 semester hours. First semester and summer.

A study of the organization and administration of health service, health instruction, and health environment for primary and secondary schools; health councils. Prerequisite: Phys. Ed. 175.

**860. Advanced Athletic Coaching.** 3 semester hours. Summer.

For advanced students of football and basketball. Underlying principles of major sports strategy, the designing of plays, methods of teaching and controlling players; special problems of management connected with selecting, handling equipment and making trips. Prerequisite: Graduate standing and one year of coaching experience.

**999. Research in Physical Education.** Credit to be arranged.

Prerequisite: Registration in the Graduate School, with sufficient training to carry on the line of research to be undertaken.

## COURSES IN PHYSICAL EDUCATION FOR WOMEN

KATHERINE GEYER, *In Charge*

Recreational swimming is offered on Tuesdays and Thursdays at 5 o'clock for women registered in College.

## FOR UNDERGRADUATE CREDIT

**055. Physical Education W.** 0 credit. Required. Each semester and summer.

Activities offered: Archery, basketball, bowling, folk and tap dancing, golf, hockey, individual and Danish gymnastics, modern dance; recreational sports, rifle, soccer, softball, social dancing, swimming, and tennis.

**065. Physical Education W Lectures.** 0 credit. Each semester.

Required of women enrolled in the Curriculum in Physical Education for Women. Orientation and general survey of the field, health, physical education, and recreation.

**250. Physical Education Orientation.** 1 semester hour. Second semester.

Self-testing activities and motor ability tests to determine exemption from service courses in soccer, speedball, softball, volleyball, basketball, swimming and tennis. For freshman women majors in Physical Education. Three hours of laboratory a week.

**265. Recreational Leadership W.** 2 semester hours. Second semester.

Principles and methods of organizing communities for leisure activities.

**270. Tumbling and Recreational Sports.** 2 semester hours. First semester.

Theory and practice of tumbling and recreational sports. One hour of recitation and three hours of laboratory a week.

**280. Playground Activities.** 3 semester hours. Each semester and summer.

Organization and administration of playground activities and equipment; history of the playground movement, types of games suitable for different age periods; practice teaching in elementary schools. Two hours of recitation and three hours of laboratory a week. Prerequisite: Sophomore standing.



**285. Individual Activities.** 2 semester hours. Second semester.

Methods of teaching tennis, badminton, and archery. One hour of recitation and three hours of laboratory a week. Prerequisite: Ability to play tennis.

**295. Team Sports I.** 2 semester hours. First semester.

Methods of teaching softball, hockey, and volleyball. One hour of recitation and three hours of laboratory a week. Prerequisite: Ability to play softball, volleyball, and hockey.

**300. Team Sports II.** 2 semester hours. First semester.

Methods of teaching soccer, speedball, and basketball. One hour of recitation and three hours of laboratory a week. Prerequisite: Ability to play soccer or speedball and basketball.

**305. Health Examinations and First Aid.** 3 semester hours. First semester.

Methods of giving health examinations, analysis of normal body mechanics, postural deviations; first aid emergency treatment. Two hours of recitation and three hours of laboratory a week. Prerequisite: Phys. Ed. 290, Zool. 210, 465.

**315. Therapeutics and Massage.** 3 semester hours. Second semester.

Postural defects studied and exercises given for correction of each: general and local massage practiced for cases which can be treated by the Department of Physical Education. Two hours of recitation and three hours of laboratory a week. Prerequisite: Phys. Ed. 290, 305, Zool. 210.

**320. Folk, Tap, and Social Dance.** 2 semester hours. Second semester.

Methods of teaching folk, tap, and social dance to all age levels. Six hours of laboratory a week. Prerequisite: Phys. Ed. 275 and one semester of Phys. Ed. 055 in folk, tap, and social dance.

**325. Methods and Materials of Modern Dance.** 2 semester hours. First semester.

History of the dance, methods of teaching modern dance. One hour of recitation and three hours of laboratory a week. Prerequisite: Semester each of beginning and intermediate modern dance.

**330. Teaching and Adaptation of Physical Education.** 3 semester hours. First semester.

Organization of physical education material for progressive program in elementary schools, and junior and senior high schools; teaching methods to achieve desired aims of education. Prerequisite: Phys. Ed. 255, 270, 280, 285, 295, 300, 320.

**340. Swimming.** 2 semester hours. Second semester.

Methods of teaching swimming. One hour of recitation and three hours of laboratory a week. Prerequisite: Semester each of beginning and intermediate swimming.

**345. Dance Composition.** 1 semester hour. Each semester.

Advanced modern dance technique, composition and accompaniment. Participation in one studio production. Three hours of laboratory a week. Prerequisite: Phys. Ed. 055, one semester of modern dance, or consent of instructor. May not be taken more than four semesters for credit.

**855. Principles and Philosophy of Physical Education.** 3 semester hours. First semester.

Aims and objectives of physical education, historical development, relation to general education, analysis of programs and methods. Prerequisite: Junior standing.

**365. Health and Safety Education W.** 2 semester hours. Summer.

Organization of material pertaining to health and hygiene, safety, and accident prevention, as recommended for the schools of Kansas.



**COURSES FOR MEN AND WOMEN****FOR UNDERGRADUATE CREDIT**

- 136. Personal and Community Health.** 3 semester hours. Each semester and summer.
- 150. Administration of Health and Physical Education.** 3 semester hours. First semester.  
Prerequisite: Junior standing.
- 175. Teaching Health.** 2 semester hours. Second semester.  
Materials and methods of teaching health at the junior and senior high school level. Prerequisite: Phys. Ed. 136, Zool. 210, 465.
- 220. Methods in Physical Education in Elementary Schools.** 2 semester hours. Summer.  
Methods of teaching and organization of material for a progressive elementary school program.
- 275. Fundamentals of Rhythms.** 2 semester hours. Second semester.  
Body rhythm, fundamentals of music, percussion accompaniment for rhythmic activities and traditional dance rhythms. Four hours of laboratory a week.
- 290. Kinesiology.** 2 semester hours. Second semester.  
Mechanics of movement; body movements analyzed and principles involved applied to the teaching of physical education. Prerequisite: Zool. 210.
- 350. First Aid.** 2 semester hours. Each semester and summer.  
Prevention of accidents and the treatment of injuries in an emergency. Upon satisfactory completion of this course, a certificate is awarded by the American Red Cross and the holder is in line for consideration as an instructor in first aid. Not open to students in the curriculum in Physical Education.

**FOR UNDERGRADUATE AND GRADUATE CREDIT**

- 799. Problems in Physical Education.** Credit to be arranged.  
Prerequisite: Background of courses needed for problem to be undertaken.

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**PHYSICS**

STUART E. WHITCOMB, *Head of Department*

For a minor, the student should complete Phys. 110 and 120 (or 130 and 140) and at least eight semester hours of course work from courses numbered 400-600.

For a major, a student should enroll in the Curriculum in Physics if he plans to enter physics as a profession in industrial or governmental research work or if he plans to enter graduate school. Prospective teachers should enroll in the Curriculum in Secondary Education with a physics or physical science major.

- 110. General Physics I.** 4 semester hours. Each semester and summer.  
Mechanics, heat, and sound. Three hours of recitation and three hours of laboratory a week. Prerequisite: Math. 190.
- 120. General Physics II.** 4 semester hours. Each semester and summer.  
Magnetism, electricity, and light. Three hours of recitation and three hours of laboratory a week. Prerequisite: Phys. 110.
- 130. Engineering Physics I.** 5 semester hours. Each semester and summer.  
Mechanics, heat, and sound for technical students. Four hours of recitation and three hours of laboratory a week. Prerequisite: Math. 215 or concurrent registration.

- 140. Engineering Physics II.** 5 semester hours. Each semester and summer.  
Magnetism, electricity, and light for technical students. Four hours of recitation and three hours of laboratory a week. Prerequisite: Phys. 130.
- 210. Household Physics.** 4 semester hours. Each semester and summer.  
Physical laws and principles involved in household appliances. Three hours of recitation and three hours of laboratory a week.
- 220. Descriptive Physics.** 3 semester hours. Each semester.  
Two hours of recitation and three hours of laboratory a week.
- 230. Agricultural Physics.** 3 semester hours. Each semester and summer.  
Fundamental principles as related to agriculture. Required of students in agriculture who enter without high school physics. Two hours of recitation and three hours of laboratory a week.
- 240. Physics for Musicians.** 2 semester hours. Each semester.  
Selected topics applied to the physics of music and musical instruments.
- 350. Descriptive Astronomy.** 3 semester hours. Each semester.
- 360. Introductory Meteorology.** 3 semester hours. Each semester.  
Weather phenomena and principles of forecasting; climatic factors; relation of weather studies to agriculture, general science, and physiology.
- 370. Photography.** 2 semester hours. Each semester and summer.  
Chemical and physical principles involved in photography; practice in making good negatives and prints. One hour of recitation and three hours of laboratory a week.

## FOR UNDERGRADUATE AND GRADUATE CREDIT

- 405. Demonstration Experiments in Physics.** 2 semester hours.  
Apparatus and demonstration methods in teaching physics. One hour of recitation and three hours of laboratory a week. Prerequisite: Phys. 120 or 140.
- 410. Light.** 3 semester hours. First semester.  
Prerequisite: Math. 245 or 290, Phys. 120 or 140.
- 420. Light Laboratory.** 1 semester hour.  
Prerequisite: Phys. 410 or concurrent enrollment.
- 432. Mechanics I.** 3 semester hours. First semester.  
Principles of statics and dynamics of particles and rigid bodies by the methods of the calculus. Prerequisite: Math. 245 or 290. Phys. 120 or 140.
- 434. Mechanics II.** 2 semester hours. Second semester.  
Continuation of Phys. 432. Prerequisite: Phys. 432.
- 440. Sound.** 3 semester hours.  
Prerequisite: Math. 245 or 290, Phys. 120 or 140.
- 450. Heat and Thermodynamics.** 3 semester hours. Second semester and alternate summers.  
Prerequisite: Math. 245 or 290, Phys. 120 or 140.
- 460. Heat Laboratory.** 1 semester hour.  
Prerequisite: Phys. 450 or concurrent enrollment.
- 471. Electricity and Magnetism.** 4 semester hours. Second semester and summer.  
Principles of electricity and magnetism by the methods of the calculus. Prerequisite: Math. 245 or 290, Phys. 120 or 140.

- 480. Electricity and Magnetism Laboratory.** 1 semester hour.  
Prerequisite: Phys. 471 or concurrent enrollment.
- 520. Electronic Physics I.** 3 semester hours. First semester.  
Prerequisite: Math. 245 or 290, Phys. 471, 480.
- 522. Electronic Physics Laboratory.** 1 semester hour.  
Prerequisite: Phys. 520 or concurrent registration.
- 530. Electronic Physics II.** 3 semester hours.  
Prerequisite: Phys. 515.
- 545. Advanced Electronic Physics Laboratory.** 1 semester hour.  
Prerequisite: Phys. 515.
- 560. Atomic Physics.** 3 semester hours. First semester.  
Contemporary theories and problems. Prerequisite: Math. 245 or 290, Phys. 120 or 140.
- 575. Nuclear Physics.** 3 semester hours. Second semester.  
Modern theories of nuclear physics. Prerequisite: Phys. 560 or consent of instructor.
- 591. Modern Physics Laboratory I.** 1 semester hour. First semester.  
Selected experiments in atomic and nuclear physics designed to develop appropriate laboratory techniques and methods. Three hours of laboratory a week. Prerequisite: Phys. 560 or concurrent registration.
- 593. Modern Physics Laboratory II.** 1 semester hour. Second semester.  
Continuation of Phys. 591. Three hours of laboratory a week. Prerequisite: Phys. 575 or concurrent enrollment.
- 604. X-ray and Crystal Physics.** 3 semester hours.  
Prerequisite: Phys. 471.
- 607. X-ray Laboratory.** 1 semester hour.  
Three hours of laboratory a week. Prerequisite: Phys. 604 or concurrent enrollment.
- 618. Geophysics I.** 3 semester hours. First semester.  
Principles and methods of exploration geology by physical methods. Prerequisite: Phys. 120 or 140.
- 621. Geophysics II.** 3 semester hours. Second semester.  
An extension of Phys. 618 to include a quantitative treatment of geophysical principles. Prerequisite: Phys. 471 and 618.
- 625. Applied Spectroscopy.** 3 semester hours. Second semester.  
Spectrographic methods for detecting, qualitatively and quantitatively, chemical constituents of minerals, metals, and biological specimens. Two hours of recitation and three hours of laboratory a week.
- 635. Radioactive Tracer Techniques.** 3 semester hours. When scheduled or on request of a sufficient number. (See Chem. 635.)  
Physics and chemistry of radioactive substances in fields of biological and physical science. Two hours recitation and three hours of laboratory a week. Taught in cooperation with the Department of Chemistry. Prerequisite: Consent of instructor.
- 740. Colloquium in Physics.**  
Required of graduate majors and undergraduate majors.
- 799. Topics in Physics.** Credit to be arranged.  
Work is offered in electricity, electronics, heat, light, mechanics, nuclear physics, sound and vibrations, spectroscopy, and X-ray. Prerequisite: Background of courses needed for topic to be undertaken.

## FOR GRADUATE CREDIT

- 805. Theoretical Physics I.** 3 semester hours. First semester.  
Prerequisite: Math. 600, 615, or concurrent enrollment.



- 815. Theoretical Physics II.** 3 semester hours. Second semester.  
Prerequisite: Phys. 805, Math. 620, or concurrent enrollment.
- 825. Advanced Dynamics.** 3 semester hours.  
Prerequisite: Phys. 815.
- 835. Electrodynamics.** 3 semester hours.  
Prerequisite: Phys. 815.
- 845. Thermodynamics.** 3 semester hours.  
Prerequisite: Phys. 815.
- 855. Statistical Mechanics.** 3 semester hours.  
Prerequisite: Math. 600, 620, Phys. 450.
- 865. Quantum Mechanics I.** 3 semester hours. First semester.  
Prerequisite: Phys. 805 or concurrent enrollment.
- 875. Quantum Mechanics II.** 3 semester hours. Second semester.  
Prerequisite: Phys. 865.
- 885. Quantum Mechanics III.** 3 semester hours.  
Prerequisite: Phys. 825, 875.
- 895. Atomic Spectra.** 3 semester hours. First semester.  
Prerequisite: Math. 600, Phys. 560 or consent of instructor.
- 905. Molecular Spectra.** 3 semester hours. Second semester.  
Prerequisite: Phys. 895 or consent of instructor.
- 915. Advanced Molecular Spectra.** 3 semester hours.  
Prerequisite: Phys. 905.
- 925. X-ray.** 3 semester hours.  
Prerequisite: Math. 600, Phys. 604.
- 935. Theory of the Solid State.** 3 semester hours.  
Prerequisite: Phys. 815.
- 945. Advanced Nuclear Physics.** 3 semester hours.  
Prerequisite: Math. 620, Phys. 575, 865.
- 955. Mathematical Physics.** 3 semester hours.  
Prerequisite: Phys. 815.
- 999. Research in Physics.** Credit to be arranged.  
Work is offered in electricity, electronics, light, nuclear physics, sound, spectroscopy, thermodynamics, theoretical physics, and X-ray.  
Prerequisite: Registration in the Graduate School, with sufficient training to carry on the line of research to be undertaken.

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## PSYCHOLOGY

ARTHUR H. BRAYFIELD, *Head of Department*

Psychology is the study of human behavior. The courses in this department fall into two groups: (1) General cultural courses suitable for all students who wish to develop understanding and skill in human relations and including 310, 325, 605, 615, 635, 638, 645, 655, 684, 700, 765, and 770; (2) pre-professional courses which include most of the remainder. These provide professional preparation for work in such fields as business and industrial personnel, student personnel and counseling, applied social psychology, and clinical services, and prepare for advanced graduate study. They are useful as supplemental courses for students in agricultural and business administration, child welfare, education, engineering, and sociology in particular.

The minor in psychology is intended for students who want courses in psychology for general education or as a supplement to some field of

specialization. It includes course 310 and 12 additional semester hours of psychology.

Work for the major should be planned in cooperation with a member of the full-time psychology staff and be approved by the head of the department. Mimeographed copies of suggested major sequences may be obtained from the psychology staff.

FOR UNDERGRADUATE CREDIT

**100. Educational Psychology I: Pupil Development.** (See Educ. 100.)

**105. Educational Psychology II: Learning.** (See Educ. 105.)

**310. General Psychology.** 3 semester hours. Each semester and summer. The study of human behavior: methods, findings, principles.

**325. General Applied Psychology.** 2 semester hours. Each semester and summer.

Application of psychological methods, findings, and principles to human affairs. Psychology in business and industry, government, education, law, medicine and everyday activities. Prerequisite: Psych. 310.

**335. Introduction to Student Personnel.** 2 semester hours. Each semester. Maximum credit, 4 semester hours.

Survey of student personnel services in colleges and universities, with emphasis upon residence hall programs. Includes supervised experience in personnel procedures. Enrollment limited primarily to students selected as personnel assistants in the residence halls. Prerequisite: Psych. 310 and consent of instructor.

FOR UNDERGRADUATE AND GRADUATE CREDIT

**410. Advanced General Psychology.** 3 semester hours. First semester.

Intensive study of selected topics in general psychology including sensation and perception, motivation, emotion, learning, problem-solving, and creative thinking. Prerequisite: Psych. 310.

**605. Abnormal Psychology.** 3 semester hours. Each semester and summer.

Behavioral and mental disorders; psychoses, psychoneuroses, and psychopathies; causes and methods of prevention and correction of therapy. Prerequisite: Psych. 310 and sophomore standing.

**615. Psychology of Childhood and Adolescence.** 3 semester hours. Each semester and summer.

Genetic studies of the trends in the development of structures, capacities, interests, and personality that facilitate understanding and control of the behavior of childhood and adolescence. Prerequisite: Psych. 310 and sophomore standing.

**625. Psychology of Exceptional Children.** 3 semester hours. Each semester and summer.

Introduction to the major forms of exceptionality: mental retardation, giftedness, subject disabilities, physical handicap, speech disorders, emotional and behavior problems including delinquency. Methods of identification and provisions for adjustment and remediation. Prerequisite: Psych. 615.

**635. Social Psychology.** 3 semester hours. Each semester and summer.

Psychology of the interrelations between the individual and groups of people. Prerequisite: Psych. 310; sophomore standing.

**636. Advanced Social Psychology.** 3 semester hours. Second semester.

Selected topics in social psychology including the effects of social factors on individual motivation and perception, interaction patterns in large-scale groups, relationship of theories of individual psychology to social behavior, and opinion-attitude research. Prerequisite: Psych. 635 and junior standing.



**638. Group Dynamics.** 3 semester hours. Second semester and summer.

Social psychological processes operating in groups; analysis of patterns and techniques of communication, development of group standards, effects of group pressures, leadership; methods of observing group behavior. Prerequisite: Psych. 635, junior standing or consent of instructor.

**645. Psychology of Personality.** 3 semester hours. First semester.

Nature, development, integration, measurement, and theories of personality, with consideration of biological and environmental factors. Prerequisite: Psych. 615, 635; senior standing.

**655. Mental Hygiene.** 3 semester hours. First semester and summer.

Problems of mental health and mental hygiene; positive guidance of everyday living to promote desirable personality traits and to facilitate personal and social adjustment. Prerequisite: Psych. 310; junior standing.

**665. Experimental Psychology.** 3 semester hours. Second semester.

Experimental studies of certain sensory, motor, and perceptual processes and of various forms and levels of learning, including problem solving and generalization; analysis and comparison of results in the literature on related studies. Prerequisite: Psych. 310, 410, a course in statistics or concurrent enrollment; junior standing.

**675. Comparative Psychology.** 3 semester hours. Second semester.

Experimental study of behavior of diverse animals as an introduction to the biological foundations of human behavior; sensory capacities, perception, adaptive behavior, learning, insight, social behavior, and other functions; methodology and psychological apparatus. Prerequisite: Junior standing and consent of instructor.

**684. Essentials of Psychological Testing.** 3 semester hours. Each semester and summer.

Different types of psychological tests including group and individual with emphasis upon their special uses; basic principles of measurements underlying each type of test; test administration, scoring, and interpretation. Prerequisite: Psych. 310; sophomore standing.

**695. Individual Testing.** 3 semester hours. Second semester and summer.

Origin and development of basic concepts and practices in individual psychological testing; current standard individual tests including Stanford-Binet, Wechsler-Bellevue and selected preschool tests; supervised experience in test administration, scoring, interpretation, and report writing. Prerequisite: Psych. 310, a course in statistics or concurrent enrollment; junior standing.

**700. Individual Differences.** 3 semester hours. First semester and summer.

Objective and quantitative investigation of human variability; nature, extent, and causes of individual differences; significance for business and industrial, governmental, and educational policies and practices. Prerequisite: Psych. 310; junior standing.

**705. Psychology of Advertising and Selling.** 3 semester hours. Second semester.

Psychological principles involved in effective advertising and selling; appropriate technics for the analysis and motivation of buying behavior with special attention to recent experimental findings. Prerequisite: Psych. 310; sophomore standing.

**715. Personnel Psychology.** 3 semester hours. Each semester and summer.

Psychological aspects of job analysis and evaluation, employee selection, training, and evaluation; problems in human relations including employee morale, supervision, communication, and employee counseling; practice in applying personnel methods. Prerequisite: Psych. 310; junior standing.



**726. Industrial Psychology.** 2 semester hours. First semester.

Conditions affecting worker efficiency; illumination, ventilation and heating, noise and distractions, work lay-out, hours, shifts, and rest periods; adaptation of machines and equipment to human capacities. Prerequisite: Psych. 310; junior standing.

**730. Occupational Information.** 2 semester hours. Summer.

Description of the labor force and dynamics of the labor market; development and sources of specific occupational information including training opportunities; applications of occupational information in counseling, guidance, and personnel work. Prerequisite: Junior standing.

**735. Personnel Practicum.** Credit to be arranged. Each semester and summer.

Directed experience in the application of psychological principles and procedures to personnel work in business and industry or in colleges and universities. Prerequisite: Psych. 715, 745, and nine additional semester hours credit in applied psychology or related personnel courses; senior standing.

**745. Introduction to Counseling.** 3 semester hours. Second semester and summer.

Clinical procedures applied to the diagnosis and treatment of educational, vocational, and personal problems. Prerequisite: Psych. 684 and nine additional hours of psychology, junior standing.

**765. Psychology of Art.** 3 semester hours. Each semester and summer.

Philosophy of art and a study of the facts and principles of psychology used in the production and appreciation of art; emphasis on pictorial art. Prerequisite: Psych. 310; sophomore standing.

**770. Psychology of Music.** (See Mus. 455.)**775. History and Systems of Psychology.** 3 semester hours. Second semester.

Basis for the organization and integration of the student's psychological knowledge; history, systems, leaders and current trends in the development of psychology as a science. Prerequisite: Twelve semester hours credit in psychology and senior standing.

**785. Psychology Seminar.** 1 semester hour. Each semester.

Prerequisite: 15 semester hours in psychology, senior standing, and consent of instructor.

**799. Problems in Psychology.** Credit to be arranged. Each semester and summer.

Prerequisite: Background of courses needed for problem to be undertaken.

## FOR GRADUATE CREDIT

**845. Advanced Counseling.** 3 semester hours. First semester and summer.

Current theories of counseling; case studies. Prerequisite: Fifteen semester hours in psychology including measurement; consent of instructor.

**855. Counseling Practicum.** Credit to be arranged. Each semester and summer.

Supervised field practice in the collection and preparation of clinical data; analysis of case reports. Participation in student counseling. Prerequisite: Psych. 845 or concurrent registration; consent of instructor.

**970. Psychology of Learning.** 3 semester hours. First semester.

A critical study of the theoretical and experimental literature on learning; analysis of various forms of learning; principles, procedures, and conditions favorable to acquisition, retention, and effective functioning of knowledge, skills, attitudes and purposes; problem solving,

generalization, and transfer. Prerequisite: Fifteen hours credit in psychology.

**999. Research in Psychology.** Credit to be arranged. Each semester and summer.

Prerequisite: Registration in the Graduate School, with sufficient training to carry on the line of research to be undertaken.

## SPEECH

JOHN W. KELTNER, *Head of Department*

The Department of Speech offers work in the following general areas of study: General Speech and Speech Education, Theatre and Interpretation, Rhetoric and Public Address, Discussion and Conference, Radio and Television, and Speech Therapy.

A major may be selected with an emphasis in any of these areas or a combination of areas. For the major in any area or combination the following courses are required: 165; either 135, 155, or 285; either 176, 405, or 436; one course each in two of the three areas of theatre, radio, and speech therapy; and additional hours as required in the area selected for the major.

Work for the major should be planned in conference with a member of the speech staff assigned to the student as an adviser by the head of the department. When the program is planned it must be approved by the head of the department.

Special programs are available in each of the areas listed above and the requirements for these programs may be secured from the staff of the department or in the departmental office.

For a minor in any field in the department: 15 hours selected in consultation with the department. The minor program must be approved by the head of the department.

### COURSES IN GENERAL SPEECH AND SPEECH EDUCATION

FOR UNDERGRADUATE CREDIT

**105. Oral Communication I.** 2 semester hours. Each semester and summer.

Selection and outlining of material with special emphasis on logic and with oral presentation practice. Coordinated with Engl. 125, 135.

**115. Oral Communication II.** 2 semester hours. Each semester and summer.

Sp. 105 continued with special attention to illustrative material. Prerequisite: Sp. 105.

**135. Voice and Diction.** 2 semester hours. Each semester and summer.

Improvement of the voice by study of the speech mechanism, tone quality, and enunciation by means of oral drill. Prerequisite: Sp. 105, or concurrent enrollment.

**155. Oral Reading.** 2 semester hours. Each semester and summer.

Attainment of some proficiency in the art of reading aloud. Prerequisite: Sp. 135.

**165. Elements of Phonetics.** 2 semester hours. Second semester.

Sounds which make up human speech and consideration of how these sounds vary physically, physiologically, and phonetically. The student will become familiar with the international phonetic alphabet and transcribe from spontaneous and tape recorded speech.

**216. Theory and Principles of Communicative Behavior.** 2 semester hours. Each semester.

Study of bases of oral communication.

## FOR UNDERGRADUATE AND GRADUATE CREDIT

- 450. Teaching of Speech.** 3 semester hours. Second semester and summer. Methods and techniques in the teaching of speech and direction of speech activities. Prerequisite: Sp. 105, eight additional hours in speech, and consent of instructor.
- 799. Problems in Speech.** Credit to be arranged. Each semester and summer. Prerequisite: Sp. 135 or 155.

## FOR GRADUATE CREDIT

- 800. Introduction to Graduate Study in Speech.** 2 semester hours. First semester and summer. Methods of research and investigation in speech, nature of research in speech. Required of all graduate majors. Prerequisite: Graduate standing.
- 999. Research in Speech.** Credit to be arranged. Each semester and summer. Work is offered in all of the areas of speech. Prerequisite: Graduate standing and consent of instructor.

## COURSES IN THEATRE AND INTERPRETATION

## FOR UNDERGRADUATE CREDIT

- 235. Dramatic Participation.** 1 or 2 semester hours. Each semester and summer. Prerequisite: Junior standing.
- 245. Acting and Rehearsal I.** 2 semester hours. First semester and summer. Fundamentals of acting, using Kansas State Players productions as laboratory. One hour of recitation and three hours of laboratory a week.
- 255. Elementary Stagecraft.** 2 semester hours. Each semester and summer. Construction, function, and operation of scenery.

## FOR UNDERGRADUATE AND GRADUATE CREDIT

- 472. Storytelling.** 2 semester hours. Each semester. Oral interpretation of literature for children, with special emphasis on aspects of delivery. Prerequisite: Sp. 105.
- 475. Oral Interpretation of Shakespearean Plays.** 2 semester hours. Each semester. Oral interpretation of selected plays by Shakespeare with attention to techniques for effective public reading presentation. Prerequisite: Sp. 105, 155.
- 480. Playwriting.** 3 semester hours. Second semester and summer. Theoretical study and practical application of fundamentals of playwriting with regard to plot, characters, and production; adaptation of drama for the medium of television. Prerequisite: Junior standing and consent of instructor.
- 526. Oral Interpretation of Literature.** 3 semester hours. Each semester. Application of principles of oral reading to interpretation of prose, poetry, and drama. Prerequisite: Sp. 155.
- 530. Projects in Interpretation.** 1 to 3 semester hours. Each semester. Special work and projects for qualified students. A total of six semester hours may be taken. Prerequisite: Sp. 526 or consent of instructor.



- 535. Dramatic Production I.** 2 semester hours. Each semester and summer.  
Theory of and practice in fundamentals of acting and direction. One hour of recitation and three hours of laboratory a week. Prerequisite: Sp. 105.
- 545. Dramatic Production II.** 2 semester hours. Each semester and summer.  
Projects in direction and stagecraft. Six hours of laboratory a week. Prerequisite: Sp. 535.
- 555. Acting and Rehearsal II.** 2 semester hours. Second semester and summer.  
Characterization, interpretation, voice, pantomime, and ensemble. One hour of recitation and three hours of laboratory a week. Prerequisite: Sp. 245.
- 566. Scene Design.** 3 semester hours. Each semester and summer.  
Application of principles of design to stage settings; scenic design for plays, utilizing sketches, diagrams, plates, and models; work in production of Kansas State Players. Prerequisite: Sp. 255.
- 575. Stage Lighting.** 2 semester hours. First semester and summer.  
History, problems of application, design of lighting for various types of plays and styles of production. One hour of recitation and three hours of laboratory a week. Prerequisite: Sp. 255.
- 586. Advanced Stagecraft.** 2 semester hours. Second semester.  
Advanced technical problems, including stage makeup, history of stage costumes, stage properties, and architectural requirements of the theatre. Prerequisite: Sp. 255.
- 600. Techniques of Makeup.** 2 semester hours. First semester and summer.  
Techniques of makeup for stage, movies, and television. Prerequisite: Sp. 545.
- 605. Development of the Theatre I.** 3 semester hours. First semester and alternate summers.  
History of the theatre from the beginning to the end of the nineteenth century.
- 615. Development of the Theatre II.** 3 semester hours. Second semester and alternate summers.  
History of the theatre in America.
- 799. Problems in Speech.** Credit to be arranged. Each semester and summer.  
Prerequisite: Sp. 135 or 155.

## COURSES IN RHETORIC AND PUBLIC ADDRESS

### FOR UNDERGRADUATE CREDIT

- 176. Argumentation and Debate.** 3 semester hours. Each semester.  
Basic theories of argumentation with emphasis on their application in debate. Prerequisite: Sp. 105.
- 185. Intercollegiate Debate I.** 2 semester hours. Second semester.  
Open only to members of the intercollegiate debate squads. Prerequisite: Sp. 175.
- 195. Intercollegiate Debate II.** 2 semester hours. Second semester.  
Open only to members of the intercollegiate debate squads. Prerequisite: Sp. 175.

- 205. Parliamentary Law.** 1 semester hour. Each semester and summer.  
Study and practical application of the rules of parliamentary procedure. Prerequisite: Sp. 105.
- 225. Oratorical Contest.** 2 semester hours. Each semester.

## FOR UNDERGRADUATE AND GRADUATE CREDIT

- 405. Persuasion.** 3 semester hours. Each semester and summer.  
Principles and practice in methods of oral persuasion in human relations. Prerequisite: Sp. 105.
- 415. Advanced Debate.** 2 semester hours. Each semester and summer.  
Advanced study of and participation in the methods of persuasion in public discussion and formal debate. Prerequisite: Sp. 175.
- 425. Public Program.** 2 semester hours. Second semester and summer.  
Planning, building, and presenting nonradio public programs. Prerequisite: Sp. 105.
- 440. History of American Public Address.** 3 semester hours. Second semester.  
Study of American speakers, from time of Jonathan Edwards to the present, including their training, speeches, and effectiveness. Prerequisite: Sp. 176, 405, or consent of instructor.
- 442. History of Rhetorical Theory.** 3 semester hours. First semester and alternate summers.  
History of the development of rhetorical theory from early Greek to modern times. Prerequisite: Sp. 105 and consent of instructor.
- 470. Business and Professional Speaking.** 2 semester hours. Each semester.  
Effective and oral reading for presentation of technical and other material to lay audiences and technical societies. Prerequisite: Junior standing, Sp. 105, and consent of instructor.
- 510. Rhetorical Criticism.** 2 semester hours. Second semester and alternate summers.  
Problems in the theory and criticism of rhetorical works. Prerequisite: Sp. 442 and consent of instructor.
- 799. Problems in Speech.** Credit to be arranged. Each semester and summer.  
Prerequisite: Sp. 176 or 405.

## COURSES IN DISCUSSION AND CONFERENCE

## FOR UNDERGRADUATE AND GRADUATE CREDIT

- 436. Group Discussion Methods.** 3 semester hours. Each semester and summer.  
Principles and techniques of discussion for committee, conferences, public discussions, and human relations in education, and in business and professional life. Prerequisite: Sp. 105.
- 437. Discussion and Conference Leadership.** 2 or 3 semester hours. Second semester and alternate summers.  
Principles and functions of leadership in discussion and conference activities. Prerequisite: Sp. 436 or consent of instructor.
- 438. Studies in Group Discussion Methods.** 2 semester hours. Second semester, alternate years, and alternate summers.  
Problems in the theory and research in group discussion and leadership. Prerequisite: Psych. 638 and Sp. 437.
- 799. Problems in Speech.** Credit to be arranged. Each semester and summer.  
Prerequisite: Sp. 436.

## COURSES IN SPEECH THERAPY

### FOR UNDERGRADUATE CREDIT

- 090. Remedial Instruction in Speech.** 0 credit. Each semester.  
Remedial instruction in individual problems of voice and diction.  
Open to students upon recommendation of any faculty member.

### FOR UNDERGRADUATE AND GRADUATE CREDIT

- 455. Speech Correction for the Classroom Teacher.** 3 semester hours. Second semester and summer.  
Types and etiology of speech problems and methods which the classroom teacher can employ. Prerequisite: Sp. 135 or consent of instructor.
- 465. Introduction to Speech Pathology.** 3 semester hours. First semester.  
Types of speech problems and consideration of etiology in relation to these types. Prerequisite: Sp. 135, 165.
- 467. Anatomy and Physiology of Speech.** 3 semester hours. Second semester.  
Anatomy and physiology of the mechanisms of speech; the larynx, the chest and cardial areas, the nose and throat, and the mouth. Prerequisite: Sp. 105.
- 468. Speech Therapy I.** 3 semester hours. Second semester.  
Methods and materials employed in the treatment of articulation and voice problems; individual and group methods. Prerequisite: Sp. 455 or 465.
- 799. Problems in Speech.** Credit to be arranged. Each semester and summer.  
Prerequisite: Sp. 455 or 465.

## COURSES IN RADIO AND TELEVISION

### FOR UNDERGRADUATE CREDIT

- 275. Survey of Broadcasting.** 2 semester hours. Each semester.  
Survey of radio industry; social importance of broadcasting.
- 285. Radio Speech I.** 2 semester hours. Each semester.  
Training in voice and diction for broadcasting. One hour of recitation and three hours of laboratory a week. For radio majors and minors only. Prerequisite: Sp. 135.
- 295. Radio Continuity.** 3 semester hours. Each semester.  
Preparation of introduction to musical shows, talks, programs, and news rewriting. Prerequisite: Sp. 285.
- 311. KSDB-FM Participation.** 1 semester hour. Each semester and summer.  
Three hours of laboratory a week. Prerequisite: Sp. 285 or consent of instructor. May not be taken for more than four semesters for credit.
- 315. Station Production and Announcing.** 2 semester hours. Each semester and summer.  
Practical experience as announcers, control operators, and other positions in radio stations. Prerequisite: Admission after satisfactory audition.
- 325. Station Traffic, Music, and Continuity.** 2 semester hours. Each semester.  
Practical experience in writing commercial continuity, servicing accounts, handling radio traffic, and operation of a music library. Six hours of laboratory a week. Prerequisite: Sp. 295 or 315.
- 326. Introduction to Television.** 2 semester hours. First semester.  
Growth and expansion of television; its impact on society and its



relation to other media of communications; economic and sociological implications.

**345. Sports Broadcasting.** 2 semester hours. Each semester.

Appropriate techniques, types of material, writing and editing copy, practice in delivery. Experience in following the play in seasonal sports events, sports knowledge, wire, tape, and live experience in ad libbing sports events. Four hours of recitation and laboratory a week. Prerequisite: Sp. 275.

**366. Radio and Television Production I.** 3 semester hours. First semester and summer.

Production and direction of individual programs in radio and television. Two hours of recitation and four hours of laboratory a week. Prerequisite: Sp. 295, 315, 326.

**385. Radio Talk.** 2 semester hours. Each semester.

Training in writing informative and persuasive material; practical delivery of radio talks. For students who are not majors or minors in radio. Four hours of recitation and laboratory a week. Prerequisite: Sp. 105.

FOR UNDERGRADUATE AND GRADUATE CREDIT

**660. Radio and Television Production II.** 3 semester hours. Second semester.

Continuation of Sp. 310. Prerequisite: Sp. 366.

**670. Radio and Television Programming.** 3 semester hours. First semester.

Planning and development of radio and television programs and schedules. Prerequisite: Sp. 285, 295, 326.

**672. Radio and Television Dramatic Techniques.** 3 semester hours. Each semester and summer.

Use of dramatic principles of radio and television. Five hours of recitation and laboratory a week. Prerequisite: Sp. 105.

**675. Radio and Television Advertising.** 3 semester hours. Second semester.

Principles and practice in radio advertising. Prerequisite: For students in Curriculum in Technical Journalism, Tech. Jour. 255; for other students, Sp. 295.

**685. Radio-Television Writing I.** 3 semester hours. First semester.

Preparation of dramatized programs. Prerequisite: Sp. 295.

**695. Radio-Television Writing II.** 3 semester hours. Second semester; alternate years.

Continuation of Sp. 685. Prerequisite: Sp. 685 and consent of instructor.

**705. Radio Speech II.** 2 semester hours. Each semester.

Advanced commercial announcing; development of individual style; supervised experience in various techniques of delivery. Recommended to the radio major as a senior level course. Radio majors and minors only. Prerequisite: Sp. 285 and consent of instructor.

**726. Radio-Television Station Management.** 3 semester hours. Each semester.

Radio-television station management problems and methods; programs, news, promotions, sales, engineering, continuity, traffic, accounting, and legal requirements. Prerequisite: Sp. 325, 366, 670.

**745. Broadcasting of Women's Programs.** 3 semester hours. Second semester.

Writing, production and criticism of radio programs presented by women and primarily intended for an audience of women and/or children. Two hours of recitation and four hours of laboratory a week. Prerequisite: Sp. 295, 315, or consent of instructor.

**750. Radio-Television Audience.** 3 semester hours. Second semester and summer.

Listening and viewing habits, preferences and attitudes. Prerequisite: Junior standing and consent of instructor.

**799. Problems in Speech.** Credit to be arranged. Each semester and summer.

Prerequisite: Sp. 115 or 295.

## STUDENT HEALTH

BENJAMIN W. LAFENE, *Head of Department*

FOR UNDERGRADUATE CREDIT

**110. Preventive Medicine and Public Health.** 2 semester hours. Each semester.

Communicable diseases and their control; factors involved in healthful living. Prerequisite: Sophomore standing.

## TECHNICAL JOURNALISM

RALPH R. LASHBROOK, *Head of Department*

For a major, the student should enroll in the Curriculum in Technical Journalism.

To be classified as "professionals," students in the Curriculum in Technical Journalism must complete two months of vocational journalism experience before graduation and must meet other requirements established by the department faculty.

FOR UNDERGRADUATE CREDIT

**050. Technical Journalism Lecture.** Required each semester.

Addresses by practicing newspaper workers and members of the department. Required of all students in the Curriculum in Technical Journalism. Prerequisite: "C" average or better in all journalism credit hours taken in residence.

**105. Graphic Arts Survey.** 2 semester hours. Each semester.

History and art of printing; typography of advertisements and headline display; principles of effective makeup. Prerequisite: Sophomore standing and concurrent enrollment in Tech. Journ. 115.

**115. Typography Laboratory.** 1 semester hour. Each semester.

Typesetting, proofreading, correction of forms as a background for journalism. Three hours of laboratory a week. Prerequisite: Sophomore standing and concurrent enrollment in Tech. Journ. 105.

**215. Reporting I.** 3 semester hours. Each semester and summer.

Introduction to the field of journalism; intensive study of the daily newspaper; news gathering and writing. Prerequisite: Sophomore standing and ability to type 30 words a minute.

**225. Reporting II.** 3 semester hours. Each semester.

Two hours of recitation and six hours of reportorial work on the *Kansas State Collegian* a week. Prerequisite: Tech. Journ. 215.

**235. Rural Press.** 2 semester hours. Second semester.

Community newspapers; emphasis on presentation of agriculture and rural life. Prerequisite: Tech. Journ. 215.

**245. Public Information Methods.** 2 semester hours. First semester.

Prerequisite: Tech. Journ. 225.

- 255. Principles of Advertising.** 3 semester hours. Each semester.  
Study of goods to be advertised, analysis of the market, psychology of advertising, preparation of advertising copy. Prerequisite: Junior standing.
- 265. Editing.** 2 semester hours. Each semester.  
Six hours of laboratory a week. Prerequisite: Tech. Journ. 225.
- 275. News Photography.** 2 semester hours. Each semester and summer.  
Planning and taking news and feature pictures; writing and editing captions. Open to students in curriculums in Agricultural Journalism and Technical Journalism. Prerequisite: Tech. Journ. 225.
- 290. Royal Purple.** 1 semester hour. Each semester.  
Writing copy, preparing layouts, editing, advertising, and business practices on the yearbook. Under supervision of an instructor. Three hours of laboratory a week. Prerequisite: Consent of instructor.
- 295. Kansas State Collegian.** 1 semester hour. Each semester and summer.  
Gathering and writing of news, or advertising practice, on student publications, under the supervision of an instructor. Three hours of laboratory a week. Prerequisite: Consent of instructor.
- 305. Agricultural Journalism.** 3 semester hours. Each semester and summer.  
Survey of agricultural information techniques, with emphasis on principles of news and feature writing.
- 310. Home Economics Journalism.** 3 semester hours. Second semester.  
Information techniques used by home economists in the dissemination of technical information through printed media, radio, television, and photography; principles of news, feature writing, and editing.
- 315. Radio and Television News.** 2 semester hours. Second semester.  
Processing and broadcasting of radio news. Prerequisite: Tech. Journ. 215. For nonjournalism students, Sp. 295.
- 325. Broadcasting Station Practice.** 1 semester hour. Each semester and summer.  
News gathering, writing, and broadcasting, over radio Station KSAC. Three hours of laboratory a week. Prerequisite: Tech. Journ. 315.

## FOR UNDERGRADUATE AND GRADUATE CREDIT

- 405. Reporting III.** 3 semester hours. First semester.  
Reporting news of local, state, and national affairs. Two hours of recitation and three hours of laboratory a week. Prerequisite: Tech. Journ. 225, Govt. 690, or consent of instructor.
- 425. History of Journalism.** 3 semester hours. First semester.  
Prerequisite: Junior standing and Hist. 175, 190, or consent of instructor.
- 445. The Home Page.** 3 semester hours. Each semester and summer.  
Writing and editing materials for a woman's page in a local newspaper, supervision of photography for that page. Prerequisite: For students in Curriculum in Technical Journalism, Tech. Journ. 265; for other students, Tech. Journ. 215 and consent of instructor.
- 465. Magazine Article Writing.** 2 semester hours. First semester and summer.  
Study of technical, trade, and general publications; writing for general magazines, agricultural and business publications, and women's departments. Prerequisite: For students in Curriculum in Technical Journalism, senior standing or consent of instructor; for students in Curriculum in Home Economics and Journalism, Tech. Journ. 445; for other students, consent of instructor.



- 485. Interpretation of Contemporary Affairs.** 3 semester hours. Second semester.  
Critical questions regarding recent developments in state, national, and international affairs; editorials and interpretive articles which document and analyze the news; introduction to research in public affairs. Prerequisite: For students in Curriculum in Technical Journalism, Tech. Journ. 650; for other students, consent of instructor.
- 505. Formation of Public Opinion.** 3 semester hours. Second semester, alternate years.  
Role of the press and communication agencies in formation of public opinion, work of propagandists and pressure groups. Prerequisite: Junior standing and consent of instructor; for graduate credit, eight hours of social science.
- 515. Public Relations.** 3 semester hours. Second semester.  
Media, methods, principles, and practices of public relations. Prerequisite: Junior standing or consent of instructor.
- 585. Technical Publications.** 3 semester hours. Alternate years.  
Layout, preparation of copy, and illustrations for house organs, trade magazines, catalogues, pamphlets, and similar publications. One hour of lecture and six hours of laboratory a week. Prerequisite: Consent of instructor.
- 605. Readings in Journalism.** 2 semester hours. Each semester.  
Investigation of the literature of journalism. Prerequisite: Junior standing and consent of instructor.
- 625. Yearbook Editing and Management.** 2 semester hours. First semester.  
Planning, editing, layout, financing, and management of a yearbook, with special emphasis on the problems of *The Royal Purple*. One hour of lecture and three hours of laboratory a week. Prerequisite: Tech. Journ. 225 and junior standing.
- 646. Workshop in School Publications.** 3 semester hours. Summer, odd-numbered years.  
Supervision of high school yearbooks and newspapers. The workshops are offered consecutively, and either or both may be taken. Prerequisite: Graduate standing or consent of instructor.
- 650. The Journalist in a Free Society.** 3 semester hours. First semester.
- 665. Newspaper Management.** 2 semester hours. Second semester, alternate years.  
Relations of departments of a newspaper to one another; costs, statistics, advertising, news, and business methods in publishing. Prerequisite: Tech. Journ. 255.
- 685. Advertising Salesmanship.** 2 semester hours. First semester.  
Application of principles of space selling and layout to specific lines of business by work with advertising clients of a daily newspaper. Prerequisite: Junior standing and consent of instructor.
- 799. Problems in Technical Journalism.** Credit to be arranged. Each semester and summer.  
Work is offered in advanced magazine article writing, advanced editing, advertising, agriculture, current newspapers and periodicals, high school journalism, history and ethics, home economics, news photography, radio, and science. Prerequisite: Background of courses needed for problems to be undertaken.

## FOR GRADUATE CREDIT

- 999. Research in Technical Journalism.** Credit to be arranged. Each semester and summer.  
Work is offered in advanced magazine article writing, advanced editing, advertising, agriculture, current newspapers and periodicals, high

school journalism, history and ethics, home economics, news photography, radio, and science. Prerequisite: Registration in the Graduate School, with sufficient training to carry on the line of research to be undertaken.

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## ZOOLOGY

DONALD J. AMEEL, *Head of Department*

The courses in zoology, which give fundamental knowledge of the structures, functions, development, and relations of animals to man, afford training that is basic for professional workers in agriculture, home economics, veterinary medicine, and the arts and sciences and their applied fields.

For a major, the student should complete at least nineteen credit hours chosen from the 400 to 799 group.

For a minor, the student should take Zool. 110 and nine credit hours chosen from the 400 to 799 group.

### FOR UNDERGRADUATE CREDIT

**110. General Zoology.** 5 semester hours. Each semester and summer.

Three hours of recitation and six hours of laboratory a week.

**210. Human Anatomy.** 5 semester hours. First semester and summer.

General anatomy studies by means of dissectible models, skeletons, and charts. Three hours of recitation and six hours of laboratory a week. Prerequisite: Zool. 110.

**240. Human Anatomy and Physiology.** 5 semester hours. Summer.

For students in Home Economics and Nursing. Three hours of recitation and six hours of laboratory a week. Prerequisite: Zool. 110.

### FOR UNDERGRADUATE AND GRADUATE CREDIT

**405. Comparative Anatomy of Vertebrates.** 4 semester hours. Second semester.

Two hours of recitation and six hours of laboratory a week. Prerequisite: Zool. 110.

**420. Embryology.** 4 semester hours. Each semester and summer.

Developmental anatomy and physiology of reproduction of domestic birds and mammals. Three hours of recitation and three hours of laboratory a week. Prerequisite: Zool. 110.

**436. Advanced Embryology.** 3 semester hours. Second semester.

Principles of embryology as determined by comparative and experimental methods. One hour of lecture and six hours of laboratory a week. Prerequisite: Zool. 420.

**451. Cytology.** 3 semester hours. First semester.

Structure and physiology of cells, with an introduction to modern methods of studying cells. One hour of lecture and six hours of laboratory a week. Prerequisite: Zool. 110 and one of Zool. 420, 465, or 635.

**465. Human Physiology.** 4 semester hours. Each semester and summer.

Functions of various organ systems of the body. Three hours of recitation and three hours of laboratory a week. Prerequisite: Zool. 110 or equivalent.

**470. Physiology of the Sense Organs.** 2 semester hours. First semester.

Functions of the special sense organs of man as well as a comparison of the physiology of these organs with those of other animals. One hour of recitation and two hours of laboratory a week. Prerequisite: Zool. 465.



**480. General Physiology.** 3 semester hours. Second semester.

A study of the nature and mechanism of living matter. Two hours of recitation and three hours of laboratory a week. Prerequisite: Chem. 330, Zool. 110.

**495. Endocrinology.** 3 semester hours. First semester and summer.

Prerequisite: Zool. 110 and consent of instructor.

**510. Animal Parasitology.** 3 semester hours. First semester.

Biology, pathology, and prophylaxis of the principal external and internal parasites of the domestic animals. Two hours of recitation and three hours of laboratory a week. Prerequisite: Zool. 110.

**525. Human Parasitology Recitation.** 3 semester hours. Second semester.

Prerequisite: Zool. 110 or equivalent.

**540. Human Parasitology Laboratory.** 1 semester hour. Second semester.

Three hours of laboratory a week. Prerequisite: Zool. 525.

**555. Taxonomy of Parasites.** 2 semester hours. Second semester.

One hour of recitation and three hours of laboratory a week. Prerequisite: Zool. 510 or 540 and consent of instructor.

**570. Protozoology.** 3 semester hours. Second semester.

Taxonomy, morphology, and biology of the free-living and parasitic protozoa. Two hours of recitation and three hours of laboratory a week. Prerequisite: Zool. 110.

**585. Invertebrate Zoology.** 3 semester hours. First semester.

Essentials of structure, function, classification, and physiology of the invertebrates. One hour of recitation and six hours of laboratory a week. Prerequisite: Zool. 110.

**605. Invertebrate Ecology.** 3 semester hours. Second semester.

Environmental factors in relation to the establishment of invertebrate animal populations. Prerequisite: Geol. 455 or Zool. 585 and consent of instructor.

**620. Heredity and Eugenics.** 2 semester hours. First semester.

Human inheritance and the interactions of nature and heredity. Prerequisite: Zool. 110 or equivalent.

**635. Zoological Technic.** 1 or 2 semester hours. Each semester and summer.

Methods and processes in preparation of microscopical slides; principles of photomicrography. Prerequisite: Zool. 110.

**650. Field Zoology.** 2 or 3 semester hours. Second semester.

Habitat, distribution, and relationship of animals. One hour of recitation and three hours of laboratory a week or one hour of recitation and six hours of laboratory a week. Prerequisite: Zool. 110 or equivalent.

**665. Bird Study.** 3 semester hours. Second semester, or 2 semester hours, summer.

Lecture, laboratory, and field studies in identification and adaptations of birds. Two hours of recitation and three hours of laboratory a week the second semester or one hour of recitation and three hours of laboratory a week in summer school. Prerequisite: Zool. 110 or equivalent.

**675. Mammalogy.** 3 semester hours. First semester.

Classification, distribution, and natural history of mammals; collecting of specimens and preparation of study skins. Two hours of recitation and three hours of laboratory a week. Prerequisite: Zool. 110.

**680. Wildlife Conservation.** 3 semester hours. First semester and summer.

Methods and techniques in the management and propagation of wild life. Prerequisite: Zool. 110 or equivalent.



**685. Wildlife Management Techniques.** 3 semester hours. First semester.

Ecology and management of game birds and mammals, including field studies of research and management techniques. Two hours of recitation and three hours of laboratory a week. Prerequisite: Zool. 110.

**690. Fisheries Management.** 5 semester hours. Second semester.

Methods of fishery biology; populations, aging and growth rates, productivity, survey methods, planning and improvement, physiochemical conditions of fresh water and fish pond management. Three hours of recitation and six hours of laboratory a week. Prerequisite: Zool. 110.

**695. Social Behavior in Vertebrates.** 2 semester hours. Second semester or summer.

Animal behavior from the viewpoint of social dominance and group organization; contributions of social behavior in the classes of vertebrates. Prerequisite: Zool. 110 or equivalent and junior standing.

**795. Zoology and Entomology Seminar.** 1 semester hour. Each semester.

Prerequisite: Consent of head of department.

**799. Problems in Zoology.** Credit to be arranged. Each semester and summer.

Work is offered in animal behavior, bird study, cytology and embryology, ecology, endocrinology, histology, parasitology, physiology, protozoology, wildlife conservation, and zoological technic. Prerequisite: Background of courses needed for problem to be undertaken and consent of head of the department.

## FOR GRADUATE CREDIT

**999. Research in Zoology.** Credit to be arranged. Each semester and summer.

Work is offered in animal behavior, bird study, cytology, and embryology, ecology, endocrinology, histology, parasitology, physiology, protozoology, and wildlife conservation. Prerequisite: Registration in the Graduate School, with sufficient training to carry on the line of research to be undertaken and consent of the head of the department.

(For Genetics Seminar, see An. Husb. 426.)

# The School of Engineering and Architecture

MERRILL AUGUSTUS DURLAND, *Dean*

ROY ANDREW SEATON, *Dean Emeritus*

RICHARD CARTER POTTER, *Assistant Dean*

The School of Engineering and Architecture offers four-year curriculums in Agricultural Engineering, Architectural Engineering, Chemical Engineering, Civil Engineering, Electrical Engineering, Industrial Education, Industrial Engineering, Industrial Technology, Mechanical Engineering, and Nuclear Engineering, each leading to the degree Bachelor of Science in the particular branch of the profession selected, and, in addition, offers a five-year Curriculum in Architecture, leading to the degree Bachelor of Architecture.

The curriculums as tabulated give fundamental preparations for entering upon work in the several branches of the professions, with some opportunity for specialization through options and electives. To a limited extent substitutions may be made for certain of the courses listed as required when there appears to be a good reason for them, but each substitution must have the approval of the head of the department in which the curriculum is administered, and the dean of the school. In no case will the substitution of an additional amount of technical work for any of the cultural work be permitted.

## Curriculum in Agricultural Engineering

The field of the agricultural engineer includes research, sales, or advertising in the farm-machinery and farm-motor industry; farm structure design, or promotional work with the building materials industry; soil erosion prevention with the federal and state agencies; rural electric service with electric power companies; management of farms where drainage, irrigation, or power-farming methods are of major importance; and engineering in agricultural development.

The curriculum includes all basic courses which are common to the other engineering curriculums, such as mathematics, physics, and mechanics. Courses in agriculture are also included in order to familiarize the student with the modern methods of agriculture. Training along engineering lines includes farm machinery, farm power, farm structures, drainage, irrigation, soil-erosion control; and modern farm and home equipment.

## Curriculum in Architectural Engineering

The Curriculum in Architectural Engineering emphasizes the structural and mechanical phases of architecture. The field of the architectural engineer comprises the superintending of building construction, general contracting, structural design, estimating construction costs, and specification writing.

Students should get practical experience during the summer vacations in the building industry, either on construction projects or in the office of an architect, construction engineer, or contractor.

## Curriculum in Architecture

The Curriculum in Architecture, while stressing architectural design, includes also training in building construction, properties and uses of building materials, professional practice, and other phases important to the architectural profession. The aim is to train students for efficient service as draftsmen and designers in an architectural organization and provide them with the necessary foundation for future independent practice.

Students should get practical experience during the summer vacations in the building industry, either on construction projects or in the office of an architect.



### **Curriculum in Chemical Engineering**

The aim of the Curriculum in Chemical Engineering is to prepare the student for work in the design, construction, and operation of chemical plants. The scope of chemical engineering includes the strictly chemical industries, such as those manufacturing acids, alkalis, lacquer solvents, dyes, explosives, metals, and like materials, and also the process industries; for instance, those processing petroleum, rubber, foods, leather, and those manufacturing cement, glass, soap, paints and varnishes, pulp and paper.

### **Curriculum in Civil Engineering**

The first and second years are devoted largely to general cultural studies and the sciences, including mathematics. An introduction to the technical work is given in these years through courses in drawing, surveying, and the elementary phases of engineering.

The last two years are devoted largely to technical work. Provision is made for class and laboratory work in mechanical and electrical engineering. Because of the growing importance of municipal problems, such as paving, sewerage, and water supply, the curriculum includes required courses in these subjects.

### **Curriculum in Electrical Engineering**

The object of the Curriculum in Electrical Engineering is to train the student for a future in electrical power or in communication and electronics. Graduate electrical engineers are engaged in research, development, application, sales, and business management.

The first and second years are devoted to general studies, with emphasis on mathematics and science. Technical training in the electrical field begins in the second year and extends through the junior and senior years, covering electric circuits, electronics, and electric machinery. The curriculum provides, in addition, elective work, giving the student opportunity for the selection of studies in cultural, social, and economic fields.

Special laboratories are provided for research in television, electronic computers, and other electrical engineering areas.

### **Curriculum in Industrial Education**

The curriculum in Industrial Education is designed to prepare students as teachers in secondary schools, colleges, and training schools in industry.

By the selection of proper electives, this four-year curriculum may lead to the degree of Bachelor of Science in Industrial Education and may also qualify the graduate for the three-year Kansas state teachers' certificate, valid in any high school or other public school in the state and renewable for life. The requirements of teaching general science, woodwork, machine shop, metal shop, auto mechanics, driver education and mechanical drawing are met by a careful selection of electives and major courses. Those desiring to teach mathematics may fulfill the requirements by electing additional hours in this field.

### **Curriculum in Industrial Engineering**

The Curriculum in Industrial Engineering is designed to provide professional training in production management for engineering students who wish to prepare for managerial positions in manufacturing industries. The curriculum includes the fundamental engineering courses that are found in the first two years of typical engineering programs supplemented by a series of industrial engineering courses that supply basic training in the major divisions of production management. Also included is a series of courses in business, economics and psychology that are designed to familiarize the student with the financial, economic and personnel aspects of production management.

In the industrial engineering program, the courses are carefully selected to insure a program of study that is well rounded and that encompasses the entire field of industrial engineering.



### **Curriculum in Industrial Technology**

The first year is devoted to the same basic courses in science, mathematics and general cultural studies as the industrial engineering curriculum. Emphasis is placed on shop work, the technology of fabrication processes and related activities preparatory to entering industrial shops. The training is enhanced by including courses in business administration, communications, and industrial management and related work.

The curriculum is designed to especially help high school graduates acquire knowledge of techniques of production and its counterpart—the improvement of manufacturing methods, processes, tools and machines as well as production and quality control; all of which are helping to provide more goods with less human effort.

The lack of requirements of advanced mathematics and subsequent mechanics and design courses are not sufficient to fulfill the requisites of a degree in engineering.

### **Curriculum in Mechanical Engineering**

The Curriculum in Mechanical Engineering is designed to prepare students for research, design, production, operation, and sales positions in industries that produce or use power and machinery. The field of mechanical engineering is necessarily very broad, including practically every industry. To permit specialization by students in particular phases of mechanical engineering, the curriculum provides optional and elective courses in the junior and senior years, covering industrial engineering, power production, air conditioning, petroleum production, aeronautical engineering, and machine design.

Students should spend at least two summers in some shop or commercial plant.

### **Curriculum in Nuclear Engineering**

The Curriculum in Nuclear Engineering, which is based on the Curriculum in Chemical Engineering and administered by that department, is designed to train young men and women for work in the engineering phases of the nuclear energy programs. The curriculum combines the fundamentals of atomic energy and radio-tracer techniques with basic engineering courses in mechanics, unit operations, thermodynamics, and design. Atomic and Nuclear Physics are the basic courses in the theory. The courses in reactor technology and reactor design are designed to give training in the applications of the theory to the production of fissionable materials, radioactive tracers and energy. The many problems in control, heat transfer, materials of construction, waste disposal and safety, which were encountered in the development of the atomic energy program, and the many problems remaining to be solved before atomic energy is fully utilized are discussed.

The present size of the government owned plants for the production of fissionable materials and the increasing interest of private enterprise in atomic energy indicate a continued and expanding demand for engineers trained in this field.

### **Engineering and Architecture in the Summer School**

The School offers summer courses in freehand and mechanical drawing, water-color and oil painting, manual training and shop practice for high school and grade school teachers, as well as various courses required in the several curriculums. Therefore teachers who wish to take an engineering or architectural curriculum can get a considerable start on the work during their summer vacations, and college students who are irregular may make up courses.

Full information concerning the courses offered is contained in the Summer School number of the Kansas State College *Bulletin*, which may be obtained upon application to the Director of Admissions of the College.

**Curriculum in Agricultural Engineering***B. S. in Agricultural Engineering***FRESHMAN**

FIRST SEMESTER				SECOND SEMESTER			
		<i>Course</i>	<i>Sem. Hrs.</i>			<i>Course</i>	<i>Sem. Hrs.</i>
Chem.	140	Chemistry E-I .....	4	Chem.	170	Chemistry E-II .....	4
Math.	175	College Algebra† .....	3	Math.	215	Anal. Geom. and Calc. I, ..	4
Math.	190	Plane Trigonometry .....	3	Engl.	135	Written Comm. II .....	2
Engl.	125	Written Comm. I .....	3	Mach. Des.	115	Desc. Geometry .....	2
Mach. Des.	110	Engg. Drawing .....	2	Civ. Engg.	120	Surveying I .....	2
Ind. Engg.	125	Shop A .....	2	Sp.	105	Oral Comm. I .....	2
		Air Science <i>or</i>		Ind. Engg.	180	Welding .....	1
		Military Science .....	1			Air Science <i>or</i>	
Gen. Engg.	110	Engg. Lectures .....	0			Military Science .....	1
Phys. Ed.	010	Physical Education M ....	0	Gen. Engg.	110	Engg. Lectures .....	0
				Phys. Ed.	010	Physical Education M ....	0
Total .....			18	Total .....			18

**SOPHOMORE**

Math.	230	Anal. Geom. and Calc. II, ..	4	Math.	245	Anal. Geom. and Calc. III, ..	4
Phys.	130	Engg. Physics I .....	5	Phys.	140	Engg. Physics II .....	5
Mach. Des.	120	Mach. Drawing I .....	2	Ag. Engg.	130	Agricultural Machinery ..	3
Ind. Engg.	175	Metals and Alloys .....	2	Gen. Stud.	160	Biol. in Rel. to Man II, ..	4
Gen. Stud.	150	Biol. in Rel. to Man I ..	4			Air Science <i>or</i>	
		Air Science <i>or</i>				Military Science .....	1
		Military Science .....	1	Gen. Engg.	115	Engg. Assembly .....	0
Gen. Engg.	115	Engg. Assembly .....	0	Phys. Ed.	010	Physical Education M ....	0
Phys. Ed.	010	Physical Education M ....	0				
Total .....			18	Total .....			17

**JUNIOR**

Ap. Mech.	405	Applied Mechanics .....	4	Ap. Mech.	410	Mech. of Mtls. I Rec. ..	4
Mech. Engg.	411	Engg. Thermodynamics I, ..	4	Ap. Mech.	418	Mech. of Mtls. Lab. ....	1
Ag. Engg.	435	Des. of Farm Mach. ....	4	Ap. Mech.	470	Fluid Mechanics A .....	4
Econ.	110	Economics I .....	3	Ag. Engg.	446	Tractors .....	4
Geol.	110	General Geology .....	3	Agron.	106	Farm Crops .....	4
Gen. Engg.	115	Engg. Assembly .....	0	Engl.	435	Technical Reports .....	1
Engl.	090	English Proficiency .....	0	Gen. Engg.	115	Engg. Assembly .....	0
Total .....			18	Total .....			18

**SENIOR**

Ag. Engg.	465	Farm Structures .....	4	Ag. Engg.	500	Rural Electrification .....	4
Agron.	149	Soils .....	4	Ag. Engg.	480	Soil and Water Consvr., ..	4
Ag. Engg.	475	Ag. Hydrology .....	3	Elec. Engg.	120	Elec. Engg. C Rec. ....	2
Ag. Ec.	206	Farm Organization .....	3	Elec. Engg.	124	Elec. Engg. C Lab. ....	1
Gen. Engg.	115	Engg. Assembly .....	0	Mach. Des.	490	Patents and Inventions ..	2
Ag. Engg.	200	Inspection Trip .....	0	Gen. Engg.	115	Engg. Assembly .....	0
		Elective* .....	4			Elective* .....	4
Total .....			18	Total .....			17

Number of hours required for graduation, 142.

† Students who offer but one unit of algebra for admission take the three-hour course in Intermediate Algebra, Math. 050, postponing both college algebra and plane trigonometry to the second semester.

\* Electives are to be chosen with the advice and approval of the head of the department and the dean.

# Curriculum in Architectural Engineering

## B. S. in Architectural Engineering

### FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Chem.	140	Chemistry E-I .....	4	Chem.	170	Chemistry E-II .....	4
Math.	175	College Algebra† .....	3	Math.	215	Anal. Geom. and Calc. I, .....	4
Math.	190	Plane Trigonometry .....	3	Engl.	135	Written Comm. II .....	2
Engl.	125	Written Comm. I .....	3	Sp.	105	Oral Comm. I .....	2
Mach. Des.	110	Engg. Drawing .....	2	Mach. Des.	115	Desc. Geometry .....	2
Civ. Engg.	120	Surveying I .....	2	Arch.	120	Freehand Drawing I .....	2
		Air Science <i>or</i>				Air Science <i>or</i>	
		Military Science .....	1			Military Science .....	1
Phys. Ed.	010	Physical Education M <i>or</i> .....		Phys. Ed.	010	Physical Education M <i>or</i> .....	
Phys. Ed.	055	Physical Education W ....	0	Phys. Ed.	055	Physical Education W ....	0
Gen. Engg.	110	Engg. Lectures .....	0	Gen. Engg.	110	Engg. Lectures .....	0
Total			18	Total			17

### SOPHOMORE

Phys.	130	Engg. Physics I .....	5	Phys.	140	Engg. Physics II .....	5
Math.	230	Anal. Geom. and Calc. II, .....	4	Math.	245	Anal. Geom. and Calc. III, .....	4
Arch.	130	Pencil Sketching .....	2	Arch.	234	El. of Arch. II .....	4
Arch.	230	El. of Arch. I .....	4	Arch.	105	Shades and Shadows .....	1
Arch.	270	Hist. of Arch. I .....	2	Arch.	110	Perspective Drwg. ....	1
		Air Science <i>or</i>		Arch.	274	Hist. of Arch. II .....	2
		Military Science .....	1			Air Science <i>or</i>	
Phys. Ed.	010	Physical Education M <i>or</i> .....				Military Science .....	1
Phys. Ed.	055	Physical Education W ....	0	Phys. Ed.	010	Physical Education M <i>or</i> .....	
Gen. Engg.	115	Engg. Assembly .....	0	Phys. Ed.	055	Physical Education W ....	0
				Gen. Engg.	115	Engg. Assembly .....	0
Total			18	Total			18

### JUNIOR

Mech. Engg.	130	Air Conditioning A .....	3	Ap. Mech.	410	Mech. of Mtls. I Rec. ....	4
Ap. Mech.	405	Applied Mechanics .....	4	Ap. Mech.	418	Mech. of Mtls. Lab. ....	1
Arch.	240	Arch. Design I .....	5	Arch.	300	Bldg. Mtls. and Const. ..	3
Arch.	278	Hist. of Arch. III .....	2	Arch.	310	Working Drawings .....	3
Econ.	110	Economics I .....	3	Arch.	280	Hist. of Arch. IV .....	2
Gen. Engg.	115	Engg. Assembly .....	0	Gen. Engg.	115	Engg. Assembly .....	0
Engl.	090	Engl. Proficiency .....	0			Elective* .....	5
Total			17	Total			18

### SENIOR

Gen. Stud.	150	Biol. in Rel. to Man I ..	4	Gen. Stud.	160	Biol. in Rel. to Man II ..	4
Civ. Engg.	420	Stress Anal. I Rec. ....	4	Civ. Engg.	428	Stress Analysis II .....	3
Civ. Engg.	424	Stress Anal. I Lab. ....	2	Civ. Engg.	470	Des. of Framed Struc. ..	3
Civ. Engg.	460	Foundations .....	2	Civ. Engg.	478	Reinf. Conc. Des. Rec. ..	2
Ap. Mech.	450	Soil Mechanics I .....	2	Civ. Engg.	480	Reinf. Conc. Des. Lab. ..	2
Elec. Engg.	130	Illumination A .....	2	Arch.	305	Building Equipment .....	2
Arch.	390	Inspection Trip .....	0	Arch.	340	Professional Practice ....	2
Gen. Engg.	115	Engg. Assembly .....	0	Gen. Engg.	115	Engg. Assembly .....	0
		Elective* .....	2				
Total			18	Total			18

Number of hours required for graduation, 142.

† Students who offer but one unit of algebra for admission take the three-hour course in Intermediate Algebra, Math. 050, postponing both college algebra and plane trigonometry to the second semester.

\* Electives are to be chosen with the advice and approval of the head of the department and the dean. At least five hours of the electives are to be chosen from the social science group.



**Curriculum in Architecture***Bachelor of Architecture***FIRST YEAR**

FIRST SEMESTER				SECOND SEMESTER			
		<i>Course</i>	<i>Sem. Hrs.</i>			<i>Course</i>	<i>Sem. Hrs.</i>
Engl.	125	Written Comm. I .....	3	Engl.	135	Written Comm. II .....	2
Math.	175	College Algebra† .....	3	Math.	190	Plane Trigonometry .....	3
Mach. Des.	110	Engg. Drawing .....	2	Mach. Des.	115	Desc. Geometry .....	2
Arch.	120	Freehand Drawing I .....	2	Arch.	124	Freehand Drawing II ....	2
Arch.	270	History of Arch. I .....	2	Arch.	274	History of Arch. II .....	2
Sp.	105	Oral Comm. I .....	2	Econ.	110	Economics I .....	3
		Air Science <i>or</i>				Air Science <i>or</i>	
		Military Science .....	1			Military Science .....	1
Phys. Ed.	010	Physical Education M <i>or</i>		Phys. Ed.	010	Physical Education M <i>or</i>	
Phys. Ed.	055	Physical Education W ....	0	Phys. Ed.	055	Physical Education W ....	0
Gen. Engg.	110	Engineering Lectures ....	0	Gen. Engg.	110	Engineering Lectures ....	0
Total .....			15	Total .....			15

**SECOND YEAR**

Arch.	110	Perspective Drawing .....	1	Arch.	105	Shades and Shadows .....	1
Arch.	230	Elements of Arch. I .....	4	Arch.	234	Elements of Arch. II ....	4
Arch.	130	Pencil Sketching .....	2	Arch.	160	Water Color I .....	2
Arch.	278	History of Arch. III .....	2	Arch.	280	History of Arch. IV .....	2
Arch.	300	Bldg. Mtls. and Const. ..	3	Ap. Mech.	105	Applied Mechanics A .....	3
Phys.	110	General Physics I .....	4	Phys.	120	General Physics II .....	4
		Air Science <i>or</i>				Air Science <i>or</i>	
		Military Science .....	1			Military Science .....	1
Phys. Ed.	010	Physical Education M <i>or</i>		Phys. Ed.	010	Physical Education M <i>or</i>	
Phys. Ed.	055	Physical Education W ....	0	Phys. Ed.	055	Physical Education W ....	0
Gen. Engg.	115	Engineering Assembly ....	0	Gen. Engg.	115	Engineering Assembly ....	0
Total .....			17	Total .....			17

**THIRD YEAR**

Arch.	240	Arch. Design I .....	5	Arch.	244	Arch. Design II .....	5
Arch.	305	Bldg. Equipment .....	2	Arch.	320	Theory of Structure I ....	4
Arch.	310	Working Drawings .....	3	Arch.	170	Life Drawing I .....	2
Arch.	285	Hist. Paint. and Sculp.,	3	Elec. Engg.	130	Illumination A .....	2
Ap. Mech.	120	Str. of Mtls. A Rec. ....	3	Gen. Engg.	115	Engineering Assembly ....	0
Ap. Mech.	124	Str. of Mtls. A Lab. ....	1			Elective* .....	3
Gen. Engg.	115	Engineering Assembly ....	0				
Engl.	090	English Proficiency .....	0				
Total .....			17	Total .....			16

**FOURTH YEAR**

Arch.	248	Arch. Design III .....	5	Arch.	250	Arch. Design IV .....	5
Arch.	324	Theory of Structure II ..	5	Arch.	328	Theory of Structure III, 4	4
Arch.	174	Life Drawing II .....	2	Mech. Engg.	130	Air Conditioning A .....	3
Gen. Stud.	150	Biology in Rel. to Man I,	4	Gen. Stud.	160	Biol. in Rel. to Man II, 4	4
Gen. Engg.	115	Engineering Assembly ....	0	Gen. Engg.	115	Engineering Assembly ....	0
Total .....			16	Total .....			16

**FIFTH YEAR**

Arch.	491	Arch. Design V .....	5	Arch.	495	Arch. Design VI .....	5
Arch.	461	City Planning I .....	3	Arch.	463	City Planning II .....	3
Arch.	340	Prof. Practice .....	2	Gen. Engg.	115	Engg. Assembly .....	0
Arch.	390	Inspection Trip .....	0			Elective* .....	7
Gen. Engg.	115	Engg. Assembly .....	0				
		Elective* .....	6				
Total .....			16	Total .....			15

Number of hours required for graduation, 160.

† Students who offer but one unit of algebra for admission take the three-hour course in Intermediate Algebra, Math. 050, postponing college algebra to the second semester.

\* Electives are to be chosen with the advice and approval of the head of the department and the dean. At least five hours of the electives are to be chosen from the social science group.

# Curriculum in Chemical Engineering

## B. S. in Chemical Engineering

### FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Chem.	210	Chemistry I .....	5	Chem. Engg.	205	Chem. Engg. Mtls. ....	2
Math.	175	College Algebra† .....	3	Chem.	230	Chemistry II Rec. ....	3
Math.	190	Plane Trigonometry .....	3	Chem.	250	Chemistry II Lab. ....	2
Engl.	125	Written Comm. I .....	3	Math.	215	Anal. Geom. and Calc. I, ..	4
Mach. Des.	110	Engg. Drawing .....	2	Engl.	135	Written Comm. II .....	2
		Air Science <i>or</i> .....		Sp.	105	Oral Comm. I .....	2
		Military Science .....	1	Mach. Des.	115	Descriptive Geometry ....	2
Phys. Ed.	010	Physical Education M ....	0			Air Science <i>or</i> .....	
Gen. Engg.	110	Engg. Lectures .....	0			Military Science .....	1
				Phys. Ed.	010	Physical Education M ....	0
				Gen. Engg.	110	Engg. Lectures .....	0
Total .....			17	Total .....			18

### SOPHOMORE

Chem.	435	Quant. Anal. ....	4	Chem. Engg.	210	Ind. Stoich. ....	3
Phys.	130	Engg. Physics I .....	5	Phys.	140	Engg. Physics II .....	5
Math.	230	Anal. Geom. and Calc. II, ..	4	Math.	245	Anal. Geom. and Calc. III, ..	4
		Air Science <i>or</i> .....		Mach. Des.	120	Mach. Drawing I .....	2
		Military Science .....	1			Air Science <i>or</i> .....	
Phys. Ed.	010	Physical Education M ....	0			Military Science .....	1
Gen. Engg.	115	Engg. Assembly .....	0	Phys. Ed.	010	Physical Education M ....	0
		Soc. Sc. Elective* .....	4	Gen. Engg.	115	Engg. Assembly .....	0
						Soc. Sc. Elective* .....	4
Total .....			18	Total .....			19

### JUNIOR

Chem. Engg.	420	Unit Op. I Rec. ....	3	Chem. Engg.	428	Unit Op. II Rec. ....	3
Chem. Engg.	424	Unit Op. I Lab. ....	1	Chem. Engg.	430	Unit Op. II Lab. ....	1
Chem.	511	Org. Chem. I Rec. ....	3	Chem.	516	Org. Chem. II Rec. ....	3
Chem.	512	Org. Chem. I Lab. ....	2	Chem.	517	Org. Chem. II Lab. ....	2
Chem.	585	Phys. Chem. I Rec. ....	3	Chem.	595	Phys. Chem. II Rec. ....	3
Chem.	590	Phys. Chem. I Lab. ....	2	Chem.	600	Phys. Chem. II Lab. ....	2
App. Mech.	405	Applied Mechanics .....	4	App. Mech.	410	Mech. of Mtls. I Rec. ....	4
Gen. Engg.	115	Engg. Assembly .....	0	Gen. Engg.	115	Engg. Assembly .....	0
Engl.	090	English Proficiency .....	0				
Total .....			18	Total .....			18

### SENIOR

Chem. Engg.	434	Unit Op. III Lab. ....	1	Chem. Engg.	455	Organic Tech. ....	3
Chem. Engg.	440	Unit. Proc. Lab. ....	2	Chem. Engg.	460	Ch. E. Plant Design ....	4
Chem. Engg.	450	Inorganic Tech. ....	2	Chem. Engg.	495	Ch. E. Thermo. II .....	4
Chem. Engg.	491	Ch. E. Thermo. I .....	4	Elec. Engg.	470	Ind. Electronics Rec. ....	3
Elec. Engg.	120	Elec. Engg. C Rec. ....	2	Gen. Engg.	115	Engg. Assembly .....	0
Elec. Engg.	124	Elec. Engg. C Lab. ....	1			Humanities Elective* ....	4
Chem. Engg.	200	Inspection Trip .....	0				
Gen. Engg.	115	Engg. Assembly .....	0				
		Humanities Elective* ....	4				
Total .....			16	Total .....			18

Number of hours required for graduation, 142.

† Students who offer but one unit of algebra for admission take a three-hour course in Intermediate Algebra, Math. 050, postponing both college algebra and plane trigonometry to the second semester.

\* Electives are to be chosen with the advice and approval of the head of the department and the dean.

**Curriculum in Civil Engineering***B. S. in Civil Engineering***FRESHMAN**

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Engl.	125	Written Comm. I .....	3	Engl.	135	Written Comm. II .....	2
Chem.	140	Chemistry E-I .....	4	Sp.	105	Oral Comm. I .....	2
Math.	175	College Algebra† .....	3	Math.	215	Anal. Geom. and Calc. I, ..	4
Math.	190	Plane Trigonometry .....	3	Chem.	170	Chemistry E-II .....	4
Mach. Des.	110	Engg. Drawing .....	2	Mach. Des.	115	Desc. Geometry .....	2
Civ. Engg.	120	Surveying I .....	2	Civ. Engg.	125	Surveying II .....	3
		Air Science <i>or</i>				Air Science <i>or</i>	
		Military Science .....	1			Military Science .....	1
Phys. Ed.	010	Physical Education M ....	0	Phys. Ed.	010	Physical Education M ....	0
Gen. Engg.	110	Engg. Lectures .....	0	Gen. Engg.	110	Engg. Lectures .....	0
Total .....			18	Total .....			18

**SOPHOMORE**

Phys.	130	Engg. Phys. I .....	5	Phys.	140	Engg. Phys. II .....	5
Math.	230	Anal. Geom. and Calc. II, ..	4	Math.	245	Anal. Geom. and Calc. III, ..	4
Mach. Des.	120	Machine Drawing I .....	2	Ap. Mech.	405	Applied Mechanics .....	4
Civ. Engg.	131	Surveying III .....	3	Civ. Engg.	411	Photogrammetry .....	3
Econ.	110	Economics I .....	3			Air Science <i>or</i>	
		Air Science <i>or</i>				Military Science .....	1
		Military Science .....	1	Phys. Ed.	010	Physical Education M ....	0
Phys. Ed.	010	Physical Education M ....	0	Gen. Engg.	115	Engg. Assembly .....	0
Gen. Engg.	115	Engg. Assembly .....	0				
Total .....			18	Total .....			17

**JUNIOR**

Elec. Engg.	120	Elec. Engg. C Rec. ....	2	Ap. Mech.	420	Hwy. and Airpt. Mtls.	
Elec. Engg.	124	Elec. Engg. C Lab. ....	1			Lab. ....	1
Ap. Mech.	410	Mech. of Mtls. I Rec. ....	4	Ap. Mech.	418	Mech. of Mtls. Lab. ....	1
Mech. Engg.	110	Steam and Gas Engg. C, ..	2	Mech. Engg.	460	Heat Power Lab. ....	1
Bact.	190	Water and Sewage Bact., ..	3	Ap. Mech.	470	Fluid Mech. A .....	4
Ap. Mech.	450	Soil Mechanics I .....	2	Ap. Mech.	478	Hydraulics Lab. ....	1
Engl.	435	Technical Reports .....	1	Geol.	110	General Geology .....	3
Engl.	090	English Proficiency .....	0	Civ. Engg.	420	Stress Anal. I Rec. ....	4
Gen. Engg.	115	Engg. Assembly .....	0	Ind. Engg.	175	Metals and Alloys .....	2
		Nontechnical Elective*†..	3	Gen. Engg.	115	Engg. Assembly .....	0
Total .....			18	Total .....			17

**SENIOR**

Civ. Engg.	428	Stress Anal. II .....	3	Civ. Engg.	470	Des. Fr. Str. ....	3
Civ. Engg.	424	Stress Anal. I Lab. ....	2	Civ. Engg.	478	Reinf. Conc. Des. Rec. ..	2
Civ. Engg.	450	Transportation Engg. ....	5	Civ. Engg.	480	Reinf. Conc. Des. Lab. ..	2
Civ. Engg.	405	Astr. and Geodesy .....	3	Civ. Engg.	455	Applied Hydrology .....	3
Civ. Engg.	460	Foundations .....	2	Civ. Engg.	440	Sanitary Engg. ....	4
Civ. Engg.	200	Inspection Trip .....	0	Gen. Engg.	115	Engg. Assembly .....	0
Gen. Engg.	115	Engg. Assembly .....	0			Nontechnical Elective ....	4
		Nontechnical Elective*†..	3				
Total .....			18	Total .....			18

Number of hours required for graduation, 142.

† Students who offer but one unit of algebra for admission take the three-hour course in Intermediate Algebra, Math. 050, postponing both college algebra and plane trigonometry to the second semester.

\* Electives are to be chosen with the advice and approval of the head of the department and the dean.

‡ Nontechnical electives to be selected from approved lists on page 229. At least six hours of the electives are to be chosen from the Humanities group.



# Curriculum in Electrical Engineering

## B. S. in Electrical Engineering

### FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Chem.	140	Chemistry E-I .....	4	Chem.	170	Chemistry E-II .....	4
Math.	175	College Algebra† .....	3	Math.	215	Anal. Geom. and Calc. I, .....	4
Math.	190	Plane Trigonometry .....	3	Mach. Des.	115	Desc. Geometry .....	2
Engl.	125	Written Comm. I .....	3	Engl.	135	Written Comm. II .....	2
Mach. Des.	110	Engineering Drawing ....	2	Ind. Engg.	125	Shop A .....	2
Elec. Engg.	110	Orientation E .....	1	Speech	105	Oral Comm. I .....	2
		Air Science <i>or</i>				Air Science <i>or</i>	
		Military Science .....	1			Military Science .....	1
Phys. Ed.	010	Physical Education M ....	0	Phys. Ed.	010	Physical Education M ....	0
Gen. Engg.	110	Engg. Lectures .....	0	Gen. Engg.	110	Engg. Lectures .....	0
Total			17	Total			17

### SOPHOMORE

Phys.	130	Engg. Physics I .....	5	Phys.	140	Engg. Physics II .....	5
Math.	230	Anal. Geom. and Calc. II, ..	4	Math.	245	Anal. Geom. and Calc. III, ..	4
Civ. Engg.	120	Surveying I .....	2	Ind. Engg.	180	Welding .....	1
Econ.	110	Economics I .....	3	Elec. Engg.	405	Basic Elec. Engg. ....	4
Mach. Des.	120	Machine Drawing I .....	2			Air Science <i>or</i>	
		Air Science <i>or</i>				Military Science .....	1
		Military Science .....	1	Phys. Ed.	010	Physical Education M ....	0
Phys. Ed.	010	Physical Education M ....	0	Gen. Engg.	115	Engg. Assembly .....	0
Gen. Engg.	115	Engg. Assembly .....	0			Soc. Science Electives*‡, ..	3
		Humanities Elective*‡ ..	1				
Total			18	Total			18

### JUNIOR

Elec. Engg.	426	A-C Circuits .....	5	App. Mech.	405	Applied Mechanics .....	4
Elec. Engg.	411	D-C Machinery Rec. ....	3	Elec. Engg.	464	Electronics II Rec. ....	4
Elec. Engg.	414	D-C Machinery Lab. ....	1	Elec. Engg.	468	Electronics II Lab. ....	2
Elec. Engg.	460	Electronics I .....	2	Elec. Engg.	430	A-C Machinery I Rec. ....	3
Elec. Engg.	490	Elec. Meas. Rec. ....	2	Elec. Engg.	437	A-C Laboratory .....	1
Elec. Engg.	494	Elec. Meas. Lab. ....	1	Engl.	435	Technical Reports .....	1
Ind. Engg.	175	Metals and Alloys .....	2	Gen. Engg.	115	Engg. Assembly .....	0
Math.	360	Diff. Equa. for Engrs. ....	2			Soc. Science Elective*‡ ..	3
Gen. Engg.	115	Engg. Assembly .....	0				
Engl.	090	Engl. Proficiency .....	0				
Total			18	Total			18

### SENIOR

Mech. Engg.	411	Engg. Thermodynamics I, ..	4	Mech. Engg.	460	Heat Power Lab. ....	1
Elec. Engg.	439	A-C Machinery II Rec. ..	2	Elec. Engg.	576	Elec. Engg. Summary ....	2
Elec. Engg.	442	A-C Machinery Lab. ....	1	App. Mech.	410	Mech. of Mtls. I Rec. ....	4
Elec. Engg.	539	Networks Rec. ....	3	Gen. Engg.	115	Engg. Assembly .....	0
Elec. Engg.	541	Networks Lab. ....	1			Humanities Elective*‡ ..	3
Gen. Engg.	115	Engg. Assembly .....	0				
Elec. Engg.	160	Inspection Trip .....	0				
		Humanities Elective*‡ ..	3				

### Power Option

Elective*	4	Mech. Engg.	440	Heat Power Engg. A .....	3
				Elective*	5

### Communication and Electronics Option

Elec. Engg.	550	Electromag. Waves Rec., ..	3	Elec. Engg.	530	Radio Comm. Rec. ....	3
Elec. Engg.	554	Electromag. Waves Lab., ..	1	Elec. Engg.	534	Radio Comm. Lab. ....	1
						Elective*	4
Total			18	Total			18

Number of hours required for graduation, 142.

† Students who offer but one unit of algebra for admission take the three-hour course in Intermediate Algebra, Math. 050, postponing both college algebra and plane trigonometry to the second semester.

\* Electives are to be chosen with the advice and approval of the head of the department and the dean.

‡ Social Science and Humanities electives are to be selected from approved lists on page 229.

### Suggested Electives

Students who elect either the Power Option or the Communication and Electronics Option are free to choose electives from college courses in business administration, language, physics, mathematics, geology, music, advanced ROTC (eight credits only to apply toward degree), communication and electronics subjects, electric power subjects, mechanical engineering subjects, or combinations from such groups, provided the selection meets the approval of the head of the department and the dean.

Students interested in electric power should select technical electives from the following:

Elec. Engg. 570	Illuminating Engineering Recitation .....	3
Elec. Engg. 590	Transmission and Distribution of Electrical Energy .....	3
Elec. Engg. 600	Transient Electrical Phenomena .....	3
Elec. Engg. 480	Industrial Electronics and Control Recitation .....	2
Elec. Engg. 474	Industrial Electronics Laboratory .....	1

### Electrical Engineering and Business Administration

Students may secure the two degrees, B. S. in the Curriculum in Electrical Engineering and B. S. in the Curriculum in Business Administration, by taking the Electrical Engineering or the Communication and Electronics Option plus the following courses:†

Econ.	130	Money and Banking .....	3	Econ.	120	Economics II .....	3
Econ.	470	Public Finance .....	3	Bus. Adm.	310	Accounting II .....	3
Bus. Adm.	440	Marketing .....	3	Bus. Adm.	405	Bus. Org. and Finance ..	3
Psych.	310	General Psychology .....	3	Govt.	310	Business Law II .....	3
Bus. Adm.	300	Accounting I .....	3	Bus. Adm.	510	Bus. Admin. Summary ..	2
Govt.	295	Business Law I .....	3	Engl.	155	Comm'l Corresp. ....	3
						Business Elective*	4

† Some of these additional courses may be substituted for the electives in the Curriculum in Electrical Engineering. A minimum of 30 additional semester hours of credit is required for the second bachelor's degree.

\* Electives are to be chosen with the advice and approval of the head of the department and the dean.

**Curriculum in Industrial Education***B. S. in Industrial Education***FRESHMAN**

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Chem.	140	Chemistry E-I .....	4	Chem.	170	Chemistry E-II .....	4
Engl.	125	Written Comm. I .....	3	Engl.	135	Written Comm. II .....	2
Math.	175	College Algebra† .....	3	Math.	190	Plane Trigonometry .....	3
Mach. Des.	110	Engg. Drawing .....	2	Mach. Des.	115	Desc. Geometry .....	2
Ind. Engg.	130	Woodwork I .....	2	Ind. Engg.	125	Shop A .....	2
Ind. Engg.	180	Welding .....	1	Ind. Engg.	200	Sheet Metal I .....	2
		Air Science or				Air Science or	
		Military Science .....	1			Military Science .....	1
Phys. Ed.	010	Physical Education M ....	0	Phys. Ed.	010	Physical Education M ....	0
Gen. Engg.	110	Engg. Lectures .....	0	Gen. Engg.	110	Engg. Lectures .....	0
Total .....			16	Total .....			16

**SOPHOMORE**

Phys.	110	General Physics I .....	4	Phys.	120	General Physics II .....	4
Mach. Des.	120	Machine Drawing I .....	2	Educ.	100	Educ. Psych. I,	
Psych.	310	General Psychology .....	3			Pupil Dev. ....	3
Gen. Stud.	150	Biol. in Rel. to Man I ....	4	Gen. Stud.	160	Biol. in Rel. to Man II ..	4
Sp.	105	Oral Comm. I .....	2	Ind. Engg.	134	Woodwork II .....	2
		Air Science or		Ind. Engg.	144	Woodturning .....	2
		Military Science .....	1			Air Science or	
Phys. Ed.	010	Physical Education M ....	0			Military Science .....	1
Gen. Engg.	115	Engg. Assembly .....	0	Phys. Ed.	010	Physical Education M ....	0
				Gen. Engg.	115	Engg. Assembly .....	0
Total .....			16	Total .....			16

**JUNIOR**

Educ.	105	Educ. Psych. II,		Educ.	120	Prin. of Secondary	
		Learning .....	3			Educ. ....	3
Hist.	175	U. S. Before 1865 .....	3	Hist.	190	U. S. Since 1865 .....	3
Ind. Engg.	110	Auto Mechanics I .....	4	Econ.	110	Economics I .....	3
Ind. Engg.	175	Metals and Alloys .....	2	Sp.	115	Oral Comm. II .....	2
Engl.	090	English Proficiency .....	0	Ind. Engg.	211	Industrial Safety .....	2
Gen. Engg.	115	Engg. Assembly .....	0	Gen. Engg.	115	Engg. Assembly .....	0
		Elective and Major* .....	5			Elective and Major* .....	4
Total .....			17	Total .....			17

**SENIOR**

Engl.	155	Comm'l Corresp. ....	3	Educ.	150	Teach. Part. in Sec.	
Ind. Engg.	244	Meth. of Teach.				Schools .....	4
		Ind. Arts .....	3	Hist.	160	Current History .....	1
Ind. Engg.	402	Highway Safety and		Ind. Engg.	122	Appliance Servicing .....	4
		Driver Educ. ....	3	Gen. Engg.	115	Engg. Assembly .....	0
Ind. Engg.	280	Inspection Trip .....	0	Educ.		Educ. Elective .....	3
Gen. Engg.	115	Engg. Assembly .....	0			Elective Major* .....	4
		Elective and Major* .....	7				
Total .....			16	Total .....			16

Number of hours required for graduation, 130.

† Students who offer but one unit of algebra for admission take the three-hour course in Intermediate Algebra, Math. 050, postponing college algebra to the second semester.

\* Elective and major courses are to be chosen with the advice and the approval of the head of the department and the dean. They are to be planned to include courses in the areas of wood and/or metal work or those closely allied to industrial arts.

This curriculum with a careful selection of elective and major courses meets the requirements for teaching general science, woodwork, machine shop, metal shop, auto mechanics, driver education, and mechanical drawing. Those desiring to teach mathematics may fulfill the requirements by electing additional hours in this field.



**Curriculum in Industrial Engineering***B. S. in Industrial Engineering***FRESHMAN**

FIRST SEMESTER				SECOND SEMESTER			
		<i>Course</i>	<i>Sem. Hrs.</i>			<i>Course</i>	<i>Sem. Hrs.</i>
Chem.	140	Chemistry E-I .....	4	Chem.	170	Chemistry E-II .....	4
Mach. Des.	110	Engg. Drawing .....	2	Math.	215	Anal. Geom. and Calc. I, .....	4
Math.	175	College Algebra† .....	3	Mach. Des.	115	Desc. Geometry .....	2
Math.	190	Plane Trigonometry .....	3	Speech	105	Oral Comm. I .....	2
Engl.	125	Written Comm. I .....	3	Engl.	135	Written Comm. II .....	2
Ind. Engg.	180	Welding .....	1	Ind. Engg.	125	Shop A .....	2
		Air Science or				Air Science or	
		Military Science .....	1			Military Science .....	1
Phys. Ed.	010	Physical Education M ....	0	Phys. Ed.	010	Physical Education M ....	0
Gen. Engg.	110	Engg. Lectures .....	0	Gen. Engg.	110	Engg. Lectures .....	0
Total .....			17	Total .....			17

**SOPHOMORE**

Math.	230	Anal. Geom. and Calc. II, .....	4	Math.	245	Anal. Geom. and Calc. III, .....	4
Phys.	130	Engg. Physics I .....	5	Phys.	140	Engg. Phys. II .....	5
Mach. Des.	120	Mach. Drawing I .....	2	Ind. Engg.	175	Metals and Alloys .....	2
Mach. Des.	130	Mechanism .....	3	Ind. Engg.	155	Foundry I .....	1
Econ.	110	Economics I .....	3	Psych.	310	General Psychology .....	3
		Air Science or		Mech. Engg.	110	Steam and Gas Engg. C, .....	2
		Military Science .....	1			Air Science or	
Phys. Ed.	010	Physical Education M ....	0	Phys. Ed.	010	Physical Education M ....	0
Gen. Engg.	115	Engg. Assembly .....	0	Gen. Engg.	115	Engg. Assembly .....	0
Total .....			18	Total .....			18

**JUNIOR**

Ind. Engg.	190	Machine Tool I .....	2	Ind. Engg.	194	Machine Tool II .....	2
Ind. Engg.	410	Industrial Mgt. .....	3	Engl.	155	Comm'l Correspondence ..	3
Hist.	190	U. S. Since 1865 .....	3	Elec. Engg.	120	Elec. Engg. C Rec. ....	2
Ap. Mech.	405	Applied Mechanics .....	4	Elec. Engg.	124	Elec. Engg. C Lab. ....	1
Bus. Adm.	330	Principles of Acctg. ....	3	App. Mech.	410	Mech. of Mtls. I Rec. ..	4
Ind. Engg.	184	Electric Welding .....	1	App. Mech.	418	Mech. of Mtls. I Lab. ..	1
Engl.	090	English Proficiency .....	0	Ind. Engg.	460	Metallography I .....	1
Gen. Engg.	115	Engg. Assembly .....	0	Ind. Engg.	211	Industrial Safety .....	2
		Nontechnical Elective*†..	2	Gen. Engg.	115	Engg. Assembly .....	0
						Nontechnical Elective*†..	2
Total .....			18	Total .....			18

**SENIOR**

Ind. Engg.	425	Time and Motion .....	2	Elec. Engg.	470	Ind. Electronics Rec. ....	3
Ind. Engg.	415	Production Control .....	2	Elec. Engg.	474	Ind. Electronics Lab. ....	1
Mech. Engg.	490	Engg. Economics .....	3	Engl.	435	Technical Reports .....	1
Psych.	715	Personnel Psychology ....	3	Ind. Engg.	442	Ind. Engg. Practice ....	3
Ind. Engg.	419	Manufacturing Processes, ..	3	Ind. Engg.	421	Prod. Cost Estimating ....	2
Ind. Engg.	427	Plant Planning and		Ind. Engg.	431	Tool Engineering .....	2
		Layout .....	2	Econ.	440	Marketing .....	3
Ind. Engg.	280	Inspection Trip .....	0	Gen. Engg.	115	Engg. Assembly .....	0
Gen. Engg.	115	Engg. Assembly .....	0			Technical Electives* .....	3
		Nontechnical Elective*†..	3				
Total .....			18	Total .....			18

Number of hours required for graduation, 142.

† Students who offer but one unit of algebra for admission take the three-hour course in Intermediate Algebra, Math. 050, postponing both college algebra and plane trigonometry to the second semester.

\* Electives are to be chosen with the advice and approval of the head of the department and the dean.

‡ Nontechnical electives are to be selected from the approved list of Humanities electives for the curriculums in Electrical Engineering and Civil Engineering, page 229.

# Curriculum in Industrial Technology

## B. S. in Industrial Technology

### FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Chem.	140	Chem. E-I .....	4	Chem.	170	Chem. E-II .....	4
Engl.	125	Writ. Comm. I .....	3	Engl.	135	Writ. Comm. II .....	2
Ind. Engg.	125	Shop A .....	2	Ind. Engg.	144	Wood Turning .....	2
Ind. Engg.	130	Woodwork I .....	2	Ind. Engg.	180	Welding .....	1
Mach. Des.	110	Engg. Draw. ....	2	Ind. Engg.	200	Sheet Metal I .....	2
Math.	175	Col. Algebra† .....	3	Mach. Des.	115	Desc. Geometry .....	2
		Air Science <i>or</i>		Math.	190	Plane Trigonometry .....	3
		Military Science .....	1			Air Science <i>or</i>	
Phys. Ed.	010	Physical Education M ....	0			Military Science .....	1
Gen. Engg.	110	Engg. Lectures .....	0	Phys. Ed.	010	Physical Education M ....	0
				Gen. Engg.	110	Engg. Lectures .....	0
Total .....			17	Total .....			17

### SOPHOMORE

Civ. Engg.	120	Surveying I .....	2	Econ.	110	Economics I .....	3
Gen. Stud.	150	Biol. in Rel. to Man I 4 <i>or</i>		Engl.	155	Comm'l Corres. ....	3
Gen. Stud.	250	Introd. to Human. I .....	4	Gen. Stud.	160	Biol. in Rel. to Man II 4 <i>or</i>	
Mach. Des.	120	Mach. Drawing I .....	2	Gen. Stud.	260	Introd. to Human. II ....	4
Phys.	110	General Physics I .....	4	Ind. Engg.	155	Foundry I .....	1
Psych.	310	General Psychology .....	3	Mach. Des.	124	Mach. Drawing II .....	2
Speech	105	Oral Comm. I .....	2	Phys.	120	General Physics II .....	4
		Air Science <i>or</i>				Air Science <i>or</i>	
		Military Science .....	1			Military Science .....	1
Phys. Ed.	010	Physical Education M ....	0	Phys. Ed.	010	Physical Education M ....	0
Gen. Engg.	115	Engg. Assembly .....	0	Gen. Engg.	115	Engg. Assembly .....	0
Total .....			18	Total .....			18

### JUNIOR

Bus. Adm.	330	Prin. of Acetg. ....	3	App. Mech.	105	App. Mech. A .....	3
Ind. Engg.	110	Auto Mechanics I .....	4	Elec. Engg.	120	Elec. Engg. C Rec. ....	2
Ind. Engg.	150	Pattern Making .....	2	Elec. Engg.	124	Elec. Engg. C Lab. ....	1
Ind. Engg.	175	Metals and Alloys .....	2	Ind. Engg.	194	Machine Tool II .....	2
Ind. Engg.	184	Electric Welding .....	1	Ind. Engg.	211	Industrial Safety .....	2
Ind. Engg.	188	Gas Welding .....	1	Mach. Des.	130	Metallography I .....	1
Ind. Engg.	190	Machine Tool I .....	2	Ind. Engg.	460	Mechanism .....	3
Ind. Engg.	442	Industrial Management ..	3	Mech. Engg.	110	Steam and Gas Engg. C, 2	
Engl.	090	English Proficiency .....	0	Speech	115	Oral Comm. II .....	2
Gen. Engg.	115	Engg. Assembly .....	0	Gen. Engg.	115	Engg. Assembly .....	0
Total .....			18	Total .....			18

### SENIOR

App. Mech.	120	Str. of Mtls. A Rec. ....	3	Engl.	435	Technical Reports .....	1
App. Mech.	124	Str. of Mtls. A Lab. ....	1	Ind. Engg.	122	Appliance Servicing .....	4
Ind. Engg.	220	Gaging .....	1	Ind. Engg.	421	Prod. Cost Estimating ..	2
Ind. Engg.	419	Mfg. Processes .....	3	Ind. Engg.	442	Ind. Engg. Practice .....	3
Ind. Engg.	425	Time and Motion .....	2	Hist.	190	U. S. Since 1865 .....	3
Psych.	715	Personnel Psychology ....	3	Gen. Engg.	115	Engg. Assembly .....	0
Ind. Engg.	280	Inspection Trip .....	0			Elective* .....	5
Gen. Engg.	115	Engg. Assembly .....	0				
		Elective* .....	5				
Total .....			18	Total .....			18

Number of hours required for graduation, 142.

† Students who offer but one unit of algebra for admission take the three-hour course in Intermediate Algebra, Math. 050, postponing college algebra to the second semester.

\* Electives are to be chosen with the advice and approval of the head of the department and the dean.

## Approved Nontechnical Electives for Civil Engineering, Electrical Engineering, and Industrial Engineering Curriculums

### Social Science Electives

(Not more than 2 courses from any one field)

Introductory Social Science I, Gen. Stud. 210 .....	4	American Industrial History, Hist. 205 .....	3
Introductory Social Science II, Gen. Stud. 220 .....	4	New American Nation, Hist. 445 .....	3
Economics II, Econ. 120 .....	3	Adv. Economic History of the U. S., Hist. 465 .....	2
Money and Banking, Econ. 130 .....	3	American Diplomatic History, Hist. 475 .....	3
Personal Finance, Bus. Ad. 140 .....	2	Russia and the Soviet Union, Hist. 585 .....	3
Business Management, Bus. Ad. 150 .....	3	American Government, Govt. 255 .....	3
Labor Management, Econ. 465 .....	2	Contemporary Governments, Govt. 270 .....	3
Public Finance, Econ. 470 .....	3	International Relations, Govt. 655 .....	2
Business Cycles, Econ. 480 .....	2	General Psychology, Psych. 310 .....	3
International Trade, Econ. 485 .....	2	General Applied Psychology, Psych. 325 ....	2
Sociology, Soc. 250 .....	3	Social Psychology, Psych. 635 .....	3
Sociology of the Family, Soc. 630 .....	3	Contemporary Social Philosophies, Phil. 780,	3
Social Systems, Soc. 655 .....	3	Recent Political Philosophies, Phil. 785 ....	2
Development of Social Thought, Soc. 675 ....	3	Effective Citizenship, Govt. 712 .....	3
Contemporary World History, Hist. 145 ....	2	War, Peace, and the World Community, Govt. 667 .....	3
Current History, Hist. 160 .....	1		
United States Before 1865, Hist. 175 .....	3		
United States Since 1865, Hist. 190 .....	3		

### Humanities Electives

(Not more than 2 courses from any one field)

Introduction to Humanities I, Gen. Stud. 250 .....	4	Elementary Logic, Phil. 365 .....	3
Introduction to Humanities II, Gen. Stud. 260 .....	4	Philosophy of Science I, Phil. 380 .....	3
Civilization I, Hist. 115 .....	3	Ethics, Phil. 775 .....	2
Civilization II, Hist. 130 .....	3	Democracy, Justice, and the Law, Govt. 672	3
Current History, Hist. 160 .....	1	American Democratic Ideas, Hist. 480 .....	3
Far East, Hist. 595 .....	3	Appreciation of Music, Mus. 250 .....	2
History of Religions, Hist. 605 .....	3	Music in History, Mus. 635 .....	3
Books and Men I, Engl. 310 .....	3	Appreciation of Architecture, Arch. 200 ....	3
Books and Men II, Engl. 320 .....	3	History of Painting and Sculpture, Modern Language .....	6
		Arch. 285 .....	3



# Curriculum in Mechanical Engineering

## B. S. in Mechanical Engineering

### FRESHMAN

(For all options)

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Chem.	140	Chemistry E-I .....	4	Chem.	170	Chemistry E-II .....	4
Math.	175	College Algebra† .....	3	Math.	215	Anal. Geom. and Calc. I, .....	4
Math.	190	Plane Trigonometry .....	3	Engl.	135	Written Comm. II .....	2
Engl.	125	Written Comm. I .....	3	Sp.	105	Oral Comm. I .....	2
Mach. Des.	110	Engg. Drawing .....	2	Mach. Des.	115	Desc. Geometry .....	2
Ind. Engg.	180	Welding .....	1	Ind. Engg.	125	Shop A .....	2
		Air Science or				Air Science or	
		Military Science .....	1			Military Science .....	1
Phys. Ed.	010	Physical Education M ....	0	Phys. Ed.	010	Physical Education M ....	0
Gen. Engg.	110	Engg. Lectures .....	0	Gen. Engg.	110	Engg. Lectures .....	0
Total .....			17	Total .....			17

### SOPHOMORE

Phys.	130	Engg. Physics I .....	5	Phys.	140	Engg. Physics II .....	5
Math.	230	Anal. Geom. and Calc. II, .....	4	Math.	245	Anal. Geom. and Calc. III, .....	4
Ind. Engg.	175	Metals and Alloys .....	2	Ap. Mech.	405	Applied Mechanics .....	4
Ind. Engg.	460	Metallography I .....	1			Air Science or	
Mach. Des.	120	Mach. Drawing I .....	2			Military Science .....	1
Econ.	110	Economics I .....	3	Phys. Ed.	010	Physical Education M ....	0
		Air Science or		Gen. Engg.	115	Engg. Assembly .....	0
		Military Science .....	1			Nontechnical Elective‡ ..	4
Phys. Ed.	010	Physical Education M ....	0				
Gen. Engg.	115	Engg. Assembly .....	0				
Total .....			18	Total .....			18

### JUNIOR

Ap. Mech.	474	Fluid Mech. B .....	3	Ap. Mech.	410	Mech. of Mtls. I Rec. ....	4
Mech. Engg.	411	Engg. Thermodynamics I, .....	4	Mach. Des.	421	Mach. Design I .....	5
Elec. Engg.	500	Elec. Engg. M-I Rec. ....	4	Elec. Engg.	508	Elec. Engg. M-II Rec. ....	3
Elec. Engg.	504	Elec. Engg. M-I Lab. ....	1	Elec. Engg.	510	Elec. Engg. M-II Lab. ....	1
Engl.	090	English Proficiency .....	0	Mech. Engg.	412	Engg. Thermodynamics II .....	2
Gen. Engg.	115	Engg. Assembly .....	0	Gen. Engg.	115	Engg. Assembly .....	0
		Option .....	2 or 3			Option .....	3 or 4
		Nontechnical elective‡ ....	4				
Total .....			18 or 19	Total .....			18 or 19

### SENIOR

Ap. Mech.	418	Mech. of Mtls. Lab. ....	1	Mach. Des.	423	Mach. Design III .....	3 or
Ind. Engg.	410	Industrial Management ..	3	Mech. Engg.	428	Air Conditioning .....	3
Mech. Engg.	464	Mech. Engg. Lab. I .....	2	Mech. Engg.	150	Prof. Development .....	1
Mech. Engg.	440	Heat-Power Engg. A ....	3	Gen. Engg.	155	Engg. Assembly .....	0
Mach. Des.	422	Mach. Design II .....	3			Option .....	10 or 11
Gen. Engg.	115	Engg. Assembly .....	0			Nontechnical elective‡ ..	3
		Option .....	3				
		Nontechnical elective‡ ....	3				
Mech. Engg.	180	Inspection Trip .....	0				
Total .....			18	Total .....			17 or 18

Number of hours required for graduation, 142.

† Students who offer but one unit of algebra for admission take the three-hour course in Intermediate Algebra, Math. 050, postponing both college algebra and plane trigonometry to the second semester.

‡ Nontechnical electives to be chosen with the advice and approval of the head of the department and the dean. At least six hours must be from the Humanities.

**Design Option****JUNIOR**

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Math.	360	Diff. Equa. for Engrs. ..	2			Technical Elective*.....	3
Total			2	Total			3

**SENIOR**

Mech. Engg.	421	Heat Transfer .....	3	Ap. Mech.	414	Mech. of Mtls. II Rec. ....	2
				Mech. Engg.	468	Mech. Engg. Lab. II .....	2
				Mech. Engg.	445	Mech. Engg. Design .....	3
				Mach. Des.	425	Machine Design Lab. ....	2
						Technical Elective* .....	2
Total			3	Total			11

**Management Option****JUNIOR**

Econ.	330	Prin. of Accounting .....	3	Math.	785	Statistical Qual. Control,	3
Total			3	Total			3

**SENIOR**

Mech. Engg.	490	Engg. Economics .....	3	Ind. Engg.	442	Ind. Engg. Practice .....	3
				Psych.	715	Personnel Psych. ....	3
				Mech. Engg.	468	Mech. Engg. Lab. II .....	2
				Mach. Des.	425	Mach. Des. Lab. ....	2
Total			3	Total			10

**Aeronautical Option****JUNIOR**

Math.	360	Diff. Equa. for Engrs. ....	2	Mach. Des.	440	Aerodynamics I Rec. ....	3
				Mach. Des.	444	Aerodynamics I Lab. ....	1
Total			2	Total			4

**SENIOR**

Ap. Mech.	491	Airpl. Stress Anal. I .....	3	Mech. Engg.	480	Aero. Engg. Lab. ....	2
				Mech. Engg.	430	Int. Comb. Engines .....	3
				Mach. Des.	468	Airpl. Des. and Const. ..	3
						Technical Elective* .....	2
Total			3	Total			10

**Petroleum Production Option****JUNIOR**

Civ. Engg.	120	Surveying I .....	2	Geol.	110	Gen. Geology .....	3
Total			2	Total			3

**SENIOR**

Mech. Engg.	510	Petroleum Prod. I .....	3	Mech. Engg.	514	Petroleum Prod. II .....	3
				Mech. Engg.	468	Mech. Engg. Lab. II ....	2
				Mach. Des.	425	Machine Des. Lab. ....	2
				Geol.	405	Historical Geology .....	4
Total			3	Total			11

\* Electives are to be chosen with the advice and approval of the head of the department and the dean.

# Curriculum in Nuclear Engineering

## B. S. in Nuclear Engineering

### FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Chem.	210	Chemistry I .....	5	Chem. Engg.	205	Ch. E. Mtls. ....	2
Math.	175	College Algebra† .....	3	Chem.	230	Chemistry II Rec. ....	3
Math.	190	Plane Trigonometry .....	3	Chem.	250	Chemistry II Lab. ....	2
Engl.	125	Written Comm. I .....	3	Math.	215	Anal. Geom. and Calc. I, ..	4
Mach. Des.	110	Engg. Drawing .....	2	Engl.	135	Written Comm. II .....	2
		Air Science <i>or</i> .....		Sp.	105	Oral Comm. I .....	2
		Military Science .....	1	Mach. Des.	115	Descr. Geometry .....	2
Phys. Ed.	010	Physical Education M ....	0			Air Science <i>or</i> .....	
Gen. Engg.	110	Engg. Lectures .....	0			Military Science .....	1
				Phys. Ed.	010	Physical Education M ....	0
				Gen. Engg.	110	Engg. Lectures .....	0
Total .....			17	Total .....			18

### SOPHOMORE

Chem.	435	Quant. Anal. ....	4	Chem. Engg.	210	Ind. Stoich. ....	3
Phys.	130	Engg. Physics I .....	5	Phys.	140	Engg. Physics II .....	5
Math.	230	Anal. Geom. and Calc. II, ..	4	Math.	245	Anal. Geom. and Calc. III, ..	4
		Soc. Sc. Elective* .....	4			Soc. Sc. Elective* .....	4
		Air Science <i>or</i> .....				Air Science <i>or</i> .....	
		Military Science .....	1			Military Science .....	1
Phys. Ed.	010	Physical Education M ....	0	Phys. Ed.	010	Physical Education M ....	0
Gen. Engg.	115	Engg. Assembly .....	0	Gen. Engg.	115	Engg. Assembly .....	0
Total .....			18	Total .....			17

### JUNIOR

Chem. Engg.	420	Unit Op. I Rec. ....	3	Chem. Engg.	428	Unit Op. II Rec. ....	3
Chem. Engg.	424	Unit Op. I Lab. ....	1	Chem. Engg.	430	Unit Op. II Lab. ....	1
Chem.	585	Phys. Chem. I Rec. ....	3	Chem.	595	Phys. Chem. II Rec. ....	3
Chem.	590	Phys. Chem. I Lab. ....	2	Chem.	600	Phys. Chem. II Lab. ....	2
Chem.	505	Org. Chem. ....	5	App. Mech.	405	Applied Mechanics .....	4
Phys.	560	Atomic Physics .....	3	Elec. Engg.	120	Elec. Engg. C Rec. ....	2
Phys.	591	Modern Physics Lab. I, ..	1	Elec. Engg.	124	Elec. Engg. C Lab. ....	1
Gen. Engg.	115	Engg. Assembly .....	0	Phys.	575	Nuclear Physics .....	3
Engl.	090	English Proficiency .....	0	Gen. Engg.	115	Engg. Assembly .....	0
Total .....			18	Total .....			19

### SENIOR

Chem. Engg.	491	Ch. E. Thermo. I .....	4	Chem. Engg.	495	Ch. E. Thermo. II .....	4
Chem. Engg.	700	Reactor Tech. ....	4	Chem. Engg.	710	Reactor Design .....	5
Chem.				Elec. Engg.	470	Ind. Electronics Rec. ....	3
(Phys.)	635	Tracer Techniques .....	3			Humanities Elective* ....	4
App. Mech.	410	Mech. of Mtls. ....	4	Gen. Engg.	115	Engg. Assembly .....	0
		Humanities Elective* ....	4				
Gen. Engg.	115	Engg. Assembly .....	0				
Chem. Engg.	200	Inspection Trip .....	0				
Total .....			19	Total .....			16

Number of hours required for graduation, 142

† Students who offer but one unit of algebra for admission take a three-hour course in Intermediate Algebra, Math. 050, postponing both college algebra and plane trigonometry to the second semester.

\* Electives are to be chosen with the advice and approval of the head of the department and the dean.



**AGRICULTURAL ENGINEERING**FREDERICK C. FENTON, *Head of Department*

## FOR UNDERGRADUATE CREDIT

**110. Farm Mechanics.** 2 semester hours. First semester.

Shop skills for teachers of vocational agriculture, including pipe fitting, plumbing repairs, taps and dies, drilling, soldering, babbitting, use of hand tools, and sharpening. Special lathe work and welding with direct application to the repair of farm machinery. Six hours of laboratory a week. For students in the Curriculum in Agricultural Education. Prerequisite: Ind. Engg. 184.

**115. Farm Machinery Repair.** 3 semester hours. Second semester.

Construction, repair, operation, adjustment, calibration, and maintenance of farm machinery and equipment. One hour of recitation and six hours of laboratory a week. For students in the Curriculum in Agricultural Education. Prerequisite: Ag. Engg. 110.

**120. Farm Power.** 3 semester hours. Second semester.

Selection, operation, and maintenance of engines, tractors, and electric motors; principles of valve timing, ignition, carburetion, cooling, lubrication, and fuels; with special emphasis on repair and reconditioning. One hour of recitation and six hours of laboratory a week. For students in the Curriculum in Agricultural Education.

**125. Farm Machinery.** 3 semester hours. Each semester and summer.

Construction, operation, adjustment, power requirements, use, service, and repair of farm machinery. Two hours of recitation and three hours of laboratory a week. For agricultural students.

**130. Agricultural Machinery.** 3 semester hours. Second semester.

Selection, adjustment, operation, servicing, economics, and application of agricultural machines. Two hours of recitation and three hours of laboratory a week.

**136. Tractor Operation and Maintenance.** 3 semester hours. Each semester and summer.

Principles of the internal combustion engine: Carburetion, valve timing, ignition, cooling, lubrication and fuels; the servicing and repair of farm engines and the selection of power for agriculture. Two hours of recitation and three hours of laboratory a week. For agricultural students.

**140. Farm Shop.** 2 semester hours. Each semester.

Shop skills and practice for the farm operator. Equipment for the farm shop and practice in using it to build and repair farm equipment. Six hours of laboratory a week. For agricultural students.

**160. Farm Buildings.** 3 semester hours. Second semester and summer in alternate years.

Requirements, details of arrangements, and materials of construction for farm buildings; preparation of plans, bills of material, and estimates of costs; water supply, sewage disposal, lighting, and other modern equipment for the farmstead. Two hours of recitation and three hours of laboratory a week.

**200. Inspection Trip.** Required; no credit. First semester.

A trip of three to five days for the purpose of studying farm machinery production and other projects of special interest to agricultural engineers. Cost of trip, \$30 to \$60. Prerequisite: Senior classification.

## FOR UNDERGRADUATE AND GRADUATE CREDIT

**405. Farm Mechanics Methods.** 3 semester hours. Second semester.

Methods of teaching farm mechanics in vocational agriculture, including the organization and equipment of the farm shop; preparation and

use of job sheets and instruction sheets; practice in the demonstration of shop skills and in the construction of farm mechanics projects. For students in the Curriculum in Agricultural Education. One hour of recitation and six hours of laboratory a week. Prerequisite: Ag. Engg. 110, 120.

**410. Farm Building Construction.** 3 semester hours. First semester.

Planning and construction of buildings and equipment for the farm; concrete and masonry, farm carpentry, painting, new building materials; blueprint reading, bills of materials, and cost estimates. For students in the Curriculum in Agricultural Education. One hour of recitation and six hours of laboratory a week. Prerequisites: Ag. Engg. 110.

**415. Agricultural Engineering Applications.** 2 semester hours. First semester.

Practical laboratory exercises, surveying, terracing, contouring, drainage, irrigation, fencing, electric wiring, farm water supply, sewage disposal, heating, lighting, refrigeration, etc. For students in the Curriculum in Agricultural Education. Six hours of laboratory a week. Prerequisite: Junior standing.

**421. Drainage and Erosion Control.** 3 semester hours. Second semester.

Principles and practices of land improvement by drainage and various methods of erosion control. Two hours of recitation and three hours of laboratory a week. For agricultural students. Prerequisite: Agron. 149.

**425. Irrigation Practice.** 3 semester hours. First semester.

Principles and practices of irrigation involved in the setup and operation of various irrigation systems on the farm. Two hours of recitation and three hours of laboratory a week. For agricultural students. Prerequisite: Agron. 149.

**430. Irrigation and Drainage.** 3 semester hours. First semester.

Design and operation problems involved in irrigation or drainage of agricultural land. Two hours of recitation and three hours of laboratory a week. Prerequisite: Agron. 149, Ap. Mech. 470, Ag. Engg. 475.

**435. Design of Farm Machinery.** 4 semester hours. First semester.

Functional requirements and principles of operation of farm machinery. Analysis of the problems involved in the design and construction of farm machines. Two hours of recitation and six hours of laboratory a week. Prerequisite: Phys. 140; prerequisite or concurrent: Ap. Mech. 405.

**440. Power and Machinery in Agriculture.** 2 semester hours. First semester.

History and development of machinery in agriculture; the application, selection, management, and cost of machines; future development; a survey course dealing with the mechanism of agriculture. Open to all students who have not taken Ag. Engg. 125 or 136. Two hours of recitation a week. Prerequisite: Junior or senior classification.

**446. Tractors.** 4 semester hours. Second semester.

Theory, design, operation, and adjustment of the internal combustion engine and a comprehensive study of power and its relation to agriculture. Two hours of recitation and six hours of laboratory a week. Prerequisite: Phys. 140, Mech. Engg. 411.

**455. Dairy Mechanics.** 3 semester hours. Second semester.

Installation, adjustment, and operation of dairy plant equipment; broilers, engines, motors, pumps, refrigeration machinery; water supply, waste disposal. Two hours of recitation and three hours of laboratory a week.

**465. Farm Structures.** 4 semester hours. First semester.

Design of farm structures, details and materials of construction; specifications and estimates. Two hours of recitation and six hours of laboratory a week. Prerequisite: Ap. Mech. 410.



**475. Agricultural Hydrology.** 3 semester hours. First semester.

The hydrologic cycle, rainfall, runoff, soil and water relationships affecting crop production, drainage, irrigation, and erosion. Watershed surveys. Two hours of recitation and three hours of laboratory a week. Prerequisite: Civ. Engg. 120.

**480. Soil and Water Conservation.** 4 semester hours. Second semester.

Principles and methods of land drainage, soil and water conservation, and irrigation. Two hours of recitation and six hours of laboratory a week. Prerequisite: Ap. Mech. 470, Ag. Engg. 475, Agron. 149.

**490. Electricity in Agriculture.** 3 semester hours. First semester.

The application of electricity to improve farm living and income. Problems relating to the production, processing, and storage of agricultural products. Motors and controls, heating and lighting, farmstead wiring, water systems, refrigeration and air conditioning. Two hours of recitation and three hours of laboratory a week. For agricultural students.

**500. Rural Electrification.** 4 semester hours. Second semester.

Water supply, sewage disposal, lighting, heating, and ventilation of farm buildings; refrigeration; rural electrification. Two hours of recitation and six hours of laboratory a week. Prerequisite: Ap. Mech. 470, Mech. Engg. 411.

**520. Problems in Agricultural Engineering.** Credit to be arranged. Each semester and summer.

Problems in the design, construction, or application of machinery or power in agriculture, structures, modern conveniences, and rural electrification. Prerequisite: Permission of instructors.

## FOR GRADUATE CREDIT

**810. Research in Agricultural Engineering.** Credit to be arranged. Each semester and summer.

The laboratories of the College are available for research in the design, use, and application of machinery and equipment in the development of agriculture. The results of such investigation, if suitable, may be incorporated in bulletins of the Engineering Experiment Station or furnish material for the master's thesis. Prerequisite: Agron. 149, Phys. 140, or equivalent.

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**APPLIED MECHANICS**

CHARLES H. SCHOLER, *Head of Department*

## FOR UNDERGRADUATE CREDIT

**105. Applied Mechanics A.** 3 semester hours. Each semester.

A study of statics, with applications to stress in structure; center of gravity; moment of inertia. Three hours of recitation a week. Prerequisite: Math. 190, Phys. 110.

**120. Strength of Materials A Recitation.** 3 semester hours. Each semester.

Behavior of materials subjected to tension, compression, shear, and bending; designs of beams of wood, steel, and reinforced concrete; design and investigation of columns; practice in the use of a handbook. Three hours of recitation a week. Prerequisite: Ap. Mech. 105.

**124. Strength of Materials A Laboratory.** 1 semester hour. Each semester.

A study of various testing machines; tension, compression, shear, and bending tests on iron, steel, wood, and concrete; tests on cement and on the fine and coarse aggregates for concrete. Three hours of laboratory a week. Prerequisite or concurrent: Ap. Mech. 120.



**140. Foundation Materials.** 3 semester hours. Second semester.

The properties and testing of natural materials, including soils, commonly used for foundations. Three hours of recitation a week. Prerequisite: Geol. 515.

## FOR UNDERGRADUATE AND GRADUATE CREDIT

**405. Applied Mechanics.** 4 semester hours. Each semester and summer.

Composition, resolution, and conditions of equilibrium of concurrent and nonconcurrent forces; center of gravity; friction; laws of rectilinear and curvilinear motion of material points; moment of inertia; relations between forces acting on rigid bodies and the resulting motions; work, energy, and power. Four hours of recitation a week. Prerequisite: Phys. 130, Math. 290; or concurrent: Math. 245.

**408. Statics.** 3 semester hours. Second semester.

Composition and resolution of forces; equilibrium of force systems; application of the general laws of statics to engineering problems, including a study of friction and force analyses of simple structures, loaded cables, and machine elements; centers of gravity; moments of inertia. Not open to students with credit in Ap. Mech. 405. Prerequisite: Phys. 130, Math. 290; or concurrent: Math. 245. Ap. Mech. 408 and 409 together constitute an acceptable substitute for Ap. Mech. 405 in all engineering curriculums.

**409. Dynamics.** 2 semester hours. First semester.

Plane kinematics, Newton's Laws, d'Alembert's principle, the concepts of work and energy, impulse and momentum, and their applications to problems of particle and rigid body motion. Not open to students with credit in Ap. Mech. 405. Prerequisite: Ap. Mech. 408. Ap. Mech. 408 and 409 together constitute an acceptable substitute for Ap. Mech. 405 in all engineering curriculums.

**410. Mechanics of Materials I Recitation.** 4 semester hours. Each semester and summer.

Behavior of materials subject to tension, compression, and shear; riveted joints; torsion; shafts and the transmission of power; strength and stiffness of simple and continuous beams; bending and shear in beams; design of beams; stresses in columns and hooks. Four hours of recitation a week. Prerequisite: Ap. Mech. 405.

**414. Mechanics of Materials II Recitation.** 2 semester hours. Second semester.

An extension of Ap. Mech. 410 with special reference to the needs of students in mechanical engineering. Two hours of recitation a week. Prerequisite: Ap. Mech. 410.

**418. Mechanics of Materials Laboratory.** 1 semester hour. Each semester and summer.

Tension, compression, shear, and bending tests on specimens of iron, steel, wood, and concrete; torsion tests on steel shafting; standard tests on fine and coarse aggregates for concrete. Three hours of laboratory a week. Prerequisite or concurrent: Ap. Mech. 410.

**420. Highway and Airport Materials Laboratory.** 1 semester hour. Each semester.

A comprehensive course in the examination and testing of materials used in the construction of highways and airports. Three hours of laboratory a week. Prerequisite: Ap. Mech. 418.

**425. Design and Control of Asphalt Mixtures.** 2 semester hours. First semester.

A practical study of the factors involved in selecting, designing, and constructing the various types of bituminous highway surfaces. One hour of recitation and three hours of laboratory a week. Prerequisite: Ap. Mech. 420.

**430. Experimental Stress Analysis.** 1 semester hour. First semester.

A study of methods and apparatus for experimental determination of stresses, including photoelasticity, brittle models, brittle coatings, electric strain gages, and strain rosettes. Three hours of laboratory a week. Prerequisite: Ap. Mech. 418; prerequisite or concurrent: Ap. Mech. 414.

**435. Design of Concrete Mixtures.** 3 semester hours. Second semester.

Practical applications of the fundamental principles of concrete making, using various kinds of cement and placing special emphasis on the proper designing, mixing, and placing of concrete mixtures to meet certain strength and durability requirements. One hour of recitation and six hours of laboratory a week. Prerequisite: Ap. Mech. 418.

**440. Cement and Concrete Technology.** 2 semester hours. First semester.

History of calcareous cements; a survey of raw materials and processes; cement components, constitution and cementing value; special cements and their concrete-making properties; resistance of concrete to natural destructive agents. Prerequisite: Ap. Mech. 418.

**450. Soil Mechanics I.** 2 semester hours. Each semester.

The identification and classification of soil types; the physical properties of soil that govern its use as a material of construction and as a support for engineering structures. One hour of recitation and three hours of laboratory a week. Prerequisite: Ap. Mech. 410.

**454. Soil Mechanics II.** 3 semester hours. First semester.

Subsurface investigations; permeability, seepage, and capillarity; consolidation and settlement; stress distribution in soils and shearing strength. Two hours of recitation and three hours of laboratory a week. Prerequisite: Ap. Mech. 450.

**458. Soil Mechanics III.** 3 semester hours. Second semester.

Stability of slopes; lateral pressure and stability of retaining walls; compaction; earth dams; bearing power of soils; behavior of soils under various types of foundations. Two hours of recitation and three hours of laboratory a week. Prerequisite: Ap. Mech. 450.

**470. Fluid Mechanics A.** 4 semester hours. Each semester and summer.

Fluid pressures, center of pressure, immersion and flotation; Bernoulli's Theorem for compressible and incompressible fluids; the principle of similarity, the Reynolds and Froude numbers; flow of fluids through orifices, nozzles, pipes; flow of water over weirs and in open channels; elements of water power, impulse wheels, reaction turbines, and centrifugal pumps. Four hours of recitation a week. Prerequisite: Ap. Mech. 405.

**474. Fluid Mechanics B.** 3 semester hours. Second semester.

An optional course for mechanical engineering students, in which both gaseous and liquid fluids are treated. Three hours of recitation a week. Not open to students with credit in Ap. Mech. 470. Prerequisite: Ap. Mech. 405, Mech. Engg. 411.

**478. Hydraulics Laboratory.** 1 semester hour. Each semester.

Tests to determine the coefficients of weirs and orifices, loss of head in pipes, water wheels, water turbines, rams and pumps. Three hours of laboratory a week. Prerequisite or concurrent: Ap. Mech. 470 or 474.

**480. Hydraulic Machinery.** 2 semester hours. Each semester.

Characteristics and applications of water wheels, turbines, pumps, and other hydraulic machinery. Two hours of recitation a week. Prerequisite: Ap. Mech. 470.

**491. Airplane Stress Analysis I.** 3 semester hours. First semester.

Analysis of stress and stability problems in the structural elements of airplanes. Three hours of recitation a week. Prerequisite: Math. 360, Ap. Mech. 410.



**494. Airplane Stress Analysis II.** 2 semester hours. Second semester.

A continuation of Airplane Stress Analysis I. Two hours of recitation a week. Prerequisite: Ap. Mech. 491.

**511. Energy Methods in Engineering Mechanics.** 3 semester hours. First semester.

The principle of virtual work, minimum potential energy. Theorem of complementary energy; Castigliano's theorems. Application to statically determinate and indeterminate beams, curved beams, and frames. Extension of energy principles of statics to dynamic problems. Prerequisite: Ap. Mech. 410.

**515. Elastic Stability.** 3 semester hours. First semester.

Bending of prismatic bars under simultaneous action of axial and lateral loads; buckling of centrally compressed bars; buckling of compressed rings and curved bars; lateral buckling of beams. Three hours of recitation a week. Prerequisite: Ap. Mech. 410.

**525. Mathematical Methods in Engineering Research.** 3 semester hours. First semester.

The application of the methods of Euler, Lagrange, Ritz, Southwell, Timoshenko, Runge, Heaviside, and Kron to problems in various fields in engineering. Three hours of recitation a week. Prerequisite: Math. 615 or equivalent.

**541. Intermediate Dynamics.** 3 semester hours. Second semester.

General vector principles of the dynamics of particles and rigid bodies; an introduction to the energy methods of advanced dynamics. Prerequisite: Ap. Mech. 405, Math. 360, or equivalent.

**545. Non-Linear Mechanics.** 2 semester hours. Second semester.

Study of mechanical or electrical systems governed by non-linear equations, elliptic integrals, geometry of integral curves, the phase plane, Lienard's graphical construction, Poincare's classification of singular points, stability and instability. Prerequisite: Math. 360.

## FOR GRADUATE CREDIT

**805. Problems in Applied Mechanics.** Credit to be arranged. Each semester and summer.

Special problems in the fields of Applied Mechanics. Prerequisite: Consult instructors.

**810. Research in Applied Mechanics.** Credit to be arranged. Each semester and summer.

Experimental and/or analytical work in the fields of materials of construction, mechanics of materials, fluid mechanics, soil mechanics and dynamics. The one material concrete provides a variety of attractive problems in regard to its design, mixing, placing, strength, plasticity, permeability, shrinkage, absorptivity, durability and its performance as a structural element or pavement slab. The results of such investigation may furnish material for the master's thesis or report. Prerequisite: Consult instructors.

**820. Theory of Elasticity I.** 2 semester hours. Second semester.

Equations of elasticity in two and three dimensions; two-dimensional problems in rectangular and in polar coordinates; torsion of shaft of noncircular section. Prerequisite: Ap. Mech. 414, Math. 615, or equivalent.

**824. Theory of Elasticity II.** 2 semester hours. First semester.

Bending of prismatic bars and circular plates; stresses around cavities; stresses within soils; thermal stresses. Prerequisite: Ap. Mech. 820.

**840. Theory of Plates and Slabs.** 3 semester hours. Second semester.

Equations for bending of thin plates; symmetrical bending of circular plates; simply supported rectangular plates. Rectangular plates or slabs



with various edge conditions. Plates or slabs of various shapes. Three hours of recitation a week. Prerequisite: Ap. Mech. 414, Math. 615, or equivalent.

**850. Vibration of Elastic Bodies.** 3 semester hours. First semester.

Longitudinal, torsional, and lateral vibration of bars; testing of samples of materials by dynamic methods; the Ritz method; vibration of membranes and plates; waves in isotropic elastic mediums; vibrations of pavement slabs. Three hours of recitation a week. Prerequisite or concurrent: Ap. Mech. 820, Mach. Des. 430.

**861. Plasticity.** 2 semester hours. First semester.

Elastic-plastic and fully plastic problems of trusses, beams, and bars in torsion; unrestricted and contained plane strain; limit analysis. Prerequisite: Ap. Mech. 414, Math. 615, or equivalent.

**870. Transform Calculus Applied to Engineering Problems.** 3 semester hours. First semester.

The Laplace, sine, cosine, Hankel, Legendre, Fourier and Jacobi transforms applied to the solution of initial and boundary value problems in the ordinary and partial differential equations arising in engineering. Prerequisite: Math. 615 or equivalent.

**880. Advanced Fluid Mechanics.** 3 semester hours. First semester.

Principles of flow, irrotational motion, conformal mapping, viscous flow, fluid turbulence, boundary layers, lift and draft, transportation of sediment. Three hours of recitation a week. Prerequisite: Ap. Mech. 474, Math. 615, or equivalent, and preferably Ap. Mech. 820.

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## ARCHITECTURE AND ALLIED ARTS

EMIL C. FISCHER, *Head of Department*

All drawings or designs made by the student during the course become the property of the department, to be used or returned at the discretion of the faculty.

### FOR UNDERGRADUATE CREDIT

**105. Shades and Shadows.** 1 semester hour. Each semester.

A fundamental course in shades and shadows. Three hours of laboratory a week. Prerequisite: Mach. Des. 110 or equivalent.

**110. Perspective Drawing.** 1 semester hour. Each semester.

The principles of perspective drawing. Three hours of laboratory a week. Prerequisite: Mach. Des. 110 or equivalent.

**115. Elementary Drawing.** 2 semester hours. Each semester and summer.

The principles and fundamentals of sketching and drawing intended for nonprofessional students. Six hours of laboratory a week. Not to be taken for credit by students enrolled in curriculums in Architecture and Humanities (Art Adaptation).

**120. Freehand Drawing I.** 2 semester hours. Each semester and summer.

A basic course in the fundamentals of freehand drawing. Six hours of laboratory a week.

**124. Freehand Drawing II.** 2 semester hours. Each semester and summer.

A continuation of Arch. 120. Six hours of laboratory a week. Prerequisite: Arch. 120.

**130. Pencil Sketching.** 2 semester hours. Each semester and summer.

Six hours of laboratory a week. Prerequisite: Arch. 120.

**135. Pen and Ink Drawing.** 2 semester hours. Each semester and summer.

Six hours of laboratory a week. Prerequisite: Approval of instructor.

- 140. Still-life Drawing.** 2 semester hours. First semester and summer.  
Sketches in various media of still-life groups in the studio and out-of-doors. Six hours of laboratory a week. Prerequisite: Arch. 120.
- 145. Clay Modeling.** 2 semester hours. First semester and summer.  
The making of original clay models, plaster casts of simple decorative and anatomical forms. Six hours of laboratory a week. Prerequisite: Arch. 140.
- 150. Block Prints.** 2 semester hours. First semester and summer.  
The carving of original compositions in linoleum and wood blocks. Six hours of laboratory a week. Prerequisite: Arch. 124 or approval of instructor.
- 155. Elementary Painting.** 2 semester hours. Each semester and summer.  
The principles and fundamentals of painting in oil or water color intended for nonprofessional students. Six hours of laboratory a week. Not to be taken for credit by students enrolled in curriculums in Architecture and Humanities (Art Adaptation).
- 160. Water Color I.** 2 semester hours. Each semester and summer.  
Rudiments of water-color painting; translation and theory of color. Sketching of simple objects and groups of objects; includes both studio and outdoor sketching. Six hours of laboratory a week. Prerequisite: Arch. 130 or approval of instructor.
- 164. Water Color II.** 2 semester hours. Each semester and summer.  
Advanced study in the technique of the medium. Includes both studio work and outdoor sketching. Six hours of laboratory a week. Prerequisite: Arch. 160.
- 170. Life Drawing I.** 2 semester hours. Each semester.  
Six hours of laboratory a week. Prerequisite: Arch. 160.
- 174. Life Drawing II.** 2 semester hours. Each semester.  
A continuation of Arch. 170. Six hours of laboratory a week. Prerequisite: Arch. 170.
- 180. Oil Painting I.** 2 semester hours. Each semester and summer.  
Principles of oil painting with emphasis on technical aspects of the medium; theory of color and composition; both studio and outdoor work. Six hours of laboratory a week. Prerequisite: Arch. 120 or approval of instructor.
- 184. Oil Painting II.** 2 semester hours. Each semester and summer.  
A continuation of Arch. 180. Six hours of laboratory a week. Prerequisite: Arch. 180 or approval of instructor.
- 190. Pictorial Composition I.** 2 semester hours. Each semester and summer.  
Individuality of expression is encouraged and the student is stimulated to express his ideas and emotions graphically in various media. Further understanding of the creative impulse and activity is gained through discussions, reports, and readings. Six hours of laboratory a week. An elective course intended for students not enrolled in the Department of Architecture and Allied Arts.
- 194. Pictorial Composition II.** 2 semester hours. Each semester and summer.  
Continuation of Arch. 190. Six hours of laboratory a week. An elective course intended for students not enrolled in the Department of Architecture and Allied Arts. Prerequisite: Arch. 190.
- 200. Appreciation of Architecture.** 3 semester hours. Each semester.  
A survey of the history of architecture. Three hours of recitation a week. An elective course intended for students not enrolled in the Department of Architecture and Allied Arts.



**205. Domestic Architecture.** 2 semester hours. Each semester.

A study of the design and planning problems of the small home. Two hours of recitation a week. An elective course intended for students not enrolled in the Department of Architecture and Allied Arts.

**210. Commercial Illustration I.** 2 semester hours. Each semester.

The principles of advertising arrangements; making various types of advertising designs, such as newspaper advertisements, lettering, and posters; making cover designs for magazines, books, and trade catalogues; for headings, tail pieces, and decorative page arrangements; drawings carried out in black and white and in one or more colors. Six hours of laboratory a week.

**214. Commercial Illustration II.** 2 semester hours. Each semester.

Continuation of Arch. 210. Six hours of laboratory a week. Prerequisite: Arch. 210.

**218. Commercial Illustration III.** 3 semester hours. Each semester.

Continuation of Arch. 214 with particular emphasis upon the perfecting of professional techniques employed in advertising work. Nine hours of laboratory a week. Prerequisite: Arch. 214.

**220. Commercial Illustration IV.** 3 semester hours. Each semester.

Continuation of Arch. 218. Nine hours of laboratory a week. Prerequisite: Arch. 218.

**230. Elements of Architecture I.** 4 semester hours. Each semester.

A study of the fundamentals of architectural design by their application in the original solution and presentation of simple architectural problems. Twelve hours of laboratory a week.

**234. Elements of Architecture II.** 4 semester hours. Each semester.

A continuation of Arch. 230. Twelve hours of laboratory a week. Prerequisite: Arch. 230.

**240. Architectural Design I.** 5 semester hours. Each semester.

A continuation of Arch. 234. Fifteen hours of laboratory a week. Prerequisite: Arch. 234.

**244. Architectural Design II.** 5 semester hours. Each semester.

A continuation of Arch. 240. Fifteen hours of laboratory a week. Prerequisite: Arch. 240.

**248. Architectural Design III.** 5 semester hours. Each semester.

Continuation of Arch. 244; time problems and rapid design sketches required at frequent intervals. Fifteen hours of laboratory a week. Prerequisite: Arch. 244.

**250. Architectural Design IV.** 5 semester hours. Each semester.

Continuation of Arch. 248. Fifteen hours of laboratory a week. Prerequisite: Arch. 248.

**255. Interior Design.** 2 semester hours. First semester and summer.

A study of the principle of interior architecture. Six hours of laboratory a week. Prerequisite: Arch. 160, 200, 248.

**270. History of Architecture I.** 2 semester hours. First semester.

Preclassical and classical architecture. Two hours of recitation a week.

**274. History of Architecture II.** 2 semester hours. Second semester.

Medieval architecture. Two hours of recitation a week. Prerequisite: Arch. 270.

**278. History of Architecture III.** 2 semester hours. First semester.

Italian and French Renaissance architecture. Two hours of recitation a week. Prerequisite: Arch. 274.

**280. History of Architecture IV.** 2 semester hours. Second semester.

Continuation of Arch. 278 through modern architecture. Two hours of recitation a week. Prerequisite: Arch. 278.



**285. History of Painting and Sculpture.** 3 semester hours. Each semester and summer.

The appreciation and development of painting and sculpture. Three hours of recitation a week. A required course for students in architecture and a recommended elective for other students.

**300. Building Materials and Construction.** 3 semester hours. Each semester.

An introduction to the properties and uses of the materials of construction; construction methods; occasional visits to buildings under construction. Three hours of recitation a week.

**305. Building Equipment.** 2 semester hours. Each semester.

A study of plumbing, sanitation systems, and mechanical equipment of buildings. Two hours of recitation a week. Prerequisite: Arch. 300.

**310. Working Drawings.** 3 semester hours. Each semester.

Preparing working drawings for a residence. Nine hours of laboratory a week. Prerequisite: Arch. 240, 300.

**320. Theory of Structures I.** 4 semester hours. Second semester.

Mathematical and graphical solutions of stresses in framed structures under static loading; practical problems in the design of wood, steel, and masonry construction; occasional inspection trips to buildings under construction. Two hours of recitation and six hours of laboratory a week. Prerequisite: Ap. Mech. 120, 124.

**324. Theory of Structures II.** 5 semester hours. First semester.

A continuation of Arch. 320. Three hours of recitation and six hours of laboratory a week. Prerequisite: Arch. 320.

**328. Theory of Structures III.** 4 semester hours. Second semester.

A continuation of Arch. 324, including design of reinforced concrete building frames; footings, columns, and floor systems, attention being given to costs and economical design. Two hours of recitation and six hours of laboratory a week. Prerequisite: Arch. 324.

**340. Professional Practice.** 2 semester hours. Each semester.

The preparation of building documents; interpretation of building codes and analysis of documents of American Institute of Architects; office organization; client and contractor relationships. Six hours of laboratory a week. Prerequisite: Arch. 310; senior classification.

**390. Inspection Trip.** Required; no credit. First semester.

An inspection trip is made to one of the larger cities of the Middle West, usually Chicago, by the senior students in architectural engineering and the fourth year students in architecture. The inspection party is under the charge of one or more faculty members of the Department of Architecture. Time allotted to the trip is from three days to one week. Prerequisite: Senior classification. Approximate cost of trip, \$60.

#### FOR UNDERGRADUATE AND GRADUATE CREDIT

**405. Advanced Freehand Drawing.** Credit to be arranged. Each semester and summer.

Prerequisite: Arch. 140, 160; approval of instructor.

**410. Etching.** Credit to be arranged. Each semester and summer.

Technical principles and practice of etching on copper and zinc plate. Prerequisite: Arch. 170 or approval of instructor.

**415. Lithography.** Credit to be arranged. Each semester and summer.

Technical principles and practice of lithography on stone and metal plate and their application in creative work. Prerequisite: Arch. 170 or approval of instructor.

**420. Oil Painting III.** 2 semester hours. Each semester and summer.

Work in the various methods and historical technics of painting. Six

hours of laboratory a week. Prerequisite: Arch. 184 or approval of instructor.

**424. Oil Painting IV.** 2 semester hours. Each semester and summer.

A continuation of Arch. 420 with a selected study and practice of mural painting. Six hours of laboratory a week. Prerequisite: Arch. 420 or approval of instructor.

**440. Portraiture I.** 2 semester hours. Each semester and summer.

Principles and elements of portrait drawing. Various media may be employed. Six hours of laboratory a week. Prerequisite: Arch. 174 or approval of instructor.

**444. Portraiture II.** 2 semester hours. Each semester and summer.

A continuation of Arch. 440. Six hours of laboratory a week. Prerequisite: Arch. 440 or approval of instructor.

**448. Sculpture I.** 2 semester hours. Each semester and summer.

Work in three-dimensional media to develop an understanding of mass and volume through an analysis of sculptural form in various materials. Six hours of laboratory a week. Prerequisite: Arch. 124.

**452. Sculpture II.** 2 semester hours. Each semester and summer.

Advanced work in various media. Prerequisite: Arch. 448.

**461. City Planning I.** 3 semester hours. First semester.

A study of the regional, state, and county background in city planning, including problems of population, resource potential, agricultural, industrial, and trade developments and their effect upon city planning. Prerequisite: Junior or senior standing. Nine hours of laboratory a week.

**463. City Planning II.** 3 semester hours. Second semester.

A study of city planning, including transportation and street systems, parks and recreation facilities, public buildings and civic centers, subdivisions of land, restrictions, and zoning. Nine hours of laboratory a week. Prerequisite: Arch. 461.

**465. Problems in Architecture.** Credit to be arranged. Each semester and summer.

Under direct supervision of some member of the departmental staff, study of specific architectural problems. Prerequisite: Approval of instructor.

**480. Theory of Structures IV.** 4 semester hours. First semester.

A continuation of Theory III with special emphasis being placed on the complete problem of the structure as a whole. Three hours of recitation and three hours of laboratory a week. Prerequisite: Arch. 328.

**491. Architectural Design V.** 5 semester hours. Each semester.

A continuation of Arch. 250. Fifteen hours of laboratory a week. Prerequisite: Arch. 250.

**495. Architectural Design VI.** 5 semester hours. Each semester.

A continuation of Arch. 491. Fifteen hours of laboratory a week. Prerequisite: Arch. 491.

**500. Contemporary Creative Art.** 3 semester hours. Summer.

Importance of creative thinking in composition and painting as it pertains both to the artist and art teacher. One hour of recitation and six hours of laboratory a week. Prerequisite: Approval of instructor.

**506. Creative Drawing.** 3 semester hours. Summer.

The logic and aesthetics of creative drawing for the artist and teacher. One hour of recitation and six hours of laboratory a week. Prerequisite: Junior standing or approval of instructor.

**510. Contemporary Approach to Figure Drawing.** 3 semester hours. Summer.

Aesthetic problems involved in drawing and painting the figure. One



hour of recitation and six hours of laboratory a week. Prerequisite: Approval of instructor.

#### FOR GRADUATE CREDIT

**810. Research in Architecture.** Credit to be arranged. Each semester and summer.

Original investigation or advanced study in architectural design, planning, industrial design and related fields. Prerequisite: Approval of instructor.

**820. Research in Painting and Sculpture.** Credit to be arranged. Each semester and summer.

Original investigation or advanced study in painting, sculpture and related fields. Prerequisite: Approval of instructor.

**830. Advanced Architectural Design I.** Credit to be arranged. Each semester and summer.

A study of the planning of important buildings and groups of buildings. Prerequisite: Arch. 494.

**834. Advanced Architectural Design II.** Credit to be arranged. Each semester and summer.

A continuation of Arch. 830; may furnish material for the master's thesis. Prerequisite: Arch. 830.

## CHEMICAL ENGINEERING

HENRY T. WARD, *Head of Department*

The instruction in the Department of Chemical Engineering deals primarily with those unit physical operations and unit chemical processes which, when coordinated and in their proper sequence, constitute a physical or chemical process as conducted on an industrial scale. Chemistry, physics, and mathematics are the underlying sciences of chemical engineering, and economics its guide in practice. Courses in Nuclear Engineering are included.

#### FOR UNDERGRADUATE CREDIT

**200. Inspection Trip.** Required; no credit. First semester.

Inspections are made of chemical industries in Kansas by visits to plants making chemicals such as ammonia, methanol, soap, glass, cement, petroleum products, fertilizers, etc. Approximate cost to student, \$30. Prerequisite: Senior standing.

**205. Chemical Engineering Materials.** 2 semester hours. Each semester.

Manufacture, use, and properties of metallic and nonmetallic materials of construction. Two hours of recitation a week. Prerequisite or concurrent: Chem. 230, 250.

**210. Industrial Stoichiometry.** 3 semester hours. Each semester and summer.

Calculation of material and energy balance in industrial chemical reactions. Three hours of recitation a week. Prerequisite: Chem. 435.

#### FOR UNDERGRADUATE AND GRADUATE CREDIT

**420. Unit Operations I Recitation.** 3 semester hours. Each semester.

Class and problem work on fluid flow, heat transfer, and evaporation. Three hours of recitation a week. Prerequisite: Chem. Engg. 210, Math. 245 or 290; prerequisite or concurrent: Chem. 585, 590.

**424. Unit Operations I Laboratory.** 1 semester hour. Each semester.

Laboratory work in fluid flow and heat transfer. Three hours laboratory a week. Prerequisite or concurrent: Chem. Engg. 420.

**428. Unit Operations II Recitation.** 3 semester hours. Each semester.

Class and problem work on humidification, drying, absorption, dis-



tillation, crystallization, and filtration. Three hours of recitation a week. Prerequisite: Chem. Engg. 420.

**430. Unit Operations II Laboratory.** 1 semester hour. Each semester.

Laboratory work in evaporation, humidification, drying, and distillation. Three hours laboratory a week. Prerequisite: Chem. Engg. 424; prerequisite or concurrent: Chem. Engg. 428.

**434. Unit Operations III Laboratory.** 1 semester hour. Each semester.

Continuation of courses I and II with studies of extraction, absorption, filtration, crystallization and crushing and grinding. Three hours of laboratory a week. Prerequisite: Chem. Engg. 424, 428.

**440. Unit Process Laboratory.** 2 semester hours. Each semester.

Investigation of important unit processes. Six hours of laboratory a week. Prerequisite or concurrent: Chem. Engg. 428, 450.

**450. Inorganic Technology.** 2 semester hours. First semester.

Study of applications of physical chemistry, unit operations, and economics to the inorganic chemical process industries. Two hours of recitation a week. Prerequisite: Chem. 595.

**455. Organic Technology.** 3 semester hours. Second semester.

A study of industrial organic processes and of the heavy organic chemical industries. Three hours recitation a week. Prerequisite: Chem. 515.

**460. Chemical Engineering Plant Design.** 4 semester hours. Second semester.

A study of the practical aspects and economics of designing a chemical process. Three hours of recitation and three hours of laboratory a week. Prerequisite: Chem. Engg. 440; prerequisite or concurrent: Chem. Engg. 495.

**480. Problems in Chemical Engineering.** Credit to be arranged. Each semester and summer.

An introduction to chemical engineering research. Prerequisite: Permission of head of department.

**491. Chemical Engineering Thermodynamics I.** 4 semester hours. First semester.

Thermodynamics applied to physical and chemical equilibria and energy changes. Four hours of recitation a week. Prerequisite: Chem. Engg. 428.

**495. Chemical Engineering Thermodynamics II.** 4 semester hours. Second semester.

Thermodynamics applied to physical and chemical equilibria in complex, nonideal systems. Three hours of recitation and three hours of laboratory a week. Prerequisite: Chem. Engg. 491.

**550. Ceramic Engineering.** 3 semester hours. First or second semester.

A study of the utilization of clays and siliceous materials in the manufacture of glass, refractories, building materials and other ceramic products. Three hours of recitation a week. Prerequisite: Chem. Engg. 428, 450.

**560. Plastics Technology.** 3 semester hours. First or second semester.

Reactions in the formation of high polymers. Manufacturing processes and physical and chemical properties of various types of plastics, resins, and elastomers. Three hours of recitation a week. Prerequisite: Chem. 515, Chem. Engg. 455.

**570. Petroleum Refining Engineering I.** 3 semester hours. First semester.

Properties of hydrocarbon mixtures; separation by distillation and extraction; cracking, polymerization, hydrogenation, and alkylation. Three hours of recitation a week. Prerequisite or concurrent: Chem. Engg. 428, senior standing.

**575. Petroleum Refining Engineering II.** 3 semester hours. Second semester.

Methods for the design and analysis of equipment and processes for the production and utilization of petroleum hydrocarbons. Prerequisite: Chem. Engg. 570; or concurrent: Chem. Engg. 495.

**700. Reactor Technology.** 4 semester hours. First semester.

Reactor fuels, types of reactions, separation and purification of fission products, operation, control and maintenance problems. Four hours of recitation a week. Prerequisite: Phys. 560, 575.

**710. Reactor Design.** 5 semester hours. Second semester.

Methods of reactor calculation, heat transfer and thermal problems in reactors, materials of construction, waste disposal problems, construction and operation costs. Five hours of recitation a week. Prerequisite: Phys. 560, 575.

FOR GRADUATE CREDIT

**810. Research in Chemical Engineering.** Credit to be arranged. Each semester and summer.

Original investigations in the fields of unit operations, unit processes, petroleum refining, and industrial utilization of Kansas raw materials. Work is usually correlated with the research projects of the engineering or agricultural experiment stations. Satisfactory results may be used for the master's thesis. Prerequisite: Consent of head of department.

**815. Advanced Chemical Engineering Thermodynamics.** 3 semester hours. First or second semester.

Advanced topics. Practical methods for computing thermodynamic functions from molecular structure and statistical and quantum mechanics. Three hours of recitation a week. Prerequisite: Chem. Engg. 495.

**820. Industrial Reaction Rates and Catalysis.** 3 semester hours. First or second semester.

Theory of kinetics and catalysis with application to design of industrial chemical processes and equipment. Three hours of recitation a week. Prerequisite or concurrent: Chem. Engg. 495.

**825. Distillation.** 3 semester hours. First or second semester.

Advanced study of distillation. Three hours of recitation a week. Prerequisite: Chem. Engg. 491.

**830. Drying.** 3 semester hours. First or second semester.

Development of drying theory and an analysis of industrial drying systems. Three hours of recitation a week. Prerequisite: Chem. Engg. 491.

**835. Filtration and Mechanical Separation.** 3 semester hours. First or second semester.

Theory and practice of filtration, screening, flotation, air separation, centrifugation, and sedimentation. Three hours of recitation per week. Prerequisite: Chem. Engg. 491.

**840. Evaporation.** 3 semester hours. First or second semester.

Theory of evaporation and design of evaporators. Three hours of recitation a week. Prerequisite or concurrent: Chem. Engg. 495.

**845. Absorption and Extraction.** 3 semester hours. First or second semester.

Advanced study of absorption and extraction. Three hours of recitation a week. Prerequisite or concurrent: Chem. Engg. 495.

**850. Chemical Engineering Analysis.** 3 semester hours. First or second semester.

Graphical methods and dimensional analysis applied to chemical engineering problems. Three hours of recitation a week. Prerequisite or concurrent: Chem. Engg. 495.



**CIVIL ENGINEERING**REED F. MORSE, *Head of Department*

## FOR UNDERGRADUATE CREDIT

- 120. Surveying I.** 2 semester hours. Each semester and summer.  
Care and use of engineers' surveying instruments. Six hours of laboratory a week. Prerequisite or concurrent: Math. 190.
- 125. Surveying II.** 3 semester hours. Each semester.  
Land, topographic, and city surveying. One hour of recitation and six hours of laboratory a week. Prerequisite: Civ. Engg. 120.
- 131. Surveying III.** 3 semester hours. Each semester.  
Curves and earthwork, surveying incidental to alignment of highways and railways. One hour of recitation and six hours of laboratory a week. Prerequisite: Civ. Engg. 120.
- 200. Inspection Trip.** Required; no credit. First semester.  
A trip of four to six days to one or more industrial centers. Approximate cost to student, \$60. Prerequisite: Senior classification.

## FOR UNDERGRADUATE AND GRADUATE CREDIT

- 405. Astronomy and Geodesy.** 3 semester hours. First semester.  
The elements of astronomy; precise methods of surveying and leveling. Two hours of recitation and three hours of laboratory a week. Prerequisite: Civ. Engg. 411.
- 411. Photogrammetry.** 3 semester hours. Each semester.  
Construction of mosaics and contour maps from aerial photographs. One hour of recitation and six hours of laboratory a week. Prerequisite: Civ. Engg. 125, 131.
- 420. Stress Analysis I Recitation.** 4 semester hours. Each semester.  
Stresses in simple beams and framed structures with an introduction to deflections and redundants. Four hours of recitation a week. Prerequisite: Ap. Mech. 410.
- 424. Stress Analysis I Laboratory.** 2 semester hours. Each semester.  
Graphical determination of stresses and deflections. Six hours of laboratory a week. Prerequisite or concurrent: Civ. Engg. 420.
- 428. Stress Analysis II.** 3 semester hours. Each semester and summer.  
Theory of statically indeterminate structures, secondary stresses, and stressed-skin structures; stresses in continuation, movable, cantilever, suspension and steel-arch bridges, rigid and space frames. Three hours of recitation a week. Prerequisite: Civ. Engg. 420, 424.
- 440. Sanitary Engineering.** 4 semester hours. Second semester.  
Design, construction, and operation of water supply and sewerage systems. Three hours of recitation and three hours of laboratory a week. Prerequisite: Ap. Mech. 470, Bact. 190.
- 444. Sanitary Engineering Design.** 2 semester hours. Second semester.  
A continuation of Civ. Engg. 440 with emphasis on cost, estimates and methods of financing. Six hours of laboratory a week. Prerequisite: Civ. Engg. 440.
- 450. Transportation Engineering.** 5 semester hours. First semester.  
The design, construction, and maintenance of railroads, highways, and airports. Three hours of recitation and six hours of laboratory a week. Prerequisite: Civ. Engg. 131, Ap. Mech. 450.
- 455. Applied Hydrology.** 3 semester hours. Second semester.  
A study of the sources of supply, amount and movement of underground and surface waters; their collection, control, and utilization. Three hours of recitation a week. Prerequisite: Ap. Mech. 470.



**460. Foundations.** 2 semester hours. Each semester.

Design and construction of foundations for pavements, bridges, and buildings. Two hours of recitation a week. Prerequisite: Ap. Mech. 450.

**470. Design of Framed Structures.** 3 semester hours. Second semester and summer.

Designs and general drawings of highway and railroad truss and girder bridges. Nine hours of laboratory a week. Prerequisite: Civ. Engg. 420.

**474. Reinforced Concrete Arches.** 3 semester hours. Second semester.

The elastic theory applied to the design of reinforced concrete arches for bridges, buildings, and dams. Three hours of recitation a week. Prerequisite: Civ. Engg. 428.

**478. Reinforced Concrete Design Recitation.** 2 semester hours. Second semester and summer.

A study of the characteristics of concrete as a building material and the design of reinforced concrete structures. Two hours of recitation a week. Prerequisite: Civ. Engg. 420.

**480. Reinforced Concrete Design Laboratory.** 2 semester hours. Second semester and summer.

Design drawings of reinforced concrete structures. Six hours of laboratory a week. Prerequisite or concurrent: Civ. Engg. 478.

**484. Advanced Structural Design A.** 3 semester hours. First semester.

The design of statically indeterminate reinforced concrete structures. Three hours of recitation a week. Prerequisite: Civ. Engg. 428, 478, 480.

**488. Advanced Structural Design B.** 3 semester hours. Second semester.

The design of statically indeterminate steel structures. Three hours of recitation a week. Prerequisite: Civ. Engg. 428, 470.

**500. Airport Design.** 3 semester hours. First semester.

An advanced study of the problems encountered in the design, construction, and maintenance of large airports. Two hours of recitation and three hours of laboratory a week. Prerequisite: Civ. Engg. 450.

**510. Highway Design.** 3 semester hours. Second semester.

Survey and preparation of highway plans based on economic studies. Two hours of recitation and three hours of laboratory a week. Prerequisite: Civ. Engg. 450.

**520. Economics of Design and Construction.** 3 semester hours. First semester.

A study of methods, construction equipment, and economic factors affecting engineering projects. Three hours of recitation a week. Prerequisite: Senior or graduate classification.

**600. Problems in Civil Engineering.** Credit to be arranged. Each semester and summer.

Prerequisite: Approval of instructor.

## FOR GRADUATE CREDIT

**810. Research in Civil Engineering.** Credit to be arranged. Each semester and summer.

Original investigation or advanced study in some field related to the practice of civil engineering. Prerequisite: Consult instructors.

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## ELECTRICAL ENGINEERING

RUSSELL M. KERCHNER, *Head of Department*

## FOR UNDERGRADUATE CREDIT

**110. Orientation E.** 1 semester hour. Each semester.

The electrical engineer's duties and responsibilities. Electrical and

safety codes applied to electrical equipment and construction. Lecture and laboratory three hours a week.

**120. Electrical Engineering C Recitation.** 2 semester hours. Each semester and summer.

The fundamental principles of direct-current and alternating-current circuits and machinery. For nonelectrical students. Two hours of recitation a week. Prerequisite: Phys. 140.

**124. Electrical Engineering C Laboratory.** 1 semester hour. Each semester and summer.

Experiments covering characteristics and applications of direct-current and alternating-current machinery. Three hours of laboratory a week. Prerequisite or concurrent: Elec. Engg. 120.

**130. Illumination A.** 2 semester hours. Each semester.

Systems, calculations, and specifications of interior wiring; principles of illumination. Two hours of recitation a week. Prerequisite: Phys. 120 or 140.

**160. Inspection Trip.** Required; no credit. First semester.

A trip of two to six days to St. Louis, Chicago, and other cities for the purpose of making inspections of power plants and various industries illustrating the application of electrical engineering principles. Approximate cost of trip, \$60. Prerequisite: Senior classification.

FOR UNDERGRADUATE AND GRADUATE CREDIT

**405. Basic Electrical Engineering.** 4 semester hours. Each semester and summer.

Fundamentals of electric, magnetic, and electrostatic circuits. Four hours of recitation a week. Prerequisite or concurrent: Phys. 140, Math. 245 or 290.

**411. Direct-current Machinery Recitation.** 3 semester hours. Each semester and summer.

Principles of operation and the characteristics of direct-current generators and motors. Three hours of recitation a week. Prerequisite: Phys. 140; or concurrent: Elec. Engg. 405.

**414. Direct-current Machinery Laboratory.** 1 semester hour. Each semester and summer.

Characteristics of direct-current machines. Three hours of laboratory a week. Prerequisite or concurrent: Elec. Engg. 411.

**426. Alternating-current Circuits.** 5 semester hours. Each semester and summer.

A mathematical treatment of alternating-current phenomena in single and polyphase circuits. Four hours of recitation and a three-hour calculating period a week. Prerequisite: Elec. Engg. 405; or concurrent: Math. 360.

**430. Alternating-current Machinery I Recitation.** 3 semester hours. Each semester and summer.

Principles of design, construction, and operation of transformers, alternating-current generators, and polyphase induction motors. Three hours of recitation a week. Prerequisite: Elec. Engg. 426.

**437. Alternating-current Laboratory.** 1 semester hour. Each semester and summer.

Experiments illustrating the characteristics of alternating-current circuits and transformers. Three hours of laboratory a week. Prerequisite or concurrent: Elec. Engg. 430.

**439. Alternating-current Machinery II Recitation.** 2 semester hours. Each semester and summer.

Continuation of Elec. Engg. 430, including synchronous motors, parallel operation of alternators, converters, induction and commuta-



- tor alternating-current motors, rectifiers, and accessory apparatus. Two hours of recitation a week. Prerequisite: Elec. Engg. 430, 437.
- 442. Alternating-current Machinery Laboratory.** 1 semester hour. Each semester and summer.  
Continuation of Elec. Engg. 436, with experiments on machines listed in Electrical Engg. 439. Six hours of laboratory a week. Prerequisite or concurrent: Elec. Engg. 439.
- 460. Electronics I.** 2 semester hours. Each semester.  
The fundamental principles of electron tubes. Two hours of recitation a week. Prerequisite: Phys. 140, Elec. Engg. 405.
- 464. Electronics II Recitation.** 4 semester hours. Each semester.  
A study of basic electronic circuits, amplifiers and oscillators. Four hours of recitation a week. Prerequisite: Elec. Engg. 426, 460.
- 468. Electronics II Laboratory.** 2 semester hours. Each semester.  
Basic electronic circuits and characteristics. Six hours of laboratory a week. Prerequisite or concurrent: Elec. Engg. 464.
- 470. Industrial Electronics Recitation.** 3 semester hours. Second semester.  
Fundamental principles of electron tubes and circuits and applications in industry. Three hours of recitation a week. Prerequisite: Elec. Engg. 120 or 426 or 508.
- 474. Industrial Electronics Laboratory.** 1 semester hour. Second semester.  
Industrial electronic equipment. Three hours of laboratory a week. Prerequisite or concurrent: Elec. Engg. 470 or 480.
- 480. Industrial Electronics and Control Recitation.** 2 semester hours. Second semester.  
Applications and circuits of electronics in industry. Servomechanisms and other control devices. Two hours of recitation a week. Prerequisite: Elec. Engg. 464.
- 490. Electrical Measurements Recitation.** 2 semester hours. Each semester.  
Methods for electric and magnetic measurements; resistance, quantity, current, electromotive force, capacity, inductance. Two hours of recitation a week. Prerequisite or concurrent: Elec. Engg. 426.
- 494. Electrical Measurements Laboratory.** 1 semester hour. Each semester.  
Measurements of resistance, current, electromotive force, capacity, inductance, watts, energy. Three hours of laboratory a week. Prerequisite or concurrent: Elec. Engg. 490.
- 500. Electrical Engineering M-I Recitation.** 4 semester hours. Each semester and summer.  
Theory of direct-current circuits and machines, magnetic circuits, and alternating-current circuits. Four hours of recitation a week. Prerequisite: Phys. 140; prerequisite or concurrent: Math. 245 or 290.
- 504. Electrical Engineering M-I Laboratory.** 1 semester hour. Each semester and summer.  
Experiments on measurement of resistance and study of direct-current machinery characteristics. Three hours of laboratory a week. Prerequisite or concurrent: Elec. Engg. 500.
- 508. Electrical Engineering M-II Recitation.** 3 semester hours. Each semester.  
Theory of alternating-current machinery. Three hours of recitation a week. Prerequisite: Elec. Engg. 500, 504.
- 510. Electrical Engineering M-II Laboratory.** 1 semester hour. Each semester.  
Experiments on alternating-current circuits and alternating-current machinery characteristics. Three hours of laboratory a week. Prerequisite or concurrent: Elec. Engg. 508.



- 530. Radio Communication Recitation.** 3 semester hours. First semester.  
Radio-frequency amplifiers and oscillators, modulation; application to transmitter circuits; antennae and wave propagation. Three hours of recitation a week. Prerequisite: Elec. Engg. 464, 468.
- 534. Radio Communication Laboratory.** 1 semester hour. First semester.  
Experiments on modulation, demodulation; fundamental design of receivers and transmitters; and antennae measurements. Three hours of laboratory a week. Prerequisite or concurrent: Elec. Engg. 530.
- 539. Networks Recitation.** 3 semester hours. First semester.  
Network theorems, infinite line, wave filters, equalizers, impedance matching. Three hours of recitation a week. Prerequisite: Elec. Engg. 426.
- 541. Networks Laboratory.** 1 semester hour. First semester.  
Communication circuits and equipment. Three hours of laboratory a week. Concurrent: Elec. Engg. 539.
- 550. Electromagnetic Waves Recitation.** 3 semester hours. Second semester.  
Principles of guided and free electromagnetic wave propagation, including generation, radiation, and reception. Three hours of recitation a week. Prerequisite: Elec. Engg. 539.
- 554. Electromagnetic Waves Laboratory.** 1 semester hour. Second semester.  
Experiments on the generation, propagation, radiation, and reception of electromagnetic waves. Three hours of laboratory a week. Prerequisite or concurrent: Elec. Engg. 550.
- 560. Television Recitation.** 3 semester hours. Second semester.  
Theory of scanning, television, cathode-ray tubes, pulse generators, video amplifiers and circuits, television transmitters and receivers. Three hours of recitation a week. Prerequisite or concurrent: Elec. Engg. 550, 539.
- 564. Television Laboratory.** 1 semester hour. Second semester.  
Television circuits and equipment. Three hours of laboratory a week. Prerequisite or concurrent: Elec. Engg. 560.
- 570. Illuminating Engineering Recitation.** 3 semester hours. Second semester.  
Photometry, light standards, principles of illumination and illumination design. Three hours of recitation a week. Prerequisite: Math. 245 or 290, Phys. 140.
- 576. Electrical Engineering Summary.** 2 semester hours. Each semester.  
An integration of the theory and applications of electrical engineering, with special emphasis on engineering economics. Two hours of recitation a week. Prerequisite: Senior standing.
- 580. Airplane Electrical Equipment Laboratory.** 1 semester hour. Second semester.  
Study of electrical equipment for airplanes. Three hours of laboratory a week. Prerequisite or concurrent: Elec. Engg. 584.
- 584. Airplane Equipment Recitation.** 2 semester hours. Second semester.  
Electric control equipment and instruments for airplanes. Two hours of recitation a week. Prerequisite: Elec. Engg. 120, or 426, or 508.
- 590. Transmission and Distribution of Electrical Energy.** 3 semester hours. Second semester.  
Transmission line design, economic and technical features; and properties of cables and insulators. Three hours of recitation a week. Prerequisite: Elec. Engg. 430.

- 600. Transient Electrical Phenomena.** 3 semester hours. Second semester.  
Two phases of electrical phenomena: (a) Transients in time, and (b) transients in space. Three hours of recitation a week. Prerequisite: Elec. Engg. 426, Math. 360.
- 610. Problems in Electrical Engineering.** Credit to be arranged. Each semester and summer.

## FOR GRADUATE CREDIT

- 810. Research in Electrical Engineering.** Credit to be arranged. Each semester and summer.  
Special investigations adapted to the needs of individual students. The laboratory work is correlated with the work of the Engineering Experiment Station and may be used as the basis of a master's thesis. Prerequisite: Elec. Engg. 464.
- 820. Advanced Electric Circuits I.** 3 semester hours. First semester.  
Short-circuit currents in networks; equivalent impedance of multi-circuit transformers; analysis of unbalanced polyphase circuits and analysis of induction motor performance on unbalanced voltages; short transmission lines in steady state. Three hours of recitation a week. Prerequisite: Elec. Engg. 439.
- 824. Advanced Electric Circuits II.** 3 semester hours. Second semester.  
Long transmission lines in steady state with various terminal conditions; transmission charts; harmonics in circuits; general circuit constants; charts and transmission problems involving synchronous machines. Three hours of recitation a week. Prerequisite: Elec. Engg. 820.
- 830. Operational Circuit Analysis.** 3 semester hours. Second semester.  
Unit function, transforms, and other methods of Heaviside and Bromwich applied to electric circuits. Three hours of recitation a week. Prerequisite: Elec. Engg. 426.
- 840. High-frequency Measurements Recitation.** 2 semester hours. Second semester.  
Theory of measurement at radio frequencies of current, voltage, frequency, modulation; antenna and transmission line characteristics. Two hours of recitation a week. Prerequisite: Elec. Engg. 426, 530.
- 844. High-frequency Measurements Laboratory.** 1 semester hour. Second semester.  
Application of high-frequency measurements. Three hours of laboratory a week. Prerequisite or concurrent: Elec. Engg. 840.
- 850. Advanced Radio Communication.** 3 semester hours. Second semester.  
An advanced course in radio communication covering high-frequency and transit-time effects, noise antennas, communication systems, and acoustics. Three hours of recitation a week. Prerequisite: Elec. Engg. 530.
- 855. Advanced Electromagnetic Waves.** 3 semester hours. Second semester.  
Mathematical development of electromagnetic wave theory. Three hours of recitation a week. Prerequisite: Elec. Engg. 554.
- 870. Vacuum Tubes.** 3 semester hours. First semester.  
Principles of vacuum-tube design. Development, description, and utilization of the physical laws involved. Three hours of recitation a week. Prerequisite: Elec. Engg. 464.
- 875. Servomechanisms.** 3 semester hours. First semester.  
Theory of closed servo loops including a study of dynamics and stability using the Laplace transform. Three hours of recitation a week. Prerequisite: Math. 600, Elec. Engg. 468.
- 880. Advanced Electrical Theory.** Credit to be arranged. Each semester.  
Prerequisite: Elec. Engg. 464.



## GENERAL ENGINEERING

MERRILL A. DURLAND, *Dean*

**110. Engineering Lectures.** Required; no credit. Each semester.

Designed to acquaint freshman engineers and architects with fundamental principles of their profession and to give a general survey of the field. One hour of lecture a week, entire freshman year. Dean Durland, other members of the engineering faculty, and visiting practicing engineers.

**115. Engineering Assembly.** Required; no credit. Each semester.

Presentation by students of abstracts and reviews of articles in the journals of their respective societies or in the technical press of their profession, and reports of engineering projects, industrial experiences, and original investigations as far as possible, conducted by the student branches of the professional engineering societies. Occasionally two or more of these individual groups unite for lectures by practicing engineers and by members of the engineering and college faculties. One hour of lecture a week, sophomore, junior, and senior years. Members of the engineering faculty.

**200. Kansas State Engineer Journalism.** 1 semester hour. Each semester.

Maximum, 4 semester hours of credit.

Editorial and business staff work on the Kansas State Engineer. Prerequisite: Junior classification and consent of dean.

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## INDUSTRIAL ENGINEERING AND INDUSTRIAL ARTS

GABE A. SELLERS, *Head of Department*

FOR UNDERGRADUATE CREDIT

**110. Auto Mechanics I.** 4 semester hours. First semester.

A study of the automobile, its construction and maintenance. Two hours of recitation and six hours of laboratory a week. Prerequisite: Phys. 120 or equivalent.

**114. Aero Mechanics I.** 4 semester hours. Taught upon request.

A study of the airplane and its maintenance. Two hours of recitation and six hours of laboratory a week.

**122. Appliance Servicing.** 4 semester hours. Second semester.

A study of the basic principles of the operation, trouble analysis, servicing, and repair of utility appliances with supplemental laboratory projects to illustrate these principles. Two hours of recitation and six hours of laboratory a week. Prerequisite: Phys. 120 or equivalent.

**125. Shop A.** 2 semester hours. Each semester and summer.

An introductory course in forging and heat treating, foundry practice and machine shop work. Six hours of laboratory a week.

**130. Woodwork I.** 2 semester hours. Each semester and summer.

Elementary woodwork. Six hours of laboratory a week.

**134. Woodwork II.** 2 semester hours. Second semester and summer.

Continuation of Ind. Engg. 130. Six hours of laboratory a week. Prerequisite: Ind. Engg. 130.

**138. Woodwork III.** 2 semester hours. Taught upon request.

Advanced woodwork and cabinetmaking. Six hours of laboratory a week. Prerequisite: Ind. Engg. 134.

**140. Woodwork IV.** 2 semester hours. Taught upon request.

An opportunity to specialize in wood finishing, carpentry work, cabinet work, or some other work of special interest to the student. Six hours of laboratory a week. Prerequisite: Ind. Engg. 138.



**144. Wood Turning.** 2 semester hours. Each semester and summer.

Practice in handling the lathe and turning tools. Six hours of laboratory a week. Prerequisite: Ind. Engg. 130.

**148. Carpentry.** 3 semester hours. Second semester.

Rafter cutting and erection, studding and siding work, making window and door frames, hanging doors, and similar operations on full-size construction work; making out bill of material; care and upkeep of tools. One hour of recitation and six hours of laboratory a week. Prerequisite: Ind. Engg. 130.

**150. Pattern Making.** 2 semester hours. Second semester.

A series of exercises embodying the principles and practices of plain and split pattern, including core prints and core boxes. A limited number of actual patterns are also made. Six hours of laboratory a week. Prerequisite: Ind. Engg. 125.

**155. Foundry I.** 1 semester hour. Each semester.

(a) Bench, floor and pit molding, use of molding and core machines, operating nonferrous furnaces and cupola; (b) study of commercial foundry equipment and the operation and control of the foundry. Three hours of laboratory a week. Prerequisite: Ind. Engg. 125.

**160. Finishing I.** 2 semester hours. Each semester and summer.

A study of materials, processes, methods of applications of finishes for both wood and metal. Brush and spray equipment used. Six hours of laboratory a week. Prerequisite or concurrent: Ind. Engg. 134.

**165. Forging and Heat Treating.** 1 semester hour. Taught upon request.

(a) Forging of iron and steel; (b) production equipment as used in the commercial forge shop; (c) operation of gas, oil, and electric furnaces, and the heat treatment of steel. Two hours of laboratory and one hour of outside preparation a week. Prerequisite: Ind. Engg. 125.

**170. Heat Treating I.** 2 semester hours. Taught upon request.

A continuation of the heat treating phase of Shop A with special emphasis upon the heat treatment of auto and aeroplane parts. Laboratory exercises in the heat treating of certain ferrous and nonferrous construction materials. Six hours of laboratory a week. Prerequisite: Ind. Engg. 125.

**175. Metals and Alloys.** 2 semester hours. Each semester and summer.

The manufacture and use of iron, steel, copper, aluminum, and their alloys. Two hours of recitation a week. Prerequisite or concurrent: Chem. 170.

**180. Welding.** 1 semester hour. Each semester and summer.

The theory and practice of fusion welding, covering gas and electric welding. Three hours of laboratory a week.

**184. Electric Welding.** 1 semester hour. First semester and summer.

The theory and practice of electric welding, including inspection methods. Three hours of laboratory a week. Prerequisite: Ind. Engg. 180.

**188. Gas Welding.** 1 semester hour. First semester and summer.

The theory and practice of gas welding, including inspection methods. Three hours of laboratory a week. Prerequisite: Ind. Engg. 180.

**190. Machine Tool I.** 2 semester hours. Each semester and summer.

A continuation of the machine shop phase of Ind. Engg. 125. Six hours of laboratory a week. Prerequisite: Ind. Engg. 125.

**194. Machine Tool II.** 2 semester hours. Each semester and summer.

Progressive problems in turning, boring, reaming, taper turning, threading on the lathe, in chucking, use of forming tools, gear cutting; study of cutting speeds and feeds. Six hours of laboratory a week. Prerequisite: Ind. Engg. 190.

**198. Machine Tool III.** 1 semester hour. Taught upon request.

Work on the turret lathe, boring mill, hand and automatic screw machines and grinders; practical work with jigs and fixtures and a study of rapid production of duplicate parts. Three hours of laboratory a week. Prerequisite: Ind. Engg. 194.

**200. Sheet Metal I.** 2 semester hours. Second semester.

Covers developments, the use of templets, practice in soldering, folding, wiring, flanging, seaming, rolling, and the more common operations on sheet metal. Six hours of laboratory a week. Prerequisite: Mach. Des. 110 or equivalent.

**204. Sheet Metal II.** 2 semester hours. Taught upon request.

A continuation of Ind. Engg. 200, with welding of sheet metal. Six hours of laboratory a week. Prerequisite: Ind. Engg. 184, 188.

**211. Industrial Safety.** 2 semester hours. Second semester.

Fundamentals of accident analysis and prevention. One hour of recitation and three hours of laboratory a week.

**220. Gaging.** 1 semester hour. First semester.

Systems of measurements and the use of various types of gages and devices for checking industrial products. Three hours of laboratory a week. Prerequisite: Ind. Engg. 125.

**225. Inspection.** 2 semester hours. Taught upon request.

Tools, instruments, and equipment used in the inspection of materials commonly used in production plants and in maintenance of equipment. Specifications and related information. Six hours of laboratory a week.

**240. Shop for Elementary Teachers.** 2 semester hours. Taught upon request.

Exercises and projects suitable for pupils from the primary to eighth grade. Special instruction in methods of teaching, materials, and equipment. Six hours of laboratory a week.

**244. Methods of Teaching Industrial Arts.** 3 semester hours. First semester.

(See Department of Education, School of Arts and Sciences.) One hour of recitation and six hours of laboratory a week. Prerequisite or concurrent: Educ. 120 and approval of instructor.

**280. Inspection Trip.** Required; no credit. First semester.

A trip of three to six days to industrial centers for inspection of establishments of special interest to industrial engineering and industrial art students. Prerequisite: Senior classification.

## FOR UNDERGRADUATE AND GRADUATE CREDIT

**402. Highway Safety and Driver Education.** 3 semester hours. First semester and summer school.

Designed to acquaint high school teachers with the available instructional materials in this field and the methods found successful in presenting such materials in the classroom and in the automobile on the road. Two hours of recitation and three hours of laboratory a week. Prerequisite: Senior standing, driver's license, and 10,000 miles driving experience.

**405. Advanced Appliance Servicing.** Credit to be arranged. Each semester and summer school.

Prerequisite: Ind. Engg. 122 and consent of instructor.

**408. Advanced Auto Mechanics.** Credit to be arranged. Each semester and summer school.

Prerequisite: Ind. Engg. 110 and consent of instructor.

**410. Industrial Management.** 3 semester hours. First semester.

Problems of the industrial executive, such as plant location, selection and arrangement of buildings and equipment, production, planning and



control, simplification and standardization, time and motion study, job analysis and methods of standardization, control of inventory and costs. Three hours of recitation a week. Prerequisite: Junior standing.

**415. Production Control.** 2 semester hours. First semester.

The organization for industrial control, control planning, control systems, work routing, scheduling, dispatching, materials control, and related topics. Two hours of recitation a week. Prerequisite: Ind. Engg. 410.

**419. Manufacturing Processes.** 3 semester hours. First semester.

A study of the nature of modern manufacturing processes and the selection of the most practical process to be used under specific production conditions. Three hours of recitation a week. Prerequisite: Ind. Engg. 194, 410.

**421. Production Cost Estimating.** 2 semester hours. Second semester.

Estimating techniques for tool and equipment costs, production rates, production costs, cost ratios, establishment of basic time charts, and related topics. Two hours of recitation a week. Prerequisite: Ind. Engg. 410.

**425. Time and Motion.** 2 semester hours. First semester.

The principles and practice of time and micro-motion analysis of work in the shop for the purpose of setting standards of performance and of improving methods of production. One hour of recitation and three hours of laboratory a week. Prerequisite: Ind. Engg. 190; junior standing in engineering or industrial arts.

**427. Plant Planning and Layout.** 2 semester hours. First semester.

The economic considerations and techniques necessary for the arrangement of manufacturing equipment to achieve the most efficient use of space, unhampered movement of materials and operators, safe working conditions and a minimum of movement of materials in their progress through the plant. This subject includes, also, the selection of adequate material handling facilities. One hour of recitation and three hours of laboratory a week. Prerequisite or concurrent: Ind. Engg. 425.

**430. Advanced Shop Practice.** Credit to be arranged. Each semester and summer.

Opportunity is offered to specialize to a limited degree along certain lines such as heat treatment of steel, oxyacetylene and arc welding, jig fixtures and die work, metallography, pattern making, and any shop work that may be of special interest to the student. Prerequisite: Consult instructor.

**431. Tool Engineering.** 2 semester hours. Second semester.

Analyzing, planning, selecting and designing the tooling for mass production, including production type gages, jigs, fixtures and dies. Six hours of laboratory a week. Prerequisite or concurrent: Ind. Engg. 419.

**442. Industrial Engineering Practice.** 3 semester hours. Each semester.

A practical term problem embracing the fields of industrial organization, finance, marketing, plant site research, production, plant layout, and other industrial engineering activities. One hour of lecture and six hours of laboratory a week. Prerequisite: Ind. Engg. 410.

**450. Advanced Foundry.** Credit to be arranged. Each semester and summer school.

Prerequisite: Ind. Engg. 155, Ind. Engg. 460 and consent of instructor.

**455. Advanced Machine Shop.** Credit to be arranged. Each semester and summer school.

Prerequisite: Ind. Engg. 194, Ind. Engg. 460 and consent of instructor.



**460. Metallography I.** 1 semester hour. Each semester.

The microscopic constituents of the different grades of iron and steel; changes in the structure and properties as produced by heat treatment, mechanical working and composition. Three hours of laboratory a week. Prerequisite or concurrent: Ind. Engg. 175.

**464. Metallography II.** 2 semester hours. Each semester and summer.

A continuation of Ind. Engg. 460, nonferrous metals, with special attention to photomicrographic analysis. Six hours of laboratory a week. Prerequisite: Ind. Engg. 460.

**468. Physical Metallurgy.** 2 semester hours. Second semester and summer.

An advanced study of the structure, properties, and uses of the more common metals and alloys involving heat and mechanical treatment and casting. Two hours of recitation a week. Prerequisite: Ind. Engg. 460.

**475. Advanced Welding.** Credit to be arranged. Each semester and summer school.

Prerequisite: Ind. Engg. 184, Ind. Engg. 188, Ind. Engg. 460 and consent of instructor.

**480. Aircraft Materials and Fabrication.** 3 semester hours. Taught upon request.

Materials and methods employed in fabricating airplanes. One hour of recitation and six hours of laboratory a week. Prerequisite or concurrent: Ap. Mech. 405, Ind. Engg. 175, 460.

**490. General Shop Organization.** 3 semester hours. Taught upon request.

A course covering the organization, methods of teaching, and equipment for the general shop. One hour of recitation and six hours of laboratory a week. Prerequisite: Ind. Engg. 125, 148, 180, 200.

**493. Advanced Woodwork.** Credit to be arranged. Each semester and summer school.

Prerequisite: Ind. Engg. 134, Ind. Engg. 160 and consent of instructor.

**495. Shop Practice Teaching.** Credit to be arranged. Each semester.

Actual laboratory teaching experience under the supervision of an instructor. Work covers the outlining, preparation, and presentation of assignments and the supervision of the work; procurement of materials and equipment, shop layouts and upkeep, and general consideration. Insofar as possible the course is adapted to the particular needs of the student. Prerequisite: Consult instructor.

**500. Wood Technology.** 2 semester hours. Second semester and summer.

A study of the identification, structure, physical properties, uses, and defects of the commercial woods. Two hours of recitation a week. Prerequisite: Ind. Engg. 134 or junior standing and consent of the instructor.

**504. Problems in Industrial Engineering.** Credit to be arranged. Each semester and summer. Prerequisite: Approval of instructor.**505. Problems in Industrial Arts.** Credit to be arranged. Each semester and summer. Prerequisite: Approval of instructor.

## FOR GRADUATE CREDIT

**815. Research in Industrial Engineering.** Credit to be arranged. Each semester and summer.

Investigations of interest to the individual student. May be used as the basis of the master's thesis or report, and may be correlated with the work of the Engineering Experiment Station. Prerequisite: Consult instructors.

**820. Research in Industrial Arts.** Credit to be arranged. Each semester and summer.

Investigations of interest to the individual student. May be used as the basis of the master's thesis or report, and may be correlated with the work of the Engineering Experiment Station. Prerequisite: Consult instructors.

## MACHINE DESIGN

CLINTON E. PEARCE, *Head of Department*

The courses in drawing deal principally with the training of the freshman and sophomore students in visualization, and the application of graphical language to engineering problems, with particular reference to commercial drafting-room methods.

The courses in machine design deal with mechanical transmission of power, analysis of the action of machine parts, design of machine elements and of complete machines, aerodynamic forces, and airplane structures. Additional courses in actual flight are offered, with the flight instruction handled under contract by a recognized flight school.

### FOR UNDERGRADUATE CREDIT

**110. Engineering Drawing.** 2 semester hours. Each semester and summer.

The selection and use of drawing instruments; construction of geometrical figures; lettering; orthographic projections and sections; pictorial methods of representation. Six hours of laboratory a week.

**115. Descriptive Geometry.** 2 semester hours. Each semester and summer.

Problems involving the point, line, and plane; the intersection and development of the surfaces of geometric solids; practical applications of the principles involved; emphasis on developing the student's ability to visualize drawings in the third angle. Six hours of laboratory a week. Prerequisite: Mach. Des. 110, Math. 110 or equivalent.

**120. Machine Drawing I.** 2 semester hours. Each semester and summer.

Conventional representation; working drawings; dimensioning; the reproduction of drawings; checking for errors; arrangement of title and notes; sheet and metal drafting; simple perspective. Six hours of laboratory a week. Prerequisite: Mach. Des. 115.

**124. Machine Drawing II.** 2 semester hours. Each semester and summer.

Machine sketching from parts of actual machines; complete working and assembly drawings; tracing and blueprinting. Six hours of laboratory a week. Prerequisite: Mach. Des. 120, 130.

**130. Mechanism.** 3 semester hours. Each semester and summer.

A careful study of the fundamental elements of machinery with reference to the transmission of motion and force, and to their forms and arrangements in actual machines. Three hours of recitation a week. Prerequisite: Math. 190, Mach. Des. 115.

**140. Aviation Ground Instruction I.** 3 semester hours. Each semester and summer.

Civil air regulations, simple avigation, simple meteorology and general service of aircraft. Three hours of recitation a week. Prerequisite: Math. 190 or approval of head of department.

**144. Aviation Ground Instruction II.** 4 semester hours. Each semester and summer.

Advanced avigation, aeronautical meteorology, aircraft engines, aerodynamics, and aircraft construction. Four hours of recitation a week. Prerequisite: Mach. Des. 140 or private pilot certificate.



**150. Flight Instruction I.** 2 semester hours. Each semester and summer.

Actual flight instruction of 35 to 50 hours, dual and solo, as required for the private pilot certificate, taught under contract by a flight school; and 25 hours of ground-school instruction as required for a private pilot's certificate.

The College furnishes the medical examination without extra charge but a special charge is made to cover student insurance and flight instruction.

## FOR UNDERGRADUATE AND GRADUATE CREDIT

**410. Kinematics and Kinetics.** 2 semester hours. Second semester.

A study of the velocities and accelerations in mechanisms and machines, and of the forces resulting therefrom. Two hours of recitation a week. Prerequisite: Mach. Des. 130, Ap. Mech. 405.

**415. Engine Dynamics.** 2 semester hours. First semester.

Study of velocity, acceleration, and dynamic forces in various types of reciprocating engines, including articulated, rotating and oscillating forms; flywheels; engine balance; harmonic torque analysis. Two hours of recitation a week. Prerequisite: Mach. Des. 410.

**421. Machine Design I.** 5 semester hours. Second semester.

Displacement, velocity, and acceleration in machinery; static and dynamic forces; introduction to machine vibration. Five hours of recitation a week. Prerequisite: Ap. Mech. 405.

**422. Machine Design II.** 3 semester hours. First semester.

The straining action in machine elements; friction and lubrication; high-speed machinery fastenings. Three hours of recitation a week. Prerequisite: Ap. Mech. 410, Mach. Des. 120, 130.

**423. Machine Design III.** 3 semester hours. Second semester.

More advanced consideration of the design of machine elements and of simple machines. Three hours of recitation a week. Prerequisite: Mach. Des. 422.

**425. Machine Design Laboratory.** 2 semester hours. Second semester.

Calculations for a number of simple machines and machine parts, paralleling the recitation class assignments. Six hours of laboratory a week. Prerequisite or concurrent: Mach. Des. 423.

**430. Machine Vibration I.** 3 semester hours. Second semester.

A general consideration of free and forced vibration in machines for various degrees of freedom; critical speed; vibration isolation. Three hours of recitation a week. Prerequisite: Ap. Mech. 405, Math. 360.

**434. Machine Vibration II.** 3 semester hours. First semester.

More advanced consideration of free and forced vibration having several degrees of freedom, with particular reference to rotating systems; absorbers and dampers; dynamic engine suspension; wing flutter; nonlinear forms. Three hours of recitation a week. Prerequisite: Mach. Des. 430.

**440. Aerodynamics I Recitation.** 3 semester hours. Second semester.

A general introduction to aerodynamics. Three hours of recitation a week. Prerequisite: Ap. Mech. 405.

**444. Aerodynamics I Laboratory.** 1 semester hour. Second semester.

Operation of wind tunnel. Three hours of laboratory a week. Prerequisite or concurrent: Mach. Des. 440.

**448. Aerodynamics II Recitation.** 3 semester hours. First semester.

A continuation of Aerodynamics I. Three hours of recitation a week. Prerequisite: Mach. Des. 440, Ap. Mech. 474.

**450. Aerodynamics II Laboratory.** 1 semester hour. First semester.

Determination of performance curves and stability of an airplane. Prerequisite or concurrent: Mach. Des. 448.



**460. Airplane Design I.** 3 semester hours. First semester.

A study of the general principles of airplane design. One hour of recitation and six hours of laboratory a week. Prerequisite: Ap. Mech. 410, Mach. Des. 444.

**464. Airplane Design II.** 3 semester hours. Second semester.

The design of an airplane, including performance calculations. One hour of recitation and six hours of laboratory a week. Prerequisite: Mach. Des. 460.

**468. Airplane Design and Construction.** 3 semester hours. Second semester.

The structure and rigging of aircraft, the design directive of a small plane, the general layout and weight analysis. One hour of recitation and six hours of laboratory a week. Prerequisite: Mach. Des. 440, Ap. Mech. 410.

**470. Propeller Theory and Design.** 2 semester hours. First semester.

Theory of air screw, effect of propeller characteristics on airplane performance, and calculation of stresses. Prerequisite: Ap. Mech. 474, Mach. Des. 440.

**480. Graphics of Engineering Formulas.** 2 semester hours. Second semester.

Simple empirical equations; diagramming of formulas; nomographic or alignment charts; special slide rules. Two hours of recitation a week. Prerequisite: Math. 215 or 260.

**490. Patents and Inventions.** 2 semester hours. Second semester.

A brief consideration of the fundamental principles of United States patents and their relationship to the engineer; the inception and development of inventions. Two hours of recitation a week. Prerequisite: Junior or senior standing.

## FOR GRADUATE CREDIT

**810. Research in Machine Design.** Credit to be arranged. Each semester and summer.

Original investigation in some advanced subject related to courses in this department. This work may furnish material for the master's thesis. Prerequisite: Consult instructors.

**820. Advanced Machine Design.** Credit to be arranged. Each semester.

At the option of the student this course may include a study of some advanced subject related to courses in this department. Prerequisite: Consult instructors.

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## MECHANICAL ENGINEERING

LINN HELANDER, *Head of Department*

The instruction in the Department of Mechanical Engineering covers courses in thermodynamics, heat transfer, heat power engineering, air conditioning, refrigeration, and petroleum production. Additional courses closely allied to and a part of mechanical engineering are given in the departments of Machine Design and Industrial Engineering and Industrial Arts.

In addition to the equipment installed especially for experimental purposes, all the heating, power, ventilating, and pumping equipment of the College subserves the further purposes of experimental work.

## FOR UNDERGRADUATE CREDIT

**110. Steam and Gas Engineering C.** 2 semester hours. Each semester.

Steam boilers, steam engines, steam turbines, internal combustion engines and auxiliaries. Two hours of recitation a week. Prerequisite: Phys. 110 or 130.

**120. Professional Orientation I.** 1 semester hour. Second semester.

A general development course for sophomores in mechanical engineering. One hour of recitation a week. Prerequisite: Sophomore standing.

**125. Professional Orientation II.** 1 semester hour. First semester.

A general development course for juniors in mechanical engineering. One hour of recitation a week. Prerequisite: Junior standing.

**130. Air Conditioning A.** 3 semester hours. Second semester.

Principles of heating, cooling, and ventilating; heat transmission; equipment used for heating, cooling, and ventilating. Three hours of recitation a week. Primarily for students who have not had engineering thermodynamics. Prerequisite: Phys. 110 or 130.

**145. Greenhouse Heating.** 3 semester hours. First semester.

Air conditioning equipment and systems; fuels; heat transmission; problems applied to greenhouses. Two hours of recitation and three hours of laboratory a week. Prerequisite: Junior classification.

**150. Professional Development.** 1 semester hour. Each semester.

The social and professional aspect of engineering. One hour of recitation a week. Prerequisite: Senior classification.

**180. Inspection Trip.** Required; no credit. First semester.

A trip of three to six days to industrial centers for the purpose of inspecting industrial plants of special interest to mechanical engineering students. Prerequisite: Senior classification.

## FOR UNDERGRADUATE AND GRADUATE CREDIT

**411. Engineering Thermodynamics I.** 4 semester hours. Each semester.

Laws of the conversion of heat energy into mechanical energy; properties of fluids; gases, vapors, and gas vapor mixtures; flow and non-flow processes; power generating cycles; air compression; refrigeration. Four hours of recitation a week. Prerequisite: Math. 245 or 290, Phys. 130.

**412. Engineering Thermodynamics II.** 2 semester hours. Each semester.

Extension of Engineering Thermodynamics I, principally for mechanical engineering students. Two hours of recitation a week. Prerequisite: Mech. Engg. 411.

**414. Advanced Thermodynamics I.** 3 semester hours. First semester.

Three hours of recitation a week. Prerequisite: Mech. Engg. 412.

**418. Advanced Thermodynamics II.** 3 semester hours. Second semester.

Continuation of Advanced Thermodynamics I. Three hours of recitation a week. Prerequisite: Mech. Engg. 414.

**421. Heat Transfer.** 3 semester hours. First semester.

Particular reference to heat exchangers, air preheaters, economizers, boilers, condensers, evaporators, and similar equipment. Two hours of recitation and three hours of laboratory a week. Prerequisite: Mech. Engg. 411, Ap. Mech. 474, Math. 360.

**424. Refrigeration.** 2 semester hours. First semester.

Thermodynamics of refrigeration; systems of refrigeration and their operation; application of refrigeration to ice making, cold storage, and the cooling of gases, liquids, and solids. Two hours of recitation a week. Prerequisite: Mech. Engg. 411.

**428. Air Conditioning.** 3 semester hours. Each semester.

Psychrometry; heat transmission; air-conditioning equipment and systems; design problems. Two hours of recitation and three hours of laboratory a week. Prerequisite: Mech. Engg. 411.

**430. Internal Combustion Engines.** 3 semester hours. Second semester.

Three hours of recitation a week. Prerequisite: Mech. Engg. 411.



**435. Aircraft Power Plants.** 2 semester hours. Second semester.

Design and performance characteristics of airplane power plants.

Two hours of recitation a week. Prerequisite: Mech. Engg. 430.

**440. Heat-power Engineering A.** 3 semester hours. Each semester.

Power-plant equipment, fuels, and combustion. Three hours of recitation a week. Prerequisite: Mech. Engg. 411.

**445. Mechanical Engineering Design.** 3 semester hours. Second semester.

Professional type problems involving thermal, thermodynamic, electrical, mechanical, and economic factors. One hour of recitation and six hours of laboratory a week. Prerequisite: Mech. Engg. 440.

**448. Advanced Power-plant Engineering.** Credit to be arranged. Second semester.

An advanced course in the economic problems met with in the design of power plants and in the generation of power. Selection of equipment, choice of station heat balances, generation of by-product power in industries, and interconnections between utilities and industrial plants for the economical interchange of power. Prerequisite: Mech. Engg. 445.

**460. Heat-power Laboratory.** 1 semester hour. Each semester.

Laboratory course in heat-power equipment for nonmechanical engineering students. Three hours of laboratory a week. Prerequisite: Mech. Engg. 110 or 411.

**464. Mechanical Engineering Laboratory I.** 2 semester hours. Each semester.

Laboratory course in heat-power equipment for mechanical engineering students. Six hours of laboratory a week. Prerequisite or concurrent: Mech. Engg. 440.

**468. Mechanical Engineering Laboratory II.** 2 semester hours. Each semester.

Power-generating equipment, fans, air-conditioning equipment, internal combustion engines, steam engines, turbines, and auxiliaries. Six hours of laboratory a week. Prerequisite: Mech. Engg. 464.

**480. Aeronautical Engineering Laboratory.** 2 semester hours. Second semester.

Aircraft engines, propellers, engine accessories, and instruments. Six hours of laboratory a week. Prerequisite: Mech. Engg. 460 or 464.

**485. Airplane Instruments.** 2 semester hours. Second semester.

Instruments and controls for the airplane. Two hours of recitation a week. Prerequisite: Elec. Engg. 120 and Mach. Des. 440.

**490. Engineering Economics.** 3 semester hours. First semester.

Economic analysis of principles as applied in engineering. Prerequisite: Econ. 110; senior standing.

**500. Instruments and Controls.** 2 semester hours. Second semester.

Principles of instrumentation and controls in mechanical engineering fields. Two hours of recitation a week. Prerequisite: Elec. Engg. 508, 510, Mech. Engg. 440.

**510. Petroleum Production I.** 3 semester hours. First semester.

Properties of petroleum; exploration methods, field developments; drilling; oil field hydrology; casing and well completion; and fishing tools and methods. Three hours of recitation a week. Prerequisite: Senior standing in the Department of Mechanical Engineering or permission of head of department.

**514. Petroleum Production II.** 3 semester hours. Second semester.

Principles of drainage; production methods; methods of flowing and pumping wells; secondary methods of recovery. Two hours of recitation and three hours of laboratory a week. Prerequisite: Mech. Engg. 510.



**520. Gas Dynamics I.** 3 semester hours. Second semester.

Properties of compressible fluids, subsonic and supersonic flow, steady and non-steady motion with emphasis on one dimensional flow.

Prerequisite: Math. 360 or 600, Mech. Engg. 412, Ap. Mech. 470 or 474.

**530. Problems in Mechanical Engineering.** Credit to be arranged. Each semester.**540. Advanced Heat Transfer.** 3 semester hours. Each semester.

Prerequisite: Mech. Engg. 421.

**FOR GRADUATE CREDIT****810. Research in Mechanical Engineering.** Credit to be arranged. Each semester and summer.

The laboratory work is correlated with the work of the Engineering Experiment Station. Research in any field pertinent to subjects taught in the Department of Mechanical Engineering. Prerequisite: Consult instructors.

**820. Advanced Air Conditioning.** 2 semester hours. First semester.

Similar to Air Conditioning, Mech. Engg. 428, but at an advanced level. Two hours of recitation a week. Prerequisite: Mech. Engg. 428.

**830. Gas Dynamics II.** 3 semester hours. Summer.

An extension of Gas Dynamics I with emphasis on two- and three-dimensional problems, shock waves, special problems in connection with combustion engines. Prerequisite: Mech. Engg. 520, Math. 615, or the equivalent.

**840. Research Methodology.** 2 semester hours. Each semester.

Principles and techniques of engineering research. Two hours of recitation a week. Prerequisite: Graduate standing.

# The Engineering Experiment Station

MERRILL A. DURLAND, *Director*

LELAND S. HOBSON, *Associate Director*

The Engineering Experiment Station was established March 24, 1910, by the Board of Regents for the purpose of carrying on tests and research work of engineering and manufacturing value to the state of Kansas, and of collecting and presenting technical information for the use of the industries and the people of the state.

Equipment in the engineering and scientific laboratories and shops is available for this work. The personnel of the station consists of members of the staff from the departments of the School of Engineering and Architecture and from other departments whose work is directly related to industry and technology. The Engineering Experiment Station conducts projects in both fundamental and applied research. Many of the researches of specific problems are supported in whole or in part by funds from industrial or commercial organizations, or by various agencies of the federal and state government.

Among the investigations now being carried on are: expanded shale as an aggregate for prestressed concrete; industrial building design; waterproofing Kansas limestones; aeration techniques for storing grain; effect of coarse aggregate characteristics on plastic and elastic properties of concrete; prestressed concrete with haydite aggregate; surface water conservation, utilization and control; new photographic processes; electronic analog computer, its construction and operation; study of internal parameters effective in starting and maintaining arc discharges; dust and erosion problems along airfield runways; removal of infestation from wheat; prestressed concrete pavement construction; heat transfer of condensing freon in horizontal and inclined tubes; method of reducing the acid requirements of western phosphate rocks in the production of superphosphate; practical methods of drying and testing grains for safe storage; harvesting of legume seed; physical-chemical studies on the stabilization of highway materials; radioactive salts in studying the migration of soluble salts in Portland cement, and fundamental studies in flash drying without disintegration.

Engineers who are well trained and thoroughly experienced in many of the fields of technical engineering, industrial management, and industrial development are on the staff of the Engineering Experiment Station. Within the limits of available personnel the services of these people may be obtained free of charge to assist Kansas industries and Kansas people in the development or operation of industry. Counsel and assistance can be given in fields of mechanical, electrical, civil, agricultural, chemical, and industrial engineering; metallurgy; welding and machine shop; industrial organization and industrial management. The testing laboratories of the Engineering Experiment Station have been made available by law for use of the State Highway Commission and the State Highway Engineer; and the road materials used in state road construction are tested in these laboratories.

Some of the results of the investigations are published as bulletins or circulars of the Engineering Experiment Station, which are sent free to any citizen of the state upon request. Seventy-six such bulletins and circulars have been published. Besides issuing these publications, the station answers yearly many hundreds of requests for information upon matters coming within its field.

Persons interested in obtaining information, assistance, or bulletins should write to the Engineering Experiment Station, Kansas State College, Manhattan, Kansas.

# The School of Home Economics

DORETTA M. SCHLAPHOFF, *Dean*

MARGARET M. JUSTIN, *Dean Emeritus*

MARTHA M. KRAMER, *Assistant Dean*

MARGARET E. RAFFINGTON, *Assistant to the Dean*

The program in home economics is directed toward two major objectives. The first of these is that of making a worthy and significant contribution to the general education of the student through a sequence of courses required of all and sometimes designated as "the core curriculum" or "the curriculum provisions for common learnings." These courses have for their goal helping the student become a well-adjusted person, who understands and employs health practices that provide maximum physical and mental fitness for herself and others, and who has a philosophy for personal, family, and community living that is both sound and satisfying. They are further directed toward helping her develop sane and creative attitudes toward social problems, to use personal, family and community resources effectively, and to appreciate the aesthetic in daily living. With such a background, with guidance, the student is helped to choose a vocation in home economics for which she is suited and in which she is interested. The second major objective, then, is that of providing effective preparation for the student to enter and advance in one of the various professions in home economics with assurance and competence.

The curriculums as outlined below are flexible enough to meet the needs of those who plan to enter their own homes, those who wish to teach, engage in social welfare, enter some aspect of the business field, engage in dietetics or institutional management, become nurses or technicians, and those who wish to prepare for graduate study in phases of home economics. Three curriculums in this School lead to the degree Bachelor of Science in Home Economics and the other three curriculums to the degrees Bachelor of Science in Restaurant Management, Bachelor of Science in Home Economics and Journalism, and Bachelor of Science in Home Economics and Nursing, respectively.

Many students who feel sure their interest is in home economics are at a loss on entering college to know which curriculum to choose. Hence, guidance plans are included in the home economics program to help the student determine the special phase in which her individual interests and abilities may best function. In order that vocational choices may be made without loss, courses for the first two years have been selected so that transfer from one curriculum to another, within the School of Home Economics, may be managed with a minimum of inconvenience. However, it is well to note that for those considering dietetics, nursing, or research and technical work in foods, nutrition, and textiles as possible vocational choices, the freshman science should be chemistry, and the sophomore science should usually include zoology and physiology.

## Curriculum in Home Economics

This curriculum is to be followed by those who wish broad, well-grounded programs in home economics, those who plan to teach or to enter the home demonstration service, and those who have not yet determined the special fields in which they wish to major. There is opportunity for inclusion of the courses required for a teacher's certificate or for preparation for other phases of work through the elective hours available in the junior and senior years. Groups of electives are chosen during the first semester, sophomore year, in conference with staff members.

## Curriculum in Home Economics with Provision for Specialization

This curriculum is offered for students wishing specialization in one or another of the newer areas of interest in home economics. The student selects groups of courses as indicated by her own aptitudes and inclina-



tions. She may thus plan for specialization in art, child development and guidance, clothing, household economics, and the like. She may prepare for home economics in business or for technical work and research in equipment, textiles, foods, and nutrition.

### **Curriculum in Dietetics and Institutional Management**

This curriculum is designed to meet the needs of students who wish to become dietitians or directors of food services in college residence halls, school lunch rooms, cafeterias, tea rooms, restaurants, or hotels. After graduation, students usually accept appointments to internships accredited by the American Dietetic Association to which satisfactory completion of the year's training makes them eligible for membership. A similar plan for internships is available through the National Restaurant Association.

### **Curriculum in Restaurant Management**

This curriculum is designed to help meet demands for trained men and women for managers or directors of commercial and industrial food services such as restaurants, hotels, coffee shops, cafeterias, and tea rooms. Graduates will be qualified for internships approved by the National Restaurant Association or for positions in the area of commercial food service. Summer experience under approved conditions is advised throughout the time students are enrolled in this curriculum.

### **Curriculum in Home Economics and Journalism**

This curriculum is much like that with Provision for Specialization, but includes courses in the Department of Technical Journalism sufficient to make a major sequence. The student acquires insight into the whole field of home economics, and in the sophomore year chooses electives in some one area. This means that she comes to understand journalism as related to home economics, and in addition is thoroughly prepared to handle material in her chosen area, such as foods, child guidance, interior decoration and housing, or costume and design.

### **Curriculum in Home Economics and Nursing**

The 48-month curriculum is offered in cooperation with the Department of Nursing of the University of Kansas School of Medicine. Four semesters and a summer session are spent at Kansas State College, followed by nine quarters in the Department of Nursing, University of Kansas School of Medicine, in Kansas City, Kansas, where theoretical instruction and clinical experience in nursing are given. Upon completion of the total program at the hospitals, students are cleared by the Registrar for graduation at Kansas State College.

### **Home Economics in the Summer School**

In addition to the regular instruction in home economics, the School offers numerous courses in the Summer School. These courses apply directly on the curriculums in Home Economics, or on graduate credit.

Full information concerning the courses offered is contained in the Summer School Catalogue of the Kansas State College *Bulletin*, which may be obtained upon application to the Director of Admissions of the College.

**Curriculum in Home Economics***B. S. in Home Economics***FRESHMAN**

FIRST SEMESTER				SECOND SEMESTER			
		<i>Course</i>	<i>Sem. Hrs.</i>			<i>Course</i>	<i>Sem. Hrs.</i>
Chem.	110	General Chemistry .....	5	Chem.	330	Gen. Org. Chem. ....	5
Engl.	125	Written Comm. I .....	3	Engl.	135	Written Comm. II .....	2
Art	100	El. Des. I .....	2	Art	113	Cost. Des. I .....	2
Clo. Text.	150	Selection of Clothing ....	2	Fds. Nutr.	110	Foods I .....	5
F. Ch. Dev.	210	Human Relations .....	2	Sp.	105	Oral Comm. I .....	2
Hshld. Ec.	102	Family Finance .....	2	Gen. H. E.	020	H. E. Lect. ....	0
Gen. H. E.	020	H. E. Lect. ....	0	Phys. Educ.	055	Physical Education W ..	0
Phys. Educ.	055	Physical Education W ..	0				
Total .....			16	Total .....			16

**SOPHOMORE**

Gen. Stud.	150	Biology I .....	4	Gen. Stud.	160	Biology II .....	4
Art	119	Int. Dec. I .....	2	Fds. Nutr.	240	Foods II* .....	3
Hshld. Ec.	202	The House .....	3	Clo. Text.	255	Textiles .....	3
Fds. Nutr.	130	Applied Nutrition .....	2	Phys.	210	Hshld. Physics .....	4
Clo. Text.	175	Fund. of Clothing .....	3			Elective .....	1
		Elective .....	2	Gen. H. E.	020	H. E. Lect. ....	0
Gen. H. E.	020	H. E. Lect. ....	0	Phys. Educ.	055	Physical Education W ..	0
Phys. Educ.	055	Physical Education W ..	0				
Total .....			16	Total .....			15

**JUNIOR**

Gen. Stud.	210	Introd. Soc. Sci. I .....	4	Gen. Stud.	220	Introd. Soc. Sci. II .....	4
Fds. Nutr.	250	Dietetics* .....	3	F. Ch. Dev.	490	Family Health* .....	3
F. Ch. Dev.	450	Family Relationships* ....	2			Elective .....	7
		Elective .....	6	Gen. H. E.	020	H. E. Lect. ....	0
Gen. H. E.	020	H. E. Lect. ....	0				
Engl.	090	English Proficiency .....	0				
Total .....			15	Total .....			14

**SENIOR**

Gen. Stud.	250	Introd. to Human. I .....	4	Gen. Stud.	260	Introd. to Human. II .....	4
		Elective .....	10			Elective .....	10
Gen. H. E.	020	H. E. Lect. ....	0	Gen. H. E.	020	H. E. Lect. ....	0
Total .....			14	Total .....			14

Number of hours required for graduation, 120.

\* For teaching majors, the course, Foods II, 3 semester hours, is omitted as a requirement, and electives are increased by 3 semester hours. For prospective home demonstration agents there is a choice between Foods II, 3 semester hours, and Dietetics, 3 semester hours, and also between Family Relationships, 2 semester hours, and Family Health, 3 semester hours, with suitable adjustment of elective requirements.

Plan for Prospective Home Economics Teachers

Students choosing the Curriculum in Home Economics with the idea of preparing to teach in the high schools of Kansas must meet state certification requirements. These students follow the plan suggested below, to include special courses required for certification.

FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Chem.	110	General Chemistry .....	5	Chem.	330	Gen. Org. Chem. ....	5
Engl.	125	Written Comm. I .....	3	Engl.	135	Written Comm. II .....	2
Art	100	El. Des. I .....	2	Art	113	Cost. Des. I .....	2
F. Ch. Dev.	210	Human Relations .....	2	Fds. Nutr.	110	Foods I .....	5
Psych.	310	Gen. Psych. ....	3	Clo. Text.	150	Sel. of Clo. ....	2
Gen. H. E.	020	H. E. Lect. ....	0	Gen. H. E.	020	H. E. Lect. ....	0
Phys. Educ.	055	Physical Education W ..	0	Phys. Educ.	055	Physical Education W ..	0
Total .....			15	Total .....			16

SOPHOMORE

Gen. Stud.	150	Biology I .....	4	Gen. Stud.	160	Biology II .....	4
Art	119	Int. Dec. I .....	2	Clo. Text.	255	Textiles .....	3
Educ.	100	Educ. Psych. I .....	3	Educ.	105	Educ. Psych. II .....	3
Sp.	105	Oral Comm. I .....	2	Phys.	210	Hshld. Physics* .....	4
Clo. Text.	175	Fund. of Clo. ....	3	Fds. Nutr.	130	Appl. Nutr. ....	2
Hshld. Ec.	102	Family Finance .....	2	Gen. H. E.	020	H. E. Lect. ....	0
Gen. H. E.	020	H. E. Lect. ....	0	Phys. Educ.	055	Physical Education W ..	0
Phys. Educ.	055	Physical Education W ..	0	Total .....			16
Total .....			16	Total .....			16

JUNIOR

Gen. Stud.	210	Introd. Soc. Sci. I .....	4	Gen. Stud.	220	Introd. Soc. Sci. II .....	4
Fds. Nutr.	250	Dietetics .....	3	F. Ch. Dev.	490	Family Health .....	3
F. Ch. Dev.	450	Family Relationships .....	2	Educ.	275	Meth. Tchg. H. E. ....	3
Educ.	120	Prin. Sec. Educ. ....	3	Clo. Text.	450	Appl. Dress Des. ....	3 or
Hshld. Ec.	202	The House .....	3	Clo. Text.	500	Adv. Dress Des. ....	3
Gen. H. E.	020	H. E. Lect. ....	0			Elective .....	1
Engl.	090	English Proficiency .....	0	Gen. H. E.	020	H. E. Lect. ....	0
Total .....			15	Total .....			14

SENIOR

Gen. Stud.	250	Introd. to Human. I .....	4	Gen. Stud.	260	Introd. to Human. II .....	4
Educ.	575	Voc. H. E. Curr. ....	3	Educ.	295	Tchg. Part. in H. E. ....	3
F. Ch. Dev.	410	Child Guid. I .....	3	Hshld. Ec.	502	Home Management .....	3
Inst. Mgmt.	430	Sch. Food Serv. ....	3			Elective .....	4
		Elective .....	1	Gen. H. E.	020	H. E. Lect. ....	0
Gen. H. E.	020	H. E. Lect. ....	0	Total .....			14
Total .....			14	Total .....			14

Number of hours required for graduation, 120.

\* An option of 4 hours in Art or 4 hours in Family and Child Development may be taken.



## Curriculum in Home Economics With Provision for Specialization

### B. S. in Home Economics

#### FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Chem.	110	General Chemistry .....	5 or	Chem.	330	Gen. Org. Chem. ....	5 or
Gen. Stud.	110	Man's Phys. World I .....	4	Gen. Stud.	120	Man's Phys. World II ....	4
Engl.	125	Written Comm. I .....	3	Engl.	135	Written Comm. II .....	2
Art	100	El. Des. I .....	2	Art	113	Cost. Des. I .....	2
F. Ch. Dev.	210	Human Relations .....	2	Fds. Nutr.	110	Foods I .....	5
Sp.	105	Oral Comm. I .....	2	Clo. Text.	150	Selection of Clothing ....	2
Hshld. Ec.	102	Family Finance .....	2	Gen. H. E.	020	H. E. Lect. ....	0
Gen. H. E.	020	H. E. Lect. ....	0	Phys. Educ.	055	Physical Education W ..	0
Phys. Educ.	055	Physical Education W ..	0				
Total .....				15 or 16	Total .....		
					15 or 16		

#### SOPHOMORE

Gen. Stud.	210	Introd. Soc. Sci. I*† ....	4	Gen. Stud.	220	Introd. Soc. Sci. II* ....	4
Gen. Stud.	150	Biology I† .....	4	Gen. Stud.	160	Biology II† .....	4
Fds. Nutr.	130	Applied Nutrition .....	2	Clo. Text.	255	Textiles .....	3 or
		Elective .....	5	Clo. Text.	175	Fund. of Clothing .....	3
Gen. H. E.	020	H. E. Lect. ....	0			Elective .....	4
Phys. Educ.	055	Physical Education W ..	0	Gen. H. E.	020	H. E. Lect. ....	0
				Phys. Educ.	055	Physical Education W ..	0
Total .....				15	Total .....		
					15		

#### JUNIOR

Art	119	Int. Dec. I .....	2	F. Ch. Dev.	490	Family Health .....	3 or
Hshld. Ec.	202	The House .....	3	F. Ch. Dev.	450	Family Relationships ....	2
		Elective .....	10			Elective .....	12 or 13
Gen. H. E.	020	H. E. Lect. ....	0	Gen. H. E.	020	H. E. Lect. ....	0
Engl.	090	English Proficiency .....	0				
Total .....				15	Total .....		
					15		

#### SENIOR

Gen. Stud.	250	Introd. to Human. I .....	4	Gen. Stud.	260	Introd. to Human. II .....	4
		Elective .....	10 or 11			Elective .....	10 or 11
Gen. H. E.	020	H. E. Lect. ....	0	Gen. H. E.	020	H. E. Lect. ....	0
Total .....				14 or 15	Total .....		
					14 or 15		

Number of hours required for graduation, 120.

\* Students in Retailing will take Econ. 110, Economics I, Soc. 250, Sociology, and Psych. 310, General Psychology, instead of Introd. Social Sci. I and II.

† Or substitute, such as Zoology, Physiology.

‡ One course in General Studies may be deferred to junior year.

Graduate nurses, who are graduates of approved schools of nursing recommended by the Director of Nursing Education, Kansas State College, may be allowed 30 hours of credit toward the degree Bachelor of Science in Home Economics (option for graduates of Schools of Nursing). In the 90 hours of work remaining for the degree, at Kansas State College, candidates must include those courses listed in the Curriculum in Home Economics with Provision for Specialization.

## An Example of Specialization in Art

An example of an application of the Curriculum in Home Economics with Provision for Specialization in a given area is shown by this presentation of the courses to be taken.

### FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
		<i>Course</i>	<i>Sem. Hrs.</i>			<i>Course</i>	<i>Sem. Hrs.</i>
Chem.	110	General Chemistry .....	5 or	Chem.	330	Gen. Org. Chem. ....	5 or
Gen. Stud.	110	Man's Phys. World I ....	4	Gen. Stud.	120	Man's Phys. World II ..	4
Engl.	125	Written Comm. I .....	3	Engl.	135	Written Comm. II .....	2
Sp.	105	Oral Comm. I .....	2	Art	113	Cost. Des. I .....	2
Art	100	El. Des. I .....	2	Fds. Nutr.	110	Foods I .....	5
F. Ch. Dev.	210	Human Relations .....	2	Clo. Text.	150	Selection of Clothing .....	2
Hshld. Ec.	102	Family Finance .....	2	Gen. H. E.	020	H. E. Lect. ....	0
Gen. H. E.	020	H. E. Lect. ....	0	Phys. Educ.	055	Physical Education W ..	0
Phys. Educ.	055	Physical Education W ..	0				
Total .....			15 or 16	Total .....			15 or 16

### SOPHOMORE

Gen. Stud.	210	Introd. Soc. Sci. I† .....	4	Gen. Stud.	220	Introd. Soc. Sci. II .....	4
Gen. Stud.	150	Biology I† .....	4	Gen. Stud.	160	Biology II† .....	4
Fds. Nutr.	130	Applied Nutrition .....	2	Clo. Text.	255	Textiles .....	3
Art	130	Drawing I .....	2	Art	132	Drawing II .....	2
Art	102	El. Des. II .....	2	Art	119	Int. Dec. I .....	2
Art	106	Lettering .....	2	Gen. H. E.	020	H. E. Lect. ....	0
Gen. H. E.	020	H. E. Lect. ....	0	Phys. Educ.	055	Physical Education W ..	0
Phys. Educ.	055	Physical Education W ..	0				
Total .....			16	Total .....			15

### JUNIOR

Hshld. Ec.	202	The House .....	3	F. Ch. Dev.	490	Family Health .....	3 or
Art	121	Int. Dec. II .....	2	F. Ch. Dev.	450	Family Relationships .....	2
Art	134	Design in the Crafts I ....	2	Art	405	Advanced Des. ....	2
Art	434	Historic Fabric Des. ....	3	Art	431	Int. Dec. III .....	2 or
Art	104	Intermediate Des. ....	2	Art	117	Costume Des. II .....	3
Art	123	Home Furnishings .....	2 or	Art	140	Weaving I .....	2
Art	115	Figure Composition .....	2	Art	415	Drawing III .....	2
Gen. H. E.	020	H. E. Lect. ....	0	Art	130	Pottery Design .....	2
Engl.	090	English Proficiency .....	0			Elective .....	2
				Gen. H. E.	020	H. E. Lect. ....	0
Total .....			14	Total .....			14 or 15

### SENIOR

Gen. Stud.	250	Introd. to Human. I .....	4	Gen. Stud.	260	Introd. to Human. II .....	4
Art	401	Survey of Art I .....	3	Art	402	Survey of Art II .....	3
Art	432	Prob. in Int. Dec. ....	2 or	Art	125	Window Display .....	3
Art	412	Costume Illustration ..	2	Art	448	Historic Furn. Des. ....	3 or
Art	435	Prob. in Cost. Des. ....	2	Clo. Text.	700	History of Costume .....	3
		Elective .....	2-4			Elective .....	2
Gen. H. E.	020	H. E. Lect. ....	0	Gen. H. E.	020	H. E. Lect. ....	0
Total .....			13-15	Total .....			15

Number of hours required for graduation, 120.

† Or substitute, such as Zoology, Physiology.

‡ One course in General Studies may be deferred to junior year.

**Curriculum in Dietetics and Institutional Management***B. S. in Home Economics***FRESHMAN**

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Chem.	110	General Chemistry .....	5	Chem.	330	Gen. Org. Chem. ....	5
Engl.	125	Written Comm. I .....	3	Engl.	135	Written Comm. II .....	2
F. Ch. Dev.	210	Human Relations .....	2	Art	100	El. Des. I .....	2
Fds. Nutr.	110	Foods I .....	5	Fds. Nutr.	130	Applied Nutrition .....	2
Gen. H. E.	020	H. E. Lect. ....	0	Psych.	310	Gen. Psychology .....	3
Phys. Educ.	055	Physical Education W ..	0	Clo. Text.	150	Selection of Clothing .....	2
				Gen. H. E.	020	H. E. Lect. ....	0
				Phys. Educ.	055	Physical Education W ..	0
Total .....			15	Total .....			16

**SOPHOMORE**

Econ.	110	Economics I .....	3	Soc.	250	Sociology .....	3
Art	113	Cost. Des. I .....	2 or	Inst. Mgmt.	207	Quan. Food Prep. I .....	2
Art	119	Int. Dec. I .....	2	Zool.	465	Human Physiology .....	4
Fds. Nutr.	240	Foods II .....	3	Phys.	210	Hshld. Physics .....	4
Sp.	105	Oral Comm. I .....	2			Elective .....	2
Zool.	110	Gen. Zoology .....	5	Gen. H. E.	020	H. E. Lect. ....	0
Gen. H. E.	020	H. E. Lect. ....	0	Phys. Educ.	055	Physical Education W ..	0
Phys. Educ.	055	Physical Education W ..	0				
Total .....			15	Total .....			15

**JUNIOR**

Gen. Stud.	250	Introd. to Human. I .....	4	Gen. Stud.	260	Introd. to Human. II .....	4
Fds. Nutr.	250	Dietetics .....	3	Chem.	650	Gen. Biochemistry .....	5
Inst. Mgmt.	212	Quan. Food Prep. II .....	3	Fds. Nutr.	417	Exp. Cookery .....	3
Inst. Mgmt.	220	Inst. Purchasing I .....	3	F. Ch. Dev.	410	Child Guid. I .....	3
An. Husb.	218	Meats H. E. ....	2	Gen. H. E.	020	H. E. Lect. ....	0
Gen. H. E.	020	H. E. Lect. ....	0				
Engl.	090	English Proficiency .....	0				
Total .....			15	Total .....			15

**SENIOR**

Bact.	150	Gen. Micro. ....	3	Acctg.	725	Inst. Accounting .....	2
Educ.	285	Meth. of Tchg. for Diet. Stu. ....	3	Fds. Nutr.	514	Diet. for Abn. Cond. ....	2
Fds. Nutr.	412	Human Nutr. ....	3	Inst. Mgmt.	403	Org. and Mgmt. of Inst.,	3
Gen. H. E.	020	Elective .....	6	Inst. Mgmt.	402	Org. and Mgmt. of Inst. Lab. ....	2
		H. E. Lect. ....	0			Elective .....	5
				Gen. H. E.	020	H. E. Lect. ....	0
Total .....			15	Total .....			14

Number of hours required for graduation, 120.



# Curriculum in Restaurant Management

## B. S. in Restaurant Management

### FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Chem.	110	General Chemistry .....	5	Chem.	330	Gen. Org. Chem. ....	5
Engl.	125	Written Comm. I .....	3	Engl.	135	Written Comm. II .....	2
Fds. Nutr.	110	Foods I .....	5	Fds. Nutr.	130	Applied Nutr. ....	2
Psych.	310	Gen. Psychology .....	3 or	Sp.	105	Oral Comm. I .....	2
F. Ch. Dev.	210	Human Relations .....	2	Econ.	110	Economics I .....	3
Gen. H. E.	020	H. E. Lect. ....	0	Art	100	El. Des. I .....	2
Phys. Educ.	010	Physical Education M ..	0	Gen. H. E.	020	H. E. Lect. ....	0
		Air Science or		Phys. Educ.	010	Physical Education M ..	0
		Military Science .....	1			Air Science or	
						Military Science .....	1
Total .....			15 to 17	Total .....			16 or 17

### SOPHOMORE

Zool.	110	Gen. Zoology .....	5	Bact.	110	Gen. Micro. ....	3
Fds. Nutr.	240	Foods II .....	3	Inst. Mgmt.	207	Quan. Fd. Prep. I .....	2
Phys.	210	Hshld. Physics .....	4	Clo. Text.	255	Textiles .....	3
An. Husb.	218	Meats H. E. ....	2	Fds. Nutr.	250	Dietetics .....	3
Mach. Des.	110	Engg. Drawing .....	2	Zool.	465	Human Physiology .....	4
Gen. H. E.	020	H. E. Lect. ....	0	Gen. H. E.	020	H. E. Lect. ....	0
Phys. Educ.	010	Physical Education M ..	0	Phys. Educ.	010	Physical Education M ..	0
		Air Science or				Air Science or	
		Military Science .....	1			Military Science .....	1
Total .....			16 or 17	Total .....			15 or 16

### JUNIOR

Gen. Stud.	250	Introd. to Human. I .....	4	Gen. Stud.	260	Introd. to Human. II .....	4
Inst. Mgmt.	212	Quan. Fd. Prep. II .....	3	Fds. Nutr.	417	Exp. Cookery .....	3
Inst. Mgmt.	220	Inst. Purch. I .....	3	Econ.	455	Labor Economics I .....	3
		Elective .....	4	Inst. Mgmt.	250	Restaurant Mgmt. I .....	2
Gen. H. E.	020	H. E. Lect. ....	0			Elective .....	2 or 3
Engl.	090	English Proficiency .....	0	Gen. H. E.	020	H. E. Lect. ....	0
Total .....			14	Total .....			14 or 15

### SENIOR

Bact.	545	Micro. of Foods .....	5	Econ.	725	Inst. Acct. ....	2
Govt.	295	Business Law I .....	3 or	Psych.	715	Personnel Psych. ....	3
Govt.	310	Business Law II .....	3	Inst. Mgmt.	425	Restaurant Mgmt. II .....	5
Inst. Mgmt.	420	Inst. Purch. II .....	3	Econ.	415	Small Bus. Operation ....	3
Educ.	285	Meth. of Tchg. for				Elective .....	2
		Diet. Stu. ....	3	Gen. H. E.	020	H. E. Lect. ....	0
Gen. H. E.	020	H. E. Lect. ....	0			Elective .....	2
Total .....			14	Total .....			15

Number of hours required for graduation: 120 (women) or 124 (men).

**Curriculum in Home Economics and Journalism***B. S. in Home Economics and Journalism***FRESHMAN**

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Chem.	110	General Chemistry .....	5 or	Chem.	330	Gen. Org. Chem. ....	5 or
Gen. Stud.	110	Man's Phys. World I ....	4	Gen. Stud.	120	Man's Phys. World II ....	4
Engl.	125	Written Comm. I .....	3	Engl.	135	Written Comm. II .....	2
Art	100	El. Des. I .....	2	Art	113	Cost. Des. I .....	2
Fds. Nutr.	110	Foods I .....	5	Sp.	105	Oral Comm. I .....	2
Gen. H. E.	020	H. E. Lect. ....	0	Clo. Text.	150	Selection of Clo. ....	2
Phys. Educ.	055	Physical Education W ....	0	Hshld. Ec.	102	Family Finance .....	2
				Tech. Journ.	050	Tech. Journ. Lect. ....	0
				Phys. Educ.	055	Physical Education W ....	0
Total .....				14 or 15	Total .....		
					14 or 15		

**SOPHOMORE**

Gen. Stud.	150	Biology I* .....	4	Gen. Stud.	160	Biology II .....	4
Gen. Stud.	210	Introd. Soc. Sci. I* .....	4	Gen. Stud.	220	Introd. Soc. Sci. II .....	4
Fds. Nutr.	130	Applied Nutrition .....	2	Clo. Text.	255	Textiles .....	3 or
Tech. Journ.	215	Reporting I .....	3	Clo. Text.	175	Fund. of Clothing .....	3
		Elective .....	2 or 3	Tech. Journ.	225	Reporting II .....	3
Gen. H. E.	020	H. E. Lect. ....	0			Elective .....	1 or 2
Phys. Educ.	055	Physical Education W ....	0	Tech. Journ.	050	Tech. Journ. Lect. ....	0
				Phys. Educ.	055	Physical Education W ....	0
Total .....				15 or 16	Total .....		
					15 or 16		

**JUNIOR**

Gen. Stud.	250	Introd. to Human. I .....	4	Gen. Stud.	260	Introd. to Human. II .....	4
F. Ch. Dev.	450	Family Relationships ..	2 or	F. Ch. Dev.	450	Family Relationships ..	2 or
F. Ch. Dev.	410	Child Guidance I .....	3	F. Ch. Dev.	490	Family Health .....	3
Hshld. Ec.	202	The House .....	3 or	Tech. Journ.	265	Editing .....	2
Hshld. Ec.	572	Cons. and Mkt. ....	3	Art	119	Int. Dec. I .....	2
Sp.	385	Radio Talk .....	2 or			Elective .....	4 or 5
Tech. Journ.	245	Publ. Infm. Methods .....	2	Gen. H. E.	020	H. E. Lect. ....	0
		Elective .....	3 or 4				
Tech. Journ.	050	Tech. Journ. Lect. ....	0				
Engl.	090	English Proficiency .....	0				
Total .....				15	Total .....		
					15		

**SENIOR**

Tech. Journ.	685	Adver. Salesmanship ..	2 or	Tech. Journ.	465	Magazine Article Writ. ..	2
Tech. Journ.	255	Prin. of Advertising .....	3	Tech. Journ.	485	Inter. of Cont. Affairs ..	3
Tech. Journ.	445	The Home Page .....	3			Elective .....	10
Tech. Journ.	650	Journ. in a Free Society. ....	3	Gen. H. E.	020	H. E. Lect. ....	0
		Elective .....	6 or 7				
Tech. Journ.	050	Tech. Journ. Lect. ....	0				
Total .....				15	Total .....		
					15		

Number of hours required for graduation, 120.

\* One course in General Studies may be deferred to junior year.

Electives will be distributed as follows: Approximately 50 percent to social studies, journalism, and English; approximately 50 percent to courses in home economics and related areas.

Curriculum in Home Economics and Nursing  
B. S. in Home Economics and Nursing

FRESHMAN

FIRST SEMESTER			SECOND SEMESTER		
	Course	Sem. Hrs.		Course	Sem. Hrs.
Chem.	110 General Chemistry .....	5	Chem.	320 Intro. Org. and Bio. ....	5
Engl.	125 Written Comm. I .....	3		Chem. ....	5
F. Ch. Dev.	210 Human Relations .....	2	Engl.	135 Written Comm. II .....	2
Fds. Nutr.	110 Foods I .....	5	Psych.	310 Gen. Psych. ....	3
Gen. H. E.	020 H. E. Lect. ....	0	Art	100 El. Des. I .....	2
Phys. Educ.	055 Physical Education W ....	0	Clo. Text.	150 Sel. of Clo. ....	2
			Hshld. Ec.	102 Fam. Finance .....	2
			Gen. H. E.	020 H. E. Lect. ....	0
			Phys. Educ.	055 Physical Education W ....	0
Total .....		15	Total .....		16

SOPHOMORE

Gen. Stud.	250	Intro. Human. I .....	4	Gen. Stud.	260	Intro. Human. II .....	4
Educ.	110	Educ. Psych. for Nurses, .....	4	Bact.	250	Bacteriology .....	5
Sp.	105	Oral Comm. I .....	2	F. Ch. Dev.	410	Child Guidance I .....	3
Zool.	110	Gen. Zool. ....	5	F. Ch. Dev.	450	Family Relationships ....	2
Fds. Nutr.	130	Applied Nutr. ....	2			Elective in H. E. ....	3
Gen. H. E.	020	H. E. Lect. ....	0	Gen. H. E.	020	H. E. Lect. ....	0
Phys. Educ.	055	Physical Education W ....	0	Phys. Educ.	055	Physical Education W ....	0
				Engl.	090	English Proficiency .....	0
Total .....		16	Total .....		17		

JUNIOR AND SENIOR

Summer (in residence at Kansas State College with dual enrollment in the Department of Nursing, University of Kansas, School of Medicine, and Kansas State College).

Soc.	250	Sociology .....	3
Zool.	240	Hum. Anat. and Physiol., .....	5
Total .....		8	

The 9-quarter program at the University of Kansas School of Medicine includes study in the following fields:

- THEORETICAL WORK
- Professional Adjustments I and II
  - Nursing Arts I and II
  - History of Nursing
  - Pathology
  - Medical and Surgical Nursing
  - Diet Therapy
  - Obstetrical Nursing
  - Pediatric Nursing
  - Public Health Nursing
  - Psychiatric Nursing
  - Medical Specialties
  - Surgical Specialties
  - Ward Adm. Teaching
  - Principles of Teaching

- CLINICAL PRACTICE
- Medicine
  - Surgery (including operating room)
  - Pediatrics
  - Nursery
  - Obstetrics
  - Dispensary
  - Tuberculosis
  - Public Health
  - Psychiatry

Number of semester hours required for graduation: 72\* plus completion of the total program at the hospitals.

\* College grades averaging C or more are required for entrance to the Department of Nursing. (For graduation in 1958 or thereafter.)



## Groups of Electives Suggested for Students, School of Home Economics

Lists of courses suggested below have been compiled with the idea of providing for professional competence in areas where home economics functions. Other combinations may be worked out to meet the needs of the individual. Choice of electives is made in conference with a faculty adviser, and is subject to approval by the Dean of the School of Home Economics.

### EDUCATIONAL WORK

#### 1. Teaching Home Economics in High School

The student who wishes to obtain the degree Bachelor of Science and to prepare for the teaching of home economics in Kansas high schools should choose the Curriculum in Home Economics. Electives are discussed with a professor in Home Economics Education. Electives must include courses considered essential in preparing for teaching high school home economics, as follows:

COURSES IN EDUCATION AND PSYCHOLOGY		COURSES IN HOME ECONOMICS	
	<i>Credit Hours</i>		<i>Credit Hours</i>
General Psychology, Psych. 310 .....	3	Design in Crafts I, Art 134 .....	2
Educational Psychology I, Educ. 100 .....	3	Child Guidance I, F. Ch. Dev. 410 .....	3
Educational Psychology II, Educ. 105 .....	3	Home Management, Hshld. Ec. 502 .....	3
Principles of Sec. Educ., Educ. 120 .....	3	Applied Dress Design, Clo. Text. 450 .....	3
Methods of Teaching Home Econ., Educ. 275 .....	3	School Food Service, Inst. Mgmt. 430 .....	3
Teach. Partic. in Home Econ., Educ. 295†, .....	3		
Vocational Home Econ. Cur., Educ. 575 ....	3		

Completion of the requirements of the Curriculum in Home Economics, including courses listed above, entitles the individual to the renewable three-year certificate issued by the State Board of Education, and to approval for teaching in a reimbursed high school home economics department, often called a vocational homemaking department.

#### 2. Teaching Art in High Schools

The student who desires to obtain the degree of Bachelor of Science with a major in art and desires to qualify for the renewable three-year Kansas state teacher's certificate should enroll in the Curriculum in Home Economics with Provision for Specialization, and elect certain courses in the departments of Education and Psychology and certain courses in the Department of Art. These are:

COURSES IN EDUCATION AND PSYCHOLOGY		COURSES IN ART	
General Psychology, Psych. 310 .....	3	Elem. Design II, Art 102 .....	2
Educational Psychology I, Educ. 100 .....	3	Intermediate Design, Art 104 .....	2
Educational Psychology II, Educ. 105 .....	3	Advanced Design, Art 405 .....	2
Methods of Teaching Home Econ., Educ. 275, or .....		Lettering, Art 106 .....	2
Methods of Teaching in the Secondary Schools, Educ. 135 .....	3	Drawing I, Art 130 .....	2
Principles of Sec. Educ., Educ. 120 .....	3	Drawing II, Art 132 .....	2
Teach. Partic. in Home Econ., Educ. 295 or Teach. Partic. in the Secondary Schools, Educ. 150 .....	3	Figure Composition, Art 115 .....	2
And one other 3-sem. hour course in Edu- cation .....		Design in Crafts I, Art 134 .....	2
		Design in Crafts II, Art 136 .....	2
		Metal Crafts, Art 410 .....	2
		Weaving I, Art 140 .....	2
		Pottery Design, Art 138 .....	2
		Survey of Art I, Art 401 .....	3
		Survey of Art II, Art 402 .....	3
		Problems in Teach. Art, Art 430 .....	2

† Each student completes a home project previous to taking this course. The project adviser, who has assisted with the planning of the project, must report a project grade before credit for this course can be sent to the College Registrar for the permanent records.

### 3. Home Demonstration Work

After graduation, apprenticeship for at least one month as an assistant home demonstration agent may precede appointment to a county position. Electives chosen with the advice of the State Home Demonstration Leader and the approval of the Dean of the School of Home Economics include courses from the following list:

Ext. Organ. and Policies, Educ. 460 .....	3	Recreational Leadership W,	
Ext. Methods for Home Economists,		Phys. Educ. 265 .....	2
Educ. 595 .....	3	Demonst. Constr. Proc., Clo. Text. 475 .....	2
Home Management, Hshld. Ec. 502 .....	3	Prin. of Tailoring, Clo. Text. 550 .....	3
Household Equipment, Hshld. Ec. 352 .....	2	Home Furnishings, Art 123 .....	2
Consumers and the Market, Hshld. Ec. 572,	3	Design in the Crafts I, Art 134 .....	2
Econ. Prob. of the Family, Hshld. Ec. 552,	2	Landscape Gardening, Hort. 153 .....	3
Agr. Policy, Agr. Ec. 537 .....	3	Vegetable Gardening, Hort. 189 .....	3
General Psychology, Psych. 310 .....	3	Preserv. Food by Freezing, Hort. 175 .....	3
Child Guidance I, F. Ch. Dev. 410 .....	3	Gen. Econ. Entomology, Ent. 210 .....	3
Dev. and Guidance Youth, F. Ch. Dev. 515,	3	Meats. H. E., An. Husb. 218 .....	2
Cult. Anthropology, Soc. 650 .....	3	Reporting I, Tech. Journ. 215 .....	3
Rural Sociology, Ag. Econ. 290 .....	3	Radio Speech I, Radio 285 .....	2
		KSDB-FM Partic., Radio 311 .....	1

### 4. Nursery School Teaching

The following courses are suggested for students interested in professional and vocational work in child development and family relationships. Students with bachelor's degrees may qualify for work in day nurseries. A fifth year of specialization is usually necessary for professional placement in nursery schools.

Child Guidance II, F. Ch. Dev. 510 .....	3	Parent Education, F. Ch. Dev. 620 .....	2
Development and Guidance of Youth,		Play Act. and Materials, F. Ch. Dev., 525,	3
F. Ch. Dev. 515 .....	3	Literature and Music for the Young	
The Family, F. Ch. Dev. 550 .....	3	Child, F. Ch. Dev. 520 .....	3
Family Health, F. Ch. Dev. 490 .....	3	Lit. for Children, Engl. 470 .....	3
Nutrition of Develop., Fds. Nutr. 516 .....	2	Psych. of Childhood and Adoles.,	
Home Management, Hshld. Ec. 502 .....	3	Psych. 615 .....	3
Nursery School Procedures,		Psych. of Exceptional Children, Psych. 625,	3
F. Ch. Dev. 601 .....	3	Cultural Anthropology, Soc. 650 .....	3
Nursery School Administration,		Social Psychology, Psych. 635 .....	3
F. Ch. Dev. 815 .....	2	Group Dynamics, Psych. 638 .....	3
Seminar in Child Development,			
F. Ch. Dev. 610 .....	2		
Seminar in The Family, F. Ch. Dev. 650,	2		

### 5. Family and Child Development with Community Services

The Family, F. Ch. Dev. 550 .....	3	Psych. of Childhood and Adoles.,	
Family Health, F. Ch. Dev. 490 .....	3	Psych. 615 .....	3
Child Guidance II, F. Ch. Dev. 510 .....	3	Psych. of Exceptional Children, Psych. 625,	3
Development and Guidance of Youth,		Abnormal Psychology, Psych. 605 .....	3
F. Ch. Dev. 515 .....	3	Introd. to Social Work, Soc. 270 .....	3
Parent Education, F. Ch. Dev. 620 .....	2	Social Pathology, Soc. 625 .....	3
Seminar in The Family, F. Ch. Dev. 650,	2	Com. Org. and Leadership, Soc. 635 .....	3
Seminar in Child Development,		Cultural Anthropology, Soc. 650 .....	3
F. Ch. Dev. 610 .....	2	Social Psychology, Psych. 635 .....	3
Home Management, Hshld. Ec. 502 .....	3	Group Dynamics, Psych. 638 .....	3
Economic Problems of the Family,			
Hshld. Ec. 552 .....	2		

### 6. Course Grouping for Elementary Education Majors with Electives in General Home Economics

Students in the Curriculum in Elementary Education may elect at least 24 semester hours of credit from the following:

Selection of Clothing, Clo. Text. 150 .....	2	Child Guidance I, F. Ch. Dev. 410 .....	3
Family Finance, Hshld. Ec. 102 .....	2	Dev. and Guidance Youth, F. Ch. Dev. 515,	3
Foods I, Fds. Nutr. 110 .....	5	Family Relationships, F. Ch. Dev. 450 .....	2
Nutrition for Elementary Teachers,		Family Health, F. Ch. Dev. 490 .....	3
Fds. Nutr. 175 .....	3	The House, Hshld. Ec. 202 .....	3
Elementary Design I, Art 100 .....	2	Textiles, Clo. Text. 255 .....	3
Interior Decoration I, Art 119 .....	2	Fundamentals of Clothing, Clo. Text. 175,	2



## 7. A Course Grouping for Elementary Education Majors with Electives in Child Development and Family Life

Students in the Curriculum in Elementary Education may elect at least 24 semester hours of credit from the following:

	Credit Hours		Credit Hours
Human Relations, F. Ch. Dev. 210 .....	2	Literature and Music for the Young	
Selection of Clothing, Clo. Text. 150 .....	2	Child, F. Ch. Dev. 520 .....	3
Family Finance, Hshld. Ec. 102 .....	2	Play Activities and Materials,	
Nutrition for Elementary Teachers,		F. Ch. Dev. 525 .....	3
Fds. Nutr. 175 .....	3	Child Guidance II, F. Ch. Dev. 510 .....	3
Child Guidance I, F. Ch. Dev. 410 .....	3	The Family, F. Ch. Dev. 550 .....	3
Dev. and Guidance Youth, F. Ch. Dev. 515, .....	3	Seminar in Child Development,	
Family Relationships, F. Ch. Dev. 450 .....	2	F. Ch. Dev. 610 .....	2
Family Health, F. Ch. Dev. 490 .....	3	Parent Education, F. Ch. Dev. 620 .....	2
		Nursery School Procedures, F. Ch. Dev. 601, .....	3

## RESEARCH AND TECHNICAL WORK

Students desiring to major in foods and nutrition or textile research should choose the Curriculum in Home Economics with Provision for Specialization. It is recommended that they take Chemistry I and Organic Chemistry as their freshman science. Electives may be selected from the courses listed below:

### 1. Foods and Nutrition

Meats, Home Ec., An. Husb. 218 .....	2	General Zoology, Zool. 110 .....	5
Expt. Baking, Mill. Ind. 481 .....	3	Human Physiology, Zool. 465 .....	4
General Microbiology, Bact. 110 .....	3	Foods II, Fds. Nutr. 240 .....	3
Chemistry II, Chem. 230, 250 .....	5	Dietetics, Fds. Nutr. 250 .....	3
Quantitative Analysis, Chem. 435 .....	4	Human Nutrition, Fds. Nutr. 412 .....	3
Organic Chemistry II, Chem. 516, 517 .....	5	Experimental Cookery, Fds. Nutr. 417 .....	3
General Biochemistry, Chem. 650 .....	5	Nutrition of Development, Fds. Nutr. 516 ....	2
College Algebra, Math. 175 .....	3	Seminar in Foods, Fds. Nutr. 553 .....	2
Plane Trigonometry, Math. 190 .....	3	Seminar in Nutrition, Fds. Nutr. 554 .....	2
Household Physics, Phys. 210 .....	4	Problems in Foods, Fds. Nutr. 557 .....	2
or		Problems in Nutrition, Fds. Nutr. 558 .....	2
General Physics I, Phys. 110 .....	4	Advanced Nutrition, Fds. Nutr. 761 .....	3
General Physics II, Phys. 120 .....	4	Advanced Foods I, Fds. Nutr. 770 .....	3

### 2. Textiles

Chemistry II, Chem. 230, 250 .....	5	Plane Trigonometry, Math. 190 .....	3
Quantitative Analysis, Chem. 435 .....	4	College Algebra, Math. 175 .....	3
Physical Chemistry I, Chem. 585 and 590, .....	5	Anal. Geom. and Calc. I, Math. 215 .....	4
Colloid Chemistry, Chem. 625 .....	3	Anal. Geom. and Calc. II, Math. 230 .....	4
Chemical Microscopy, Chem. 470 .....	2	Elementary Statistics, Math. 320 .....	3
Clothing Economics, Clo. Text. 650 .....	3	General Microbiology, Bact. 110 .....	3
Advanced Textiles, Clo. Text. 755 .....	3	Statistical Methods I, Math. 725 .....	3
Experimental Textiles, Clo. Text. 760 .....	2	Statistical Methods II, Math. 730 .....	3
Marketing, Econ. 440 .....	3	General Physics I, Phys. 110 .....	4
		General Physics II, Phys. 120 .....	4

## HOME ECONOMICS IN BUSINESS

Radio and television training and experience are increasingly useful to home economists, particularly those going into the business world. Students with aptitudes and interests in the direction of radio and television might elect:

Survey Broadcasting, Radio 275 .....	2	Introd. to TV, Radio 326 .....	2
Radio Speech I, Radio 285 .....	2	Broadcasting Women's Programs,	
Radio Continuity, Radio 295 .....	3	Radio 745 .....	3
KSDB-FM Partic., Radio 311 .....	1		

### 1. Clothing Retailing

Drawing I, Art 130 .....	2	Business Cycles, Econ. 480 .....	2
Historic Fabric Design, Art 434 .....	3	Psychology of Adv. and Selling, Psych. 705, .....	3
Clothing Economics, Clo. Text. 650 .....	3	Social Psychology, Psych. 635 .....	3
Intermediate Textiles, Clo. Text. 600 .....	2	Commercial Correspondence, Engl. 155 .....	3
Adv. Dress Design, Clo. Text. 500 .....	3	Cont. World Hist., Hist. 145 .....	2
Principles of Tailoring, Clo. Text. 550 .....	3	Reporting I, Tech. Journ. 215 .....	3
History of Costume, Clo. Text. 700 .....	3	The Home Page, Tech. Journ. 445 .....	3
Principles of Accounting, Acctg. 330 .....	3	Advertising Salesmanship, Tech. Journ. 685, .....	2
Business Management, Econ. 150 .....	3	Prin. of Advertising, Tech. Journ. 255 .....	3
Marketing, Econ. 440 .....	3	Oral Communications II, Sp. 115 .....	2
Gen. Applied Psych., Psych. 325 .....	2	Radio Talk, Radio 385 .....	2
Personnel Psychology, Psych. 715 .....	3	Clothing and Textiles Summary,	
Retailing, Econ. 445 .....	3	Clo. Text. 775 .....	2



## 2. Clothing and Costume Designing

Elementary Design II, Art 102 .....	2	Advanced Dress Design, Clo. Text. 500 .....	3
Drawing I, Art 130 .....	2	Principles of Tailoring, Clo. Text. 550 .....	3
Drawing II, Art 132 .....	2	Prob. in Clothing and Textiles,	
Costume Design II, Art 117 .....	3	Clo. Text. 750 .....	3
Survey of Art I, Art 401 .....	3	History of Costume, Clo. Text. 700 .....	3
Survey of Art II, Art 402 .....	3	Clothing and Textiles Summary,	
Costume Illustration, Art 412 .....	2	Clo. Text. 775 .....	2
Historic Fabric Design, Art 434 .....	3	General Psychology, Psych. 310 .....	3
Problems in Costume Design, Art 435 .....	2	Psychology of Art, Psych. 765 .....	3
Textiles, Clo. Text. 255 .....	3	Social Psychology, Psych. 635 .....	3
Intermediate Textiles, Clo. Text. 600 .....	2	Cont. World Hist., Hist. 145 .....	2
Clothing Economics, Clo. Text. 650 .....	3	Com. Corres., Engl. 155 .....	3
Applied Dress Design, Clo. Text. 450 .....	3	Contemporary Fiction, Engl. 645 .....	3

## 3. Food Demonstrating

Students preparing to become food demonstrators should choose chemistry as the freshman science. Electives should be selected from the courses listed below:

Mathematics in Human Affairs, Math. 125, .....	3	Home Management, Hshld. Ec. 502 .....	3
General Psychology, Psych. 310 .....	3	Oral Communications II, Sp. 115 .....	2
Household Physics, Phys. 210 .....	4	Reporting I, Tech. Journ. 215 .....	3
Household Equipment, Hshld. Ec. 352 .....	2	Reporting II, Tech. Journ. 225 .....	3
Adv. Household Equipment, Hshld. Ec. 452, .....	3	The Home Page, Tech. Journ. 445 .....	3
Foods II, Fds. Nutr. 240 .....	3	Radio Talk, Radio 385 .....	2
Dietetics, Fds. Nutr. 250 .....	3	Radio Continuity, Radio 295 .....	3
Food Demonstration Techniques,		KSDB-FM Partic., Radio 311 .....	1
Fds. Nutr. 315 .....	2	Broadcasting Women's Programs, Radio 745, .....	3
Experimental Cookery, Fds. Nutr. 417 .....	3	Methods of Teaching Home Economics,	
Seminar in Foods, Fds. Nutr. 553 .....	2	Educ. 656 .....	3
Gen. Biochemistry, Chem. 650 .....	5	Meats, H. E., An. Husb. 218 .....	2
Problems in Foods, Fds. Nutr. 557 .....	1		
Quantity Food Preparation I,			
Inst. Mgmt. 207 .....	2		

## 4. Art and Costume Designing

Lettering, Art 106 .....	2	Figure Composition, Art 115 .....	2
Drawing I, Art 130 .....	2	Problems in Costume Design, Art 435 .....	2
Drawing II, Art 132 .....	2	App. Dress Design, Clo. Text. 450 .....	3
Metal Crafts, Art 410 .....	2	Advanced Dress Design, Clo. Text. 500 .....	3
Window Display, Art 125 .....	3	Principles of Tailoring, Clo. Text. 550 .....	3
Elementary Design II, Art 102 .....	2	History of Costume, Clo. Text. 700 .....	3
Intermediate Design, Art 104 .....	2	Survey of Art I, Art 401 .....	3
Advanced Design, Art 405 .....	2	Survey of Art II, Art 402 .....	3
Costume Design II, Art 117 .....	3	Historic Fabric Design, Art 434 .....	3
Costume Illustration, Art 412 .....	2	Design in the Crafts I, Art 134 .....	2
		Principles of Advertising, Tech. Journ. 255, .....	3

## 5. Art and Interior Decorating

Window Display, Art 125 .....	3	Home Furnishing, Art 123 .....	2
Elementary Design II, Art 102 .....	2	Problems in Interior Dec., Art 432 .....	2
Intermediate Design, Art 104 .....	2	Interior Decoration II, Art 121 .....	2
Advanced Design, Art 405 .....	2	Interior Decoration III, Art 431 .....	2
Problems in Design, Art 417 .....	2	Historic Furniture Design, Art 448 .....	3
Drawing I, Art 130 .....	2	Historic Fabric Design, Art 434 .....	3
Drawing II, Art 132 .....	2	Survey of Art I, Art 401 .....	3
Drawing III, Art 415 .....	2	Survey of Art II, Art 402 .....	3
Lettering, Art 106 .....	2	Landscape Gardening, Hort. 153 .....	3
Design in the Crafts I, Art 134 .....	2	Reporting I, Tech. Journ. 215 .....	3
Weaving I, Art 140 .....	2	The Home Page, Tech. Journ. 445 .....	3
Pottery Design, Art 138 .....	2	Principles of Advertising, Tech. Journ. 255, .....	3

## 6. Household Economics: Home, Equipment, or Budget Advising

Students interested in this area should choose the Curriculum in Home Economics with Provision for Specialization. Students interested in becoming budget advisers should substitute Economics I, Sociology, and one other course for Introduction to Social Science I and II.

Twenty to twenty-five semester hours, which approximates 50 percent of the elective hours, should be chosen from the courses listed below:

Hshld. Physics, Phys. 210 .....	4	Family Relationships, F. Ch. Dev. 450* ....	2
Household Equipment, Hshld. Ec. 352 .....	2	or	
Housing Req. Fam., Hshld. Ec. 422 .....	2	Family Health, F. Ch. Dev. 490* .....	3
Advanced Household Equipment,		Methods of Teaching Home Economics,	
Hshld. Ec. 452 .....	3	Educ. 275 .....	3
Home Management, Hshld. Ec. 502 .....	3	or	
Economic Problems of the Family,		Ext. Methods for Home Economists,	
Hshld. Ec. 552 .....	2	Educ. 595 .....	3
Consumer and the Market, Hshld. Ec. 572,	3	Reporting I, Tech. Journ. 215 .....	3
Foods II, Fds. Nutr. 240 .....	3	The Home Page, Tech. Journ. 445 .....	3
Dietetics, Fds. Nutr. 250 .....	3	Radio TV Pr. I, Radio 310 .....	3
Food Demonstration Techniques,		Radio Talk, Radio 385 .....	2
Fds. Nutr. 315 .....	2	Building Materials and Construction,	
Experimental Cookery, Fds. Nutr. 417 .....	3	Arch. 300 .....	3
Child Guidance I, F. Ch. Dev. 410 .....	3	Landscape Gardening, Hort. 153 .....	3

\* Whichever was not taken in the basic curriculum.

## HOMEMAKING

	<i>Credit Hours</i>		<i>Credit Hours</i>
Com. Org. and Lead., Soc. 635 .....	3	Psychology of Childhood and Adoles-	
Survey of Art I, Art 401 .....	3	cence. Psych. 615 .....	3
Child Guidance I, F. Ch. Dev. 410 .....	3	Applied Dress Design, Clo. Text. 450 .....	3
Child Guidance II, F. Ch. Dev. 510 .....	3	Advanced Dress Design, Clo. Text. 500 .....	3
Dev. and Guid. Youth, F. Ch. Dev. 515 .....	3	Prin. Tailoring, Clo. Text. 550 .....	3
Foods II, Fds. Nutr. 240 .....	3	Housing Req. Fam., Hshld. Ec. 422 .....	2
Dietetics, Fds. Nutr. 250 .....	3	Home Management, Hshld. Ec. 502 .....	3
Experimental Cookery, Fds. Nutr. 417 .....	3	Economic Problems of the Family,	
Nutr. of Development, Fds. Nutr. 516 .....	2	Hshld. Ec. 552 .....	2
Meats, H. E., An. Husb. 218 .....	2	Consumers and the Market, Hshld. Ec. 572,	3

## ART

DOROTHY BARFOOT, *Head of Department*

Specialization in art is designed to provide a background for home-making or other professional work. Depending upon their interests, the undergraduate students may specialize in design, interior decoration, costume design, or teaching of art. Major work leading to the degree Master of Science is offered in costume design and interior decoration and related phases of the department's work.

### FOR UNDERGRADUATE CREDIT

- 100. Elementary Design I.** 2 semester hours. Each semester and summer.  
An introduction to the arts and application of their principles to daily living. One hour of recitation and three hours of laboratory a week.
- 102. Elementary Design II.** 2 semester hours. Each semester and summer.  
Theory of design and color continued and a practical application of it made to functional items in the home. Prerequisite: Art 100.
- 104. Intermediate Design.** 2 semester hours. First semester.  
Theory of color and design. Special emphasis on abstractions and nonsubjective motifs and their influence in contemporary design. Prerequisite: Art 102.
- 106. Lettering.** 2 semester hours. First semester.  
Creative design in the field of lettering in relation to historic and modern forms. Prerequisite: Art 100.
- 113. Costume Design I.** 2 semester hours. Each semester and summer.  
Line, form, color, texture in costume design and selection as related to the requirements of the individual. This course is a design basis for garment selection and construction. One hour of recitation and three hours of laboratory a week. Prerequisite: Art 100.
- 115. Figure Composition.** 2 semester hours. First semester.  
Design and decorative drawing of the figure with reference to various dress silhouettes and styles. Prerequisite: Art 100, 130.
- 117. Costume Design II.** 3 semester hours. First semester.  
Creative designing for the fashion figure. Nine hours of laboratory a week. Prerequisite: Art 113, 130.
- 119. Interior Decoration I.** 2 semester hours. Each semester and summer.  
The design and furnishing of the modern interior. One hour of recitation and three hours of laboratory. Prerequisite: Art 100.
- 121. Interior Decoration II.** 2 semester hours. First semester.  
Interior design in its relation to house types, period furniture and fabrics. Prerequisite: Art 119, 130, or consent of instructor.
- 123. Home Furnishing.** 2 semester hours. Each semester and summer.  
Refinishing, restyling, upholstering and/or slipcovering furniture; also designing and making draperies and lamp shades. Prerequisite: Art 119.
- 125. Window Display.** 3 semester hours. Each semester and summer.  
Three dimensional designing. Experiments in a variety of materials such as paper sculpture, wire mesh, papier-maché, and plastics. Practical experience is gained through the cooperation of local stores. Prerequisite: Art 106, 130, or consent of instructor.
- 130. Drawing I.** 2 semester hours. Each semester and summer.  
Representative and creative sketching in which a variety of media and techniques is employed. Prerequisite: Art 100.
- 132. Drawing II.** 2 semester hours. First and second semester.  
Creative work in oils, water colors, pen and ink, and lithograph crayon. The student works both in the studio and outdoors. Prerequisite: Art 130.



- 134. Design in the Crafts I.** 2 semester hours. Each semester and summer.  
Basic craft experiences with various methods and techniques such as leatherwork, wood carving, decorative stitchery, art glass etching. Prerequisite: Art 100 or consent of instructor.
- 136. Design in the Crafts II.** 2 semester hours. First semester and summer.  
Further experience in the basic principles and techniques of crafts with special emphasis on plastics, bookbinding, and new materials. Prerequisite: Art 100 and junior standing.
- 138. Pottery Design.** 2 semester hours. Each semester and summer.  
Creative design of pottery, its formation, firing, and decoration. Prerequisite: Art 100 or permission of instructor.
- 140. Weaving I.** 2 semester hours. Each semester and summer.  
A study of the principles of design, color and texture applied to textile construction. Prerequisite: Art 100 or consent of instructor.
- 172. Contemporary Homes.** 3 semester hours. Each semester and summer.  
The design of the contemporary home as an art expression of the family in relation to everyday living. Three recitation periods a week. Prerequisite: Art 100 or equivalent.
- 190. Art for Elementary Schools.** 3 semester hours. Each semester and summer.  
A course in color and form with methods and materials for teaching art at different grade levels in the elementary schools. This course is not to be substituted for Elementary Design I.
- 192. Crafts for Elementary Schools.** 3 semester hours. Each semester and summer.  
A course in crafts emphasizing design with methods and materials for different grade levels in the elementary schools. This course is not to be substituted for Design in the Crafts I or II. Prerequisite: Art 190.

## FOR UNDERGRADUATE AND GRADUATE CREDIT

- 401. Survey of Art I.** 3 semester hours. First semester and summer.  
The culture of various peoples and their homes as shown by their use of color, line, and form in architecture and sculpture and the minor arts. Prerequisite: Art 100.
- 402. Survey of Art II.** 3 semester hours. Second semester and summer.  
The culture of various peoples as expressed in historic painting. Prerequisite: Art 401.
- 405. Advanced Design.** 2 semester hours. Second semester and summer.  
Special emphasis on art structure. Designs for textiles using modern commercial repeats. Prerequisite: Art 104.
- 410. Metal Crafts.** 2 semester hours. Second semester and summer.  
Basic principles and techniques of metal work and jewelry. Prerequisite: Art 134.
- 412. Costume Illustration.** 2 semester hours. Second semester and summer.  
Costume figures for fashion illustration rendered in various media suitable for reproduction. Prerequisite: Art 117.
- 415. Drawing III.** 2 semester hours. Each semester and summer.  
A continuation of Drawing II. Work in oil, water color, pen and ink, in studio and out of doors. Individual needs of student given special attention. Prerequisite: Art 132.
- 417. Problems in Design.** Credit to be arranged. Each semester and summer.  
Problems in design planned to meet the particular needs of the student. Prerequisite: Ten credit hours in art or consent of instructor and senior standing.

**430. Problems in Teaching Art.** Credit to be arranged. Each semester and summer.

For the high school teacher who is correlating art with home economics, particularly for the teacher of art connected with the vocational home economics program. Lectures and class discussions of methods, consideration of suitable laboratory equipment, use of illustrative material, and preparation of course of study. Prerequisite: Art 102, Educ. 275, or equivalent; twelve credit hours in Art.

**431. Interior Decoration III.** 2 semester hours. Second semester.

Practical experience is offered in helping townspeople in the interior design of their homes. Functionalism, originality, and contemporary design are stressed. Prerequisite: Art 121.

**432. Problems in Interior Decoration.** Credit to be arranged. Each semester and summer.

Problems planned with the students to meet their particular needs. Prerequisite: Art 431 or consent of instructor.

**434. Historic Fabric Design.** 3 semester hours. Each semester and summer.

Design employed in fabrics in each of the great art periods. Prerequisite: Art 100, Clo. Text. 255.

**435. Problems in Costume Design.** Credit to be arranged. First semester and summer.

Problems planned with the students to meet their particular needs. Prerequisite: Art 117 or consent of instructor.

**443. Arts of Mexico.** 3 semester hours. Each semester and summer.

A survey of the arts of pre-Spanish, colonial, and modern Mexico, their origins and developments. Prerequisite: Art 100.

**448. Historic Furniture Design.** 3 semester hours. Each semester and summer.

Design expressed in furniture in each of the great art periods. Prerequisite: Art 100.

FOR GRADUATE CREDIT

**900. Advanced Costume Design.** Credit to be arranged. Each semester and summer.

Individual research problems which may form the basis for the master's thesis. Prerequisite: Consult instructor.

**904. Advanced Interior Decoration.** Credit to be arranged. Each semester and summer.

Individual research problems which may form the basis for the master's thesis. Prerequisite: Consult instructor.

**906. Problems in Advanced Design.** Credit to be arranged. Each semester and summer.

Individual research problems dealing with the various phases of design may be chosen by the student (with the aid of the instructor) to form the basis of a master's thesis. Prerequisite: Consult instructor.

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## CLOTHING AND TEXTILES

ALPHA C. LATZKE, *Head of Department*

The Department of Clothing and Textiles offers courses designed to furnish essential knowledge concerning consumer problems in clothing and textiles. Instruction is provided for students who wish to prepare for vocational, professional, and business positions, such as teachers, extension workers, research workers, textile chemists, clothing consultants, and purchasing agents for institutions and department stores.



## FOR UNDERGRADUATE CREDIT

**150. Selection of Clothing.** 2 semester hours. Each semester.

A study of the clothing needs and practices of individuals and social groups; wardrobe planning and buying procedures.

**175. Fundamentals of Clothing.** 3 semester hours. Each semester.

Use of commercial patterns in garment construction. Problems adjusted to abilities of students. Students are to be registered in sections according to results of placement examination. Six hours of laboratory a week.

**255. Textiles.** 3 semester hours. Each semester and summer.

Fundamentals of textiles as related to the problems of the consumer. Two hours of recitation and two hours of laboratory a week. Prerequisite: Chem. 330 or Gen. Stud. 120.

## FOR UNDERGRADUATE AND GRADUATE CREDIT

**450. Applied Dress Design.** 3 semester hours. Each semester and summer.

Application of design principles to dress; construction of foundation pattern; flat pattern designing; development of garments in suitable material. One hour of recitation and six hours of laboratory a week. Prerequisite: Clo. Text. 175, Art 113; Clo. Text. 255 recommended.

**475. Demonstrating Construction Processes.** 2 semester hours. First semester and summer.

Emphasis on clothing standards, demonstration techniques, and use of new equipment and processes. For students preparing for teaching and home demonstration work. Four hours of laboratory a week. Prerequisite: Clo. Text. 450 or equivalent.

**500. Advanced Dress Design.** 3 semester hours. Each semester and summer.

Social significance of fashion; application of design to dress. Designs draped in cotton and then completed in suitable material. One hour of recitation and six hours of laboratory a week. Prerequisite: Clo. Text. 175, Art 113; Clo. Text. 255 recommended.

**550. Principles of Tailoring.** 3 semester hours. Each semester and summer.

Design as related to the coat or suit; techniques of tailoring; construction of coat or suit. One hour of recitation and six hours of laboratory a week. Prerequisite: Clo. Text. 500 or consult instructor.

**600. Intermediate Textiles.** 2 semester hours. First semester and summer.

Nontechnical study of current developments in textiles. One hour of recitation and three hours of laboratory a week. Prerequisite: Clo. Text. 255.

**650. Clothing Economics.** 3 semester hours. Second semester and summer.

The organization of textile industries and markets; consumer problems in relation to market conditions. Prerequisite: Gen. Stud. 220 or equivalent.

**700. History of Costume.** 3 semester hours. Each semester and summer.

Aspects of the culture of various countries and periods of history as reflected in costume. Prerequisite: Gen. Stud. 250, Hist. 115, or equivalent.

**750. Problems in Clothing and Textiles.** Credit to be arranged. Each semester and summer.

Work is offered in garment designing, textiles, history of costume, clothing economics. Prerequisite: Senior or graduate standing. Consult instructor.

**755. Advanced Textiles.** 3 semester hours. First semester and summer.

Physical, chemical, and optical testing of textiles; emphasis placed on



research techniques. One hour of recitation and six hours of laboratory a week. Prerequisite: Clo. Text. 255, Chem. 330.

**760. Experimental Textiles.** Credit to be arranged. Each semester and summer.

Prerequisite: Clo. Text. 755.

**775. Clothing and Textiles Summary.** 2 semester hours. Second semester and summer.

Summarization and correlation of information from courses in Clothing and Textiles and their application to the family's clothing needs. One hour of recitation and three hours of laboratory a week. Prerequisite: Clo. Text. 255, and 450 or 500.

#### FOR GRADUATE CREDIT

**800. Master's Report.** 1 or 2 semester hours. Each semester and summer.

Written report required of students adopting Plan II for meeting the requirements for the degree Master of Science in clothing and textiles. Subject chosen in consultation with major instructor. Consult head of department.

**850. Clothing and Textiles Seminar.** 1 semester hour. Second semester and summer.

Discussion of current developments in the field. Prerequisite: Graduate standing.

**900. Research in Clothing and Textiles.** Credit to be arranged. Each semester and summer.

Research in clothing or in textiles which may form the basis for the master's thesis. Consult instructor for time of meeting. Prerequisite: Graduate standing.

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## FAMILY AND CHILD DEVELOPMENT

\_\_\_\_\_, *Head of Department*

The Department of Family and Child Development offers opportunities for study of the child and his family with a nursery school as a laboratory of human development. For the student interested in homemaking, the courses are planned to create an awareness of the child as a developing personality and to promote an understanding of the dynamics of family relationships. Many of the courses will be of value to prospective teachers, nurses, dietitians, extension workers, and others, in helping them understand human needs and relationships. For the student interested in professional opportunities such as nursery school teaching, child guidance clinics, family life programs in the public schools, college teaching, child welfare with community agencies, or research in child development and family life, the department offers work toward the degree Master of Science.

The curriculum for students in Home Economics and Nursing is under the supervision of the Director of Nursing Education, who is a member of the Department of Family and Child Development.

#### FOR UNDERGRADUATE CREDIT

**105. The Preschool Child.** 2 semester hours recitation.

How children grow and develop physically, mentally, socially, and emotionally. Emphasis on the understandings and skills necessary to meet their basic needs. Not open for credit to home economics students. (Evening class.)

**115. Home Nursing.** 1 semester hour.

Knowledge and skills needed to give simple home nursing care under a physician's supervision. Upon satisfactory completion of this course,

a certificate is awarded by the American Red Cross. (Not to be substituted for any curriculum requirements.) Two hours of laboratory and class discussion.

**210. Human Relations.** 2 semester hours.

Study of human development and adjustment with emphasis on social relationships. Considers basic human relations during periods of dating, courtship, and engagement leading to the beginning family. Planned primarily for the beginning college student.

**310. Family Living.** 2 semester hours. Each semester.

An introduction to the study of the family and its relation to the health and growth of the individual at different age levels. Includes planned experiences with children.

FOR UNDERGRADUATE AND GRADUATE CREDIT

**410. Child Guidance I.** 3 semester hours. Each semester and summer.

Study of the development characteristics of young children, adaptation of environment to meet their needs, and principles involved in the guidance of children at the preschool age. Two hours of recitation and three hours of laboratory a week. Prerequisite: Junior standing or consent of head of department. Additional charge for luncheon.

**450. Family Relationships.** 2 semester hours. Each semester and summer.

Effects of family interaction upon individual development; consideration of premarital, marital, and parent-child relationships. Prerequisite: Junior standing.

**490. Family Health.** 3 semester hours. Each semester and summer.

Meaning of health. Summary of factors conducive to maintaining a high level of health for family members throughout the life cycle including the prenatal and old-age periods. Home care of the ill and injured. Prerequisite: Junior standing or consent of the instructor.

**510. Child Guidance II.** 3 semester hours. First semester and summer.

Study of the growth sequence in relation to behavior and to the young child's process of adjustment. Two hours of recitation and three hours of laboratory a week. Prerequisite: F. Ch. Dev. 410, 490, or concurrent; and consent of head of department.

**515. Development and Guidance of Youth.** 3 semester hours. Each semester and summer.

Study of the developmental characteristics of later childhood as a basis for guidance. Field work arranged. Prerequisite: F. Ch. Dev. 410.

**520. Literature and Music for the Young Child.** 3 semester hours. Second semester.

Children's creative experiences with stories, songs, records and dramatized play. Two hours of recitation and three hours of laboratory. Prerequisite: F. Ch. Dev. 410.

**525. Play Activities and Materials.** 3 semester hours. First semester.

The young child's use of space and equipment, toys, plastic and graphic materials, with emphasis upon play experiences which will contribute to the needs of individual children. Two hours of recitation and three hours of laboratory. Prerequisite: F. Ch. Dev. 410.

**550. The Family.** 3 semester hours. Each semester and summer.

Study of contemporary social conditions affecting family functions, emphasizing the influence of subcultures on personality development. Prerequisite: F. Ch. Dev. 450.

**601. Nursery School Procedures.** 3 semester hours. Second semester.

Supervised participation in the nursery school with opportunity for planning and directing the program. Six hours of laboratory and one hour of conference. Prerequisite: F. Ch. Dev. 510.



**610. Seminar in Child Development.** 2 semester hours. Second semester and summer.

Interpretation and evaluation of research relating to the field of child development. Intended primarily for graduate students but open to others with consent of head of department. Prerequisite: F. Ch. Dev. 510.

**620. Parent Education.** 2 semester hours. Second semester.

Summary of principles in child development and family relationships; application of these principles to group and individual work with parents; organization of material in a resource unit. Prerequisite: F. Ch. Dev. 510 or 550.

**650. Seminar in the Family.** 2 semester hours. First semester and summer.

Interpretation and evaluation of research relating to interaction of family members. Intended primarily for graduate students but open to others with consent of head of department. Prerequisite: F. Ch. Dev. 550.

**711. Problems in Family and Child Development.** Credit to be arranged. Each semester and summer.

Students writing a master's report enroll in this course. Prerequisite: Consult head of department.

FOR GRADUATE CREDIT

**811. Research in Family and Child Development.** Credit to be arranged. Each semester and summer.

Individual research problems which may form the basis for the master's thesis. Consult head of department.

**815. Nursery School Administration.** 2 semester hours. First semester.

Survey of development of the nursery school; consideration of administrative problems, such as physical plant, equipment, records, standards and personnel in relation to the objectives of the nursery school. Prerequisite: F. Ch. Dev. 510 or concurrent.

## FOODS AND NUTRITION

GWENDOLYN L. TINKLIN, *Acting Head of Department*

The Department of Foods and Nutrition provides specialized instruction for homemakers, teachers of foods and nutrition, and dietitians, and for commercial, extension, and research workers. It also gives courses designed for those whose major interest is outside the field of home economics.

FOR UNDERGRADUATE CREDIT

**110. Foods I.** 5 semester hours. Each semester and summer.

Principles of food preparation and food economics. Experience in food preparation and meal service. One required meat demonstration during the semester. Three hours of recitation and six hours of laboratory a week.

**130. Applied Nutrition.** 2 semester hours. Each semester and summer.

Introduction to nutrition with emphasis on food requirements, food selection, and food habits. For beginning students in home economics; open to men and women students not majoring in home economics.

**175. Nutrition for Elementary Teachers.** 3 semester hours.

Second semester and summer sessions. Introduction to nutrition and methods of teaching nutrition to children, including use of visual aids and observation of learning situations. Four hours of recitation and laboratory a week. Not open to students having credit in Fds. Nutr. 130.



**205. Meal Planning, Preparation, and Service.** 3 semester hours. First semester.

Consideration given to problems involved in selecting of foods and planning, preparing, and serving of meals. Emphasis on organization and management of time, money, and energy. Not open to students having credit in Fds. Nutr. 110. Two hours of recitation and three hours of laboratory a week. Prerequisite: Two hours credit in food preparation.

**218. Meats, H. E.** 2 semester hours. Each semester.

See An. Husb. 218, Department of Animal Husbandry, School of Agriculture.

**240. Foods II.** 3 semester hours. Each semester and summer.

Chemical and physical properties of food related to preparation and preservation. One hour of recitation and six hours of laboratory a week. Prerequisite: Chem. 330 or 511 and 512 or Gen. Stud. 120, Fds. Nutr. 110 or 205.

**250. Dietetics.** 3 semester hours. Each semester and summer.

Principles of normal nutrition and practice in planning, adjusting, and preparing dietaries for specific individuals. Energy, protein, mineral, and vitamin computation. Two hours of recitation and three hours of laboratory a week. Prerequisite: Fds. Nutr. 130 or 175, Chem. 330 or 511 and 512, or Gen. Stud. 120.

**315. Food Demonstration Techniques.** 2 semester hours. Second semester.

Objectives and techniques of demonstrations in foods as presented by the classroom teacher and commercial demonstrator. Six hours of laboratory a week. Prerequisite: Fds. Nutr. 240, Educ. 275 or 285 or 595, and senior standing.

FOR UNDERGRADUATE AND GRADUATE CREDIT

**412. Human Nutrition.** 3 semester hours. Each semester and summer.

Chemistry of foods and nutrition, emphasizing food nutrients, digestion and metabolism. Prerequisite: Chem. 650, Zool. 420 or 465, or Gen. Stud. 160; for home economics majors, Fds. Nutr. 250.

**417. Experimental Cookery.** 3 semester hours. Each semester and summer.

Food preparation from the experimental standpoint. One hour of recitation and six hours of laboratory a week. Prerequisite: Fds. Nutr. 240, Chem. 330 or 511 and 512, and at least second semester junior standing.

**514. Dietetics for Abnormal Conditions.** 2 semester hours. Each semester and summer.

Food requirements in pathological conditions. Special diets, preparation of trays, computation of dietaries, consideration of costs. One hour of recitation and three hours of laboratory a week. Prerequisite: Fds. Nutr. 412.

**516. Nutrition of Development.** 2 semester hours. Second semester and summer.

Nutrition in pregnancy and lactation. Food requirements of fetus, infant, preschool and school child through adolescence. Prerequisite: Fds. Nutr. 250.

**553. Seminar in Foods.** 2 semester hours. Each semester and summer.

Individual reports and discussions of topics in fields of foods, food economics, and food research. Prerequisite or concurrent: Fds. Nutr. 417.

**554. Seminar in Nutrition.** 2 semester hours. Each semester and summer.

Individual reports and discussions of topics in field of nutrition. Prerequisite: Fds. Nutr. 412.

**557. Problems in Foods.** Credit to be arranged. Each semester and summer.

Problems dealing with preparation and preservation of food. Three hours of laboratory a week for each hour of credit. Prerequisite: Chem. 330 or 511 and 512; for home economics majors, Fds. Nutr. 417.

**558. Problems in Nutrition.** Credit to be arranged. Each semester and summer.

Problems dealing with the nutritive value of foods, animal experimentation, dietary studies, practice in methods commonly used in simple experiments in nutrition. Three hours of laboratory a week for each hour of credit. Prerequisite: Fds. Nutr. 412.

**761. Advanced Nutrition.** 3 semester hours. First semester and summer.

A study of the more complex phases of the metabolism of foods within the body. Prerequisite: Fds. Nutr. 412.

**770. Advanced Foods I.** 3 semester hours. First semester.

Fundamental principles and practices of food preparation approached through applied organic and colloid chemistry. Egg cookery, emulsions, freezing, batters and doughs will be considered. Two hours of recitation and three hours of laboratory a week. Prerequisite: Fds. Nutr. 240, Chem. 516 and 517 or 650.

FOR GRADUATE CREDIT

**807. Advanced Foods II.** 3 semester hours. Second semester.

A continuation of Advanced Foods I. Starches, protein cookery, fats, and oils will be considered. Two hours of recitation and three hours of laboratory a week. Prerequisite: Fds. Nutr. 770.

**808. Research Techniques in Nutrition.** 3 semester hours. First semester.

Fundamental techniques relating to energy, protein, mineral, and vitamin metabolism. One hour of recitation and six hours of laboratory a week. Prerequisite: Fds. Nutr. 761.

**809. Graduate Seminar in Foods and Nutrition.** 1 semester hour. Each semester.

Discussion of investigations in foods and nutrition. May be taken for four semesters for credit. Prerequisite: Fds. Nutr. 412 and 417.

**905. Research in Foods and Nutrition.** Credit to be arranged. Each semester and summer.

Three hours a week for each hour of credit. Prerequisite: Consult instructor.

**COURSES IN HOME ECONOMICS EDUCATION\***

LUCILE O. RUST, *Professor of Home Economics Education  
and Special Adviser*

FOR UNDERGRADUATE CREDIT

**275. Methods of Teaching Home Economics.** 3 semester hours. Each semester and summer.

Prerequisite: Clo. Text. 175, Fds. Nutr. 240; prerequisite or concurrent: Educ. 105.

**285. Methods of Teaching for Dietetic Students.** 3 semester hours. Each semester.

Prerequisite: Inst. Mgmt. 212 or Fds. Nutr. 250 or concurrent registration.

**295. Teaching Participation in Home Economics.** 3 to 5 semester hours. Each semester and summer.

Prerequisite: Completion of one home project and Educ. 275.

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\* The ten courses named here are given by the Department of Education for the School of Home Economics. The staff is appointed cooperatively by that department and the School of Home Economics.

## FOR UNDERGRADUATE AND GRADUATE CREDIT

**575. The Vocational Home Economics Curriculum.** 3 semester hours. Each semester and summer.

Prerequisite: Educ. 275 or concurrent registration.

**585. Methods in Adult Homemaking Classes.** 1 to 3 semester hours. Summer.

Prerequisite: Educ. 275 or equivalent.

**795. Problems in Education.** Credit to be arranged. Each semester and summer.

Prerequisite: Educ. 120 and approval of instructor. Work is offered in Home Economics Education.

## FOR GRADUATE CREDIT

**930. Organization and Presentation of Home Economics.** Credit to be arranged. Each semester and summer.

**935. Research in Organization and Presentation of Home Economics.** Credit to be arranged. Each semester and summer.

**940. Supervision in Home Economics.** 2 semester hours. Second semester and summer.

Prerequisite: Educ. 295 and experience in teaching home economics.

**945. Seminar in Home Economics Education.** 2 or 3 semester hours. Summer.

Prerequisite: Educ. 295 and experience in teaching home economics.

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## GENERAL HOME ECONOMICS

DORETTA M. SCHLAPHOFF, *Head of Department*

## FOR UNDERGRADUATE CREDIT

**020. Home Economics Lectures.**

Required each semester of students enrolled for ten or more credit hours. Students meet for orientation, for vocational guidance, for consideration of professional opportunities and responsibilities, and for special interest programs, in groups arranged according to classification and curriculum.

**101. Guidance of Freshmen I.** 2 semester hours. First semester.

Instruction and practice in group techniques employed in the orientation of freshman women. The residence halls for freshman women will be used as a laboratory. Offered by the School of Home Economics in conjunction with the Dean of Women, the Counseling Center, and other members of staff in specialized areas. Prerequisite: Junior standing and consent of the Dean of Women. Application for enrollment must be made in the preceding semester.

**102. Guidance of Freshmen II.** 1 semester hour. Second semester.

Instruction and practice in the techniques of working with the individual. Prerequisite: General Home Economics 101 and/or consent of the Dean of Women.

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## HOUSEHOLD ECONOMICS

RICHARD L. D. MORSE, *Head of Department*

Through the courses in the Department of Household Economics an opportunity is offered to study the management of family resources—personal qualities, time, energy, money, house furnishings, equipment, and others—in the attainment of family goals, and to consider the effect of



social and economic forces on the home and its management. Graduate students preparing to become advisers in home management houses, home management specialists in extension, teachers and research workers in these fields, and homemakers find suitable courses in this department.

#### FOR UNDERGRADUATE CREDIT

**102. Family Finance.** 2 semester hours. Each semester and summer.

Financial problems involved in the effective management of the family's resources.

**202. The House.** 3 semester hours. Each semester and summer.

A consideration of dwellings, their environments, plans, and space requirements, which promote effective utilization of family resources. Six hours of recitation and laboratory a week. Prerequisite: Sophomore standing.

**352. Household Equipment.** 2 semester hours. Each semester and summer.

Selection, use, and care of certain furniture and equipment used in the home. Four hours of recitation and laboratory a week. Prerequisite: Fds. Nutr. 110.

#### FOR UNDERGRADUATE AND GRADUATE CREDIT

**422. Housing Requirements of Families.** 2 semester hours. First semester and summer.

Housing requirements of families as influenced by their interests, activities, and socio-economic status; effective ways of meeting these requirements in homes in this area. Six hours of recitation and laboratory a week. Field trips. Prerequisite: Hshld. Ec. 202, 352; senior or graduate standing.

**452. Advanced Household Equipment.** 3 semester hours. Second semester and summer.

Fundamental principles underlying the operation and construction of certain household equipment; demonstration of the practical use of equipment. Six hours of recitation and laboratory a week. Prerequisite: Hshld. Ec. 352, Phys. 210; senior or graduate standing.

**502. Home Management.** 3 semester hours. Each semester and summer.

The application of principles related to satisfying home life. Opportunity is provided for experience in group living and for management in house operating on two different income levels. The period of residence in home management houses is one-half a semester, the equivalent of one hour of recitation and six hours of laboratory a week for one semester. Arrangements must be made in advance for living in the houses. Prerequisite: Senior standing, or consent of instructor.

**522. Time and Motion in Household Tasks.** 2 semester hours. Second semester and summer.

The application of the principles of motion economy in the performance of certain household tasks to promote the more effective use of time and energy. One hour of recitation and two hours of laboratory a week. Prerequisite: Junior standing.

**552. Economic Problems of the Family.** 2 semester hours. First semester and summer.

Study of incomes, investments, and debts; factors determining cost of living; economic problems requiring social action; criteria for appraising plans for improvement of levels of living. Prerequisite or parallel: Gen. Stud. 220 or consent of instructor.

**572. Consumers and the Market.** 3 semester hours. First semester and summer.

Problems of the consumer in the present market, market practices, aids toward intelligent buying of commodities, and the types of protection, including legislation. Field trip out of town. Prerequisite or parallel: Gen. Stud. 220 and junior standing.

**622. Seminar in Household Economics.** 1 to 3 semester hours. Each semester and summer.

A review of research literature; trends in the field of household economics; the contribution of the area to the family and community. Prerequisite: Senior or graduate standing.

**702. Problems in Household Economics.** Credit to be arranged. Each semester and summer.

Individual investigation in standards of living and family expenditures; housing and household equipment; time and motion study; and use of family resources. Prerequisite: Consent of instructor.

FOR GRADUATE CREDIT

**802. Research in Household Economics.** Credit to be arranged. Each semester and summer.

Individual research problems which may form the basis for the master's thesis. Prerequisite: Consent of instructor.

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## INSTITUTIONAL MANAGEMENT

BESSIE B. WEST, *Head of Department*

The Department of Institutional Management provides instruction for those preparing to become school lunchroom managers, or to become dietitians in hospitals, college residence halls, or college, school, commercial, or industrial foods service units.

FOR UNDERGRADUATE CREDIT

**207. Quantity Food Preparation I.** 2 semester hours. Second semester and summer.

Introduction into various areas of institutional management. Food problems of institutions including preparing and serving foods in large quantity. The campus food units will be used as laboratories for this course. One hour of recitation and four hours of laboratory a week. Prerequisite: Fds. Nutr. 240.

**212. Quantity Food Preparation II.** 3 semester hours. First semester.

Food problems of institutions including preparing and serving foods in large quantity, menus, planning, and food costs. The campus food units will be used as laboratories for this course. One hour of recitation and six hours of laboratory a week. Prerequisite: Inst. Mgmt. 207.

**220. Institutional Purchasing I** 3 semester hours. First semester.

Selection, arrangement, installation, and care of various types of equipment for institutional food service departments. Selection and methods of purchasing foods in large quantities. Prerequisite or concurrent: Inst. Mgmt. 212.

**250. Restaurant Management I.** 2 semester hours. Second semester.

An introduction to the field of restaurant management including the development of the industry and a survey of its opportunities and responsibilities. Prerequisite: Inst. Mgmt. 212.

FOR UNDERGRADUATE AND GRADUATE CREDIT

**403. Organization and Management of Institutions.** 3 semester hours. Second semester.

Problems involved in the organization and management of food service units. Women's residence hall or equivalent facilities are used for observation and study. Residence in the hall concurrent with this course is required unless a satisfactory substitute can be arranged with the Committee on Dietetic Education. Prerequisite (or concurrent for graduate students): Inst. Mgmt. 212.

**404. Organization and Management of Institutions Laboratory.** 2 semester hours. Second semester.

Women's residence hall to be used as laboratory. Six hours of laboratory a week. Prerequisite (or concurrent for graduate students): Inst. Mgmt. 212.

**410. Problems in Institutional Management.** Credit to be arranged. Each semester and summer.

Individual investigation of problems in institutional management. Conferences and reports at appointed hours. Prerequisite or concurrent: Inst. Mgmt. 403, 404, or equivalent. Consult instructor.

**420. Institutional Purchasing II.** 3 semester hours. Second semester.

Advanced studies of the principles of purchasing equipment and food for institutions. Two hours of recitation and three hours of laboratory a week. Prerequisite: Inst. Mgmt. 220 or 430.

**425. Restaurant Management II.** 5 semester hours. Second semester.

Problems involved in organization and management of restaurants. Advanced study of food service budgets, cost control, supervision and personnel management. Food service units on the campus will be used for laboratory experience. Two hours of recitation and nine hours of laboratory a week. Prerequisite: Inst. Mgmt. 250.

**430. School Food Service.** 3 semester hours. Each semester.

Consideration given to problems of the school lunch and special meals, including the organization, administration, purchase of food and equipment, food costs, and menu planning. Two hours of recitation and three hours of laboratory a week. Not open to students with credit in Institutional Management 207 or 212. Prerequisite: Fds. Nutr. 110.

**460. Seminar in Institutional Management.** 2 semester hours. First semester.

A review of literature and trends in institutional management as applied to various types of institutions. Prerequisite: Senior or graduate standing.

FOR GRADUATE CREDIT

**901. Research in Institutional Management.** Credit to be arranged. Each semester and summer.

Prerequisite: Consult instructor.



# The School of Veterinary Medicine

ELDEN E. LEASURE, *Dean*

RALPH R. DYKSTRA, *Dean Emeritus*

## VETERINARY ENROLLMENT LIMITED

By authority of the State Board of Regents, enrollment in the Curriculum of Veterinary Medicine is limited to a total of 200 students. Advancement to each of the four professional years is based upon the applicant's scholarship record and completion of the previous year, or semester, requirements in the curriculum. Resident students wishing to enter this curriculum should apply for admission to the Dean of the School of Veterinary Medicine previous to June 1 upon completion of three semesters requirements in the preveterinary curriculum. Transfer students should make application to the Director of Admissions before applying to the Dean of the School. Selection of applicants for the professional curriculum is based upon the applicant's scholarship record in the required preveterinary curriculum and other evidence of his fitness. When all other factors are equal, first preference is given to applicants who have qualified for resident fees at Kansas State College, and second preference to applicants from states having no standard college of veterinary medicine. In general, no requests for admission to the professional curriculum will be approved after June 15. Application blanks for the professional curriculum may be obtained from the Dean of the School of Veterinary Medicine after February 15 of each year. Ordinarily application blanks for the professional curriculum are to be returned in completed form to the Dean's office within six days, after which time the Committee on Selection will proceed with interviews and with the process of selection.

Applicants must offer: (1) satisfactory evidence of completing the high school units required for admission to the preveterinary curriculum in the School of Arts and Sciences; (2) and evidence of completing 68 hours of college work as prescribed in or equivalent to the two preveterinary years in the School of Arts and Sciences, or evidence that such work will be completed satisfactorily by the end of the fourth semester of the preveterinary years. The preveterinary work required may be pursued at Kansas State College or in any approved junior college, college, or university, although it is strongly recommended that the second preveterinary year be completed in residence at Kansas State College.

For the applicant's information, a Kansas resident is interpreted as a student who is entitled to pay resident fees; a nonresident student is one who is required to pay nonresident fees.

## VETERINARY READING ROOM

As a result of generous contributions from alumni and friends of the School of Veterinary Medicine, the veterinary school has a well-equipped reading room consisting of approximately 4,500 volumes which deal with all phases of veterinary medical literature and many allied fields. Veterinary students are permitted admission to the reading room at any hour during the day, and from 7:00 to 10:00, Tuesday and Thursday evenings.

## FEES

	<i>Kansas residents and staff members</i>	<i>Nonresidents</i>
1. <i>Assessments:</i>		
A. Matriculation .....	\$10.00	\$20.00
B. A Semester:		
Student Health .....	10.00	10.00
Student Union .....	7.50	7.50
Summer Session, Recreation Fee .....	2.50	2.50
C. Incidental Fee:		
Veterinary Medicine Students .....	72.50	142.50
2. <i>Refund Policy:</i>		
See General Statement, p. 17.		
3. <i>Other Fees:</i>		
See General Statement, pp. 16-19.		

Curriculum in Veterinary Medicine

Doctor of Veterinary Medicine

The Curriculum in Veterinary Medicine in Kansas State College was established to give the young men of this state an opportunity to pursue these studies in an agricultural environment, where the facilities offered by other branches of the College would be at their command. Better to fit the veterinarian to deal wisely with the livestock problems which he has to meet, he is required to take the work in livestock feeding, breeding, judging, poultry, in milk and dairy inspection, chemistry, bacteriology, parasitology, and zoology, in addition to his purely professional work.

Work must be taken as prescribed; except that certain courses may be selected from the list of extracurricular electives if the student has the prerequisites.

While note required, third-year students are encouraged to accept summer internships with practicing veterinarians, federal and state regulatory forces.

Curriculum in Veterinary Medicine

For admission requirements to this curriculum consult the "Preveterinary Curriculum," page 131.

The two-year Preveterinary Curriculum and this curriculum lead to the two degrees, Bachelor of Science and Doctor of Veterinary Medicine.

FIRST YEAR

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Bact.	310	Vet. Microbiology .....	3	Bact.	340	Path. Bact. and Virology, .....	4
Anat.	109	Anatomy I .....	7	Anat.	120	Anatomy II .....	6
Path.	104	Histology I .....	3	Path.	120	Histology II .....	3
A. H.	130	Animal Husb. A .....	2	Phys.	435	Comp. Physiol. I .....	4
A. H.	131	Livestock Judg. A .....	1	D. H.	111	Dairy Cattle Judg. ....	1
		Electives .....	2				
Engl.	090	English Proficiency .....	0				
Total .....			18	Total .....			18

SECOND YEAR

Bact.	370	Vet. Immunology .....	3	Phys.	401	Special Physiology .....	2
Phys.	445	Comp. Physiol. II .....	4	Path.	403	Pathology I .....	5
Zool.	510	Ani. Parasitology .....	3	Phys.	455	Pharmacodynamics .....	3
Bot.	150	Medical Botany .....	2	Surg.	250	Materia Medica .....	4
Chem.	655	Physiological Chem. ....	5	A. H.	162	Livestock Feeding .....	3
Total .....			17	Total .....			17

THIRD YEAR

Path.	420	Pathology II .....	4	Path.	430	Pathology III .....	3
Path.	500	App. Vet. Parasitology ..	3	Surg.	120	Surgery II .....	4
Surg.	108	Surgery I .....	4	Surg.	180	Obst. and Breed. Dis. ....	5
Surg.	260	Therapeutics .....	3	Surg.	210	Clinics II .....	1
Surg.	200	Clinics I .....	1	Surg.	150	Dis. of Lrg. Animals I ..	4
Surg.	130	Diagnosis .....	2	Anat.	135	Topographic Anatomy ....	1
V. M.	101	Jr.-Sr. Conf. ....	0	V. M.	110	Jr.-Sr. Conf. ....	0
Total .....			17	Total .....			18

FOURTH YEAR

Surg.	140	Surg. Exercises .....	1	Surg.	270	Inf. Dis. of Lrg. Animals, ..	5
Surg.	160	Dis. of Lrg. Animals II, ..	4	Path.	455	Poultry Diseases .....	2
D. H.	153	Dairy Inspection for Vet. Students .....	2	Path.	450	Food Hygiene and Pub. Health .....	5
Path.	440	Pathology .....	3	Surg.	290	Med. Econ. and Law .....	2
Surg.	170	Sm. Animal Surgery .....	2	Surg.	230	Clinics IV .....	4
Surg.	220	Clinics III .....	4	Path.	490	Clinical Path. II .....	0
Surg.	280	Dis. of Sm. Animals .....	2	V. M.	130	Jr.-Sr. Conf. ....	0
Path.	480	Clinical Path. I .....	0				
V. M.	120	Jr.-Sr. Conf. ....	0				
Total .....			18	Total .....			18

Number of hours required for graduation, 141,



## Extracurricular Electives

## FIRST OR SECOND SEMESTER

Anat.	420	Applied Anatomy .....	1 semester hour
Anat.	401	Special Anatomy .....	Credit to be arranged
Physiol.	415	Problems in Physiology .....	Credit to be arranged
Physiol.	465	Physiologic Constituents of Body Fluids .....	2 semester hours
Physiol.	803	Seminar .....	1 semester hour
Physiol.	815	Histophysiology of Nutritional Deficiencies .....	3 semester hours
Physiol.	820	Research in Physiology .....	Credit to be arranged
Path.	460	Pathological Technic and Diagnosis I .....	2 to 5 semester hours
Path.	470	Pathological Technic and Diagnosis II .....	2 to 5 semester hours
Path.	802	Research in Pathology .....	Credit to be arranged
Surg.	240	Extra Clinics .....	1 semester hour
Surg.	801	Research in Surgery .....	Credit to be arranged
Surg.	810	Research in Medicine .....	Credit to be arranged
Mil. Sci.		Mil. I-IV (Vet. Med.) .....	1-8 semester hours

## ANATOMY

WILLIAM McLEOD, *Head of Department*

The classroom instruction consists of lectures, quizzes, recitations, and special dissected specimens, various models and the Azoux model of the horse. The anatomical museum contains hundreds of anatomical specimens for student use, and various skeleton models and bones for individual study. In addition to the conventional embalming, the anatomical specimens are stored under controlled refrigeration. This equipment makes it possible to use fresh anatomical specimens as well as embalmed material. The ruminant is taken as the type and other domestic animals are compared with the ruminant as the dissection proceeds. Comparative dissections and demonstrations on the horse and dog parallel those of the ruminant.

## FOR UNDERGRADUATE CREDIT

**109. Anatomy I.** 7 semester hours. First semester.

Dissections of the body cavities and genital organs of the ruminant. Three hours of recitation and twelve hours of laboratory a week.

**120. Anatomy II.** 6 semester hours. Second semester.

Dissections of the limbs, head and neck of the ruminant. Two hours of recitation and twelve hours of laboratory a week. Prerequisite: Anatomy 109.

**135. Topographic Anatomy.** 1 semester hour. Second semester.

Intense study of the general groups of the ruminant and comparisons with other domestic animals. Dissections and demonstrations of regions of diagnostic and surgical importance of the domestic animals. Three hours of laboratory a week. Prerequisite: Third-year standing in veterinary medicine. Staff.

## FOR UNDERGRADUATE AND GRADUATE CREDIT

**401. Special Anatomy.** Credit to be arranged. Each semester and summer.

The study of any part of the horse (as the digestive or reproductive system), ox, sheep, pig, dog, cat, or poultry. Prerequisite: Anat. 109, 120, Physiol. 131, or equivalent. Staff. Adapted to the work in which the student is specializing.

**420. Applied Anatomy.** 1 semester hour. First semester.

Dissection of certain areas embraced in performing the various surgical operations, and the study of all the structures in each area and their relation to one another as they would present themselves during an operation. Three hours of laboratory a week. Prerequisite: Anat. 120.



## PATHOLOGY

M. J. TWIEHAUS, *Head of Department*

The Department of Pathology presents courses in histology, pathology, and meat inspection, histopathological technic, and research in pathology. Instruction is by lecture, recitation, laboratory work, and demonstrations with visual aid equipment. Practical autopsy experience is gained each afternoon of the week in the autopsy laboratory. Instruction in clinical pathology is required of fourth-year students each afternoon of the week. Students obtain various specimens from clinical patients for blood, blood chemistry, urine and pathological examinations as well as tissue sectioning.

### COURSES IN HISTOLOGY

FOR UNDERGRADUATE CREDIT

**104. Histology I.** 3 semester hours. First semester.

Origin, development, structure, and appearance of the various cells and tissues of the animal body. Particular attention is paid to the relationships between structure and function and to the fundamental similarities and differences of cells and tissues. One hour of recitation and six hours of laboratory a week.

**120. Histology II.** 3 semester hours. Second semester.

Origin, development, structure, and microscopic appearance of the various organs and systems of the animal body. Particular emphasis is laid on the correlation of tissue distribution and regional function. One hour of recitation and six hours of laboratory a week. Prerequisite: Path. 104.

FOR UNDERGRADUATE AND GRADUATE CREDIT

**510. Special Histology.** 3 semester hours. Each semester.

Fundamental histological technics studied by means of problems. Nine hours of laboratory a week. Prerequisite: Path. 120.

### COURSES IN PATHOLOGY

FOR UNDERGRADUATE AND GRADUATE CREDIT

**403. Pathology I.** 5 semester hours. Second semester.

General pathology deals with the etiology, course and termination of disease. Three hours of recitation and six hours of laboratory a week. Prerequisite: Physiol. 435, Path. 120, Chem. 655.

**420. Pathology II.** 4 semester hours. First semester.

Special pathology, study of specific pathological processes occurring in the various organs of the body. Three hours of recitation and three hours of laboratory a week. Prerequisite: Path. 403.

**430. Pathology III.** 3 semester hours. Second semester.

Special pathology continued. The pathology of infectious diseases. Two hours of recitation and three hours of laboratory a week. Prerequisite: Path. 420.

**440. Pathology IV.** 3 semester hours. First semester.

The epidemiology and differential diagnosis of infectious diseases. Three hours of recitation and demonstration a week. Prerequisite: Path. 430.

**450. Food Hygiene and Public Health.** 5 semester hours. Second semester.

A study of the procedures and regulations covering the ante-mortem and post-mortem inspection of food animals, sanitation, and the inspection of food products of animal origin. The place and work of a veterinarian in a public health organization. Five hours of recitation a week. Prerequisite: Path. 440.

**455. Diseases of Poultry.** 2 semester hours. Second semester.

The fundamentals of poultry diseases, sanitation and prevention.  
Prerequisite: Path. 440.

**460, 470. Pathological Technic and Diagnosis I and II.** 2 to 5 semester hours each. Each semester.

Pathological technic, collecting, fixing, embedding in paraffin, and sectioning of tissues, methods of preserving gross specimens, practice in post-mortem and laboratory diagnosis. Prerequisite: For I, Path. 403; for II, Path. 440, 460.

**480, 490. Clinical Pathology I and II.** Credit in Clinics III and IV. Each semester.

The unification and practical application of the various laboratory test procedures to clinical diagnosis. Pathological examinations will include autopsies, biopsies, and hematological, bacteriological, serological, chemical, pathological, and parasitological diagnosis. Prerequisite: Surg. 200, 210. Open only to fourth-year students in veterinary medicine and graduate students.

**500. Applied Veterinary Parasitology.** 3 semester hours. First semester.

The identification of parasites and the diagnosis of parasitosis. A consideration of the important parasitic diseases of livestock. Two hours of recitation and three hours of laboratory a week. Prerequisite: Zool. 510. Limited to veterinary students.

## FOR GRADUATE CREDIT

**802. Research in Pathology.** Credit to be arranged. Each semester.

Individual research in the pathology of an animal disease problem. Prerequisite: Path. 440, 460. This work may form the basis for the master's thesis.

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## PHYSIOLOGY

GRAVERS K. L. UNDERBJERG, *Head of Department*

The Department of Physiology presents courses in comparative physiology, problems in physiology, urine analysis, pharmacodynamics, and anatomy and physiology. Instruction is by lecture, recitation, laboratory work, and demonstrations. The department is especially well equipped for resident instruction and research.

## FOR UNDERGRADUATE CREDIT

**131. Anatomy and Physiology.** 3 semester hours. First semester.

Physiology of the domestic animals, with special emphasis on digestion, absorption, metabolism, and excretion; sufficient anatomy to give a thorough understanding of the correlation between the two subjects and of the physiologic relations existing among the various organs of the body. Two hours of recitation and three hours of laboratory a week. Adapted to students majoring in animal husbandry.

## FOR UNDERGRADUATE AND GRADUATE CREDIT

**401. Special Physiology.** 2 semester hours. Second semester.

The study of special phases of the physiology of domestic animals, especially reproduction, endocrine function, nutrition, and senses. Prerequisite: Physiol. 445.

**415. Problems in Physiology.** Credit to be arranged. Each semester.

Individual investigational problems in the physiology of digestion, reproduction, endocrine glands, etc. Prerequisite: Physiol. 131 or 435 or 445.



**435. Comparative Physiology I.** 4 semester hours. Second semester.

Physiology of the domestic animal; the blood, heart, and blood vessels, the ductless glands and internal secretions, respiration, digestion, and absorption. The laboratory exercises consist of a practical application of the knowledge derived in the classroom. Laboratory directions furnished the student. Three hours of recitation and three hours of laboratory a week. Prerequisite: For veterinary students, Anat. 109, Chem. 330, 655; for others, an approved course in organic chemistry.

**445. Comparative Physiology II.** 4 semester hours. First semester.

The urine and urinary system, nutrition, animal heat, muscular and nervous system, locomotion, generation and development, growth and decay, and selected physiological experiments. Three hours of recitation and three hours of laboratory a week. Prerequisite: Same as for Physiol. 435.

**455. Pharmacodynamics.** 3 semester hours. Second semester.

The study of the physiological and therapeutic action of substances other than foodstuffs in the living structures. Substances to be studied will include drugs, poisons, and hormones used in the practice of veterinary medicine. One hour of recitation and six hours of laboratory a week. Prerequisite: Physiol. 445.

**465. Physiologic Constituents of Body Fluids.** 2 semester hours. Each semester and summer.

Analysis of body fluids with application to specific and fundamental problems in veterinary medicine. One hour of recitation and three hours of laboratory a week. Prerequisite: Physiol. 445 and consent of staff.

**803. Seminar.** 1 semester hour. Each semester and summer.

Designed primarily for graduate and senior students enrolled for graduate credit in physiology. Each student is required to give a report on some subject related to physiology. The course is intended to stimulate interest in research and evaluate data. One hour a week. Prerequisite: Consent of staff.

**815. Histophysiology of Nutritional Deficiencies.** 3 semester hours. Each semester and summer.

The study of changes occurring in tissues from nutritional deficiencies. Two hours of recitation and three hours of laboratory a week. Open to graduate students and veterinary students earning graduate credit. Prerequisite: Consent of staff.

**820. Research in Physiology.** Credit to be arranged. Each semester and summer.

For graduate students working toward the M. S. and Ph. D. degrees. Prerequisite: Consent of staff.

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## SURGERY AND MEDICINE

EDWIN J. FRICK, *Head of Department*

The Dykstra Veterinary Hospital is equipped with every modern appliance for surgical operations and treatment of animal diseases. The hospital has a capacity of more than fifty horses or cattle, and in addition it can accommodate 100 small animals, such as sheep, swine, cats, dogs, etc. Members of the clinical staff, accompanied by students, operate five ambulatory cars, and make trips at all times of the day and night into the surrounding country to diagnose and treat animal patients for all diseases affecting livestock and poultry.

In this way the student comes into contact daily with the diseases of animals and their treatment. More than 25,000 clinical cases a year are treated. Third- and fourth-year students are assigned regularly to in-



patients and out-patients each afternoon of the week and are responsible for arriving at diagnosis, treatment, and keeping of accurate clinical data all under the supervision of a staff member. During clinical hours knowledge is also gained in the restraint of animals, in the pathology observed in autopsies, and in the clinical (pathological) laboratory tests and examinations required.

Fourth-year students are required to serve a two-weeks' internship in the veterinary hospital during which time they are responsible for the treatment of all in-patients and out-patients, and the proper conduct of managing a modern hospital. All third- and fourth-year students are regularly assigned in rotation during the year to various specialists of the clinical staff.

## COURSES IN SURGERY

### FOR UNDERGRADUATE CREDIT

**108. Surgery I.** 4 semester hours. First semester.

Lectures, recitations, and demonstrations on the fundamental principles of surgery, methods of restraint, asepsis, and antisepsis, anesthesia, division of tissues, union of tissues, control of hemorrhage, neoplasms, and animal dentistry. Four hours of recitation a week. Prerequisite: Third-year standing in veterinary medicine.

**120. Surgery II.** 4 semester hours. Second semester.

Lectures, recitations, and demonstrations on the surgical diseases of domestic animals; horseshoeing is included. Four hours of recitation and demonstration a week. Prerequisite: Surg. 108.

**140. Surgical Exercises.** 1 semester hour. First semester.

Surgery on anesthetized animals, and on cadavers; fractures, dressings, X-ray technics. Three hours of laboratory a week. Prerequisite: Surg. 120.

**170. Small Animal Surgery.** 2 semester hours. First semester.

Description and application of practical surgery on small animals, including anesthesia. Two hours of recitation a week. Prerequisite: Third- or fourth-year standing in veterinary medicine.

### FOR GRADUATE CREDIT

**801. Research in Surgery.** Credit to be arranged. Each semester.

The purpose of this course is to attempt to solve many of the surgical problems confronting the average veterinary practitioner. Prerequisite: Anat. 109, 120, 135, Surg. 108, 120, 260. Offered especially for graduates in veterinary medicine.

## COURSES IN OBSTETRICS

### FOR UNDERGRADUATE CREDIT

**180. Obstetrics and Breeding Diseases.** 5 semester hours. Second semester.

Physiology of reproduction, principles of normal and abnormal parturition, special attention given to handling of reduced fertility. Five hours of recitation a week. Prerequisite: Third-year standing in veterinary medicine.

## COURSES IN CLINIC

### FOR UNDERGRADUATE CREDIT

**200, 210. Clinics I and II.** 1 semester hour each. First and second semesters, respectively.

All species of domestic animals are treated at clinic. Students assist in the restraint of animals, in bandaging, in compounding prescriptions, and in preparing antiseptics and other medicinal agents. Six hours of laboratory a week. Prerequisite: Third- or fourth-year standing in veterinary medicine.

**220, 230. Clinics III and IV.** 4 semester hours each. First and second semesters, respectively.

Diagnosis and treatment of hospital patients, including keeping clinical records, administering medicines, changing dressings on surgical wounds, X-ray technic, etc.; assisting clinicians in out-clinic work. Twelve hours of laboratory a week. Prerequisite: Third- or fourth-year standing in veterinary medicine.

**240. Extra Clinics.** 1 semester hour. Each semester and summer.

A course in clinics intended for those undergraduate students desiring clinical training in addition to that offered in the Curriculum in Veterinary Medicine. Three hours of laboratory a week. Prerequisite: Surg. 210 or 230.

## COURSES IN MATERIA MEDICA

### FOR UNDERGRADUATE CREDIT

**250. Materia Medica.** 4 semester hours. Second semester.

A detailed study of important drugs: their origin, properties, and classification; their physiological actions, clinical administration, and dosage; metrology, prescription writing, pharmaceutical processes, and pharmaceutical preparations; compounding of prescriptions. Three hours of recitation and three hours of laboratory a week. Prerequisite: Second-year standing in veterinary medicine.

**260. Therapeutics.** 3 semester hours. First semester.

History of therapeutics; healing methods; types of therapy, including mechanical, chemical, electrical, biological, dietetic, and thermal; toxicology as encountered in veterinary practice. Three hours of recitation a week. Prerequisite: Surg. 250.

## COURSES IN MEDICINE

### FOR UNDERGRADUATE CREDIT

**130. Diagnosis.** 2 semester hours. First semester.

Differential diagnostic methods employed for the detection of disease. Two hours of recitation a week. Prerequisite: Third-year standing in veterinary medicine.

**150, 160. Diseases of Large Animals I and II.** 4 semester hours each. Second semester and first semester, respectively.

I. Noninfectious diseases of the digestive, circulatory, and respiratory organs of the larger animals.

II. Noninfectious diseases of the urinary organs, diseases of metabolism, of the nervous system, the organs and locomotion, the skin, and the eye.

Four hours of recitation a week each semester. Prerequisite: Surg. 250, third- or fourth-year standing in veterinary medicine.

**270. Infectious Diseases of Large Animals.** 5 semester hours. Second semester.

Five hours of recitation a week. Prerequisite: Surg. 160; fourth-year standing in veterinary medicine.

**280. Diseases of Small Animals.** 2 semester hours. First semester.

Infectious and noninfectious canine and feline diseases; breeds of dogs, cats, and fur-bearing animals; erection of kennels; the breeding and care of puppies; care and feeding of dogs in general, and the hygienic measures pertaining thereto. Two hours of recitation a week. Prerequisite: Surg. 250, 260; fourth-year standing in veterinary medicine.

**290. Medical Economics and Law.** 2 semester hours. Second semester.

The veterinarian's legal responsibilities; national and state livestock laws; quarantine regulations; principles of business law. Two hours

of recitation a week. Prerequisite: Fourth-year standing in veterinary medicine.

**400. Diseases of Wild Life.** 3 semester hours. First semester.

Infectious and noninfectious diseases of birds, fur-bearing animals, zoological animals, and fish, with reference to methods of prevention and control of disease. Prerequisite: Zool. 110, Bact. 110.

FOR GRADUATE CREDIT

**810. Research in Medicine.** Credit to be arranged. Each semester and summer.

An attempted solution of some of the medical and parasitological problems confronting the practitioner of veterinary medicine. Prerequisite: Surg. 150, 160, 250, 270. Offered especially for graduates in veterinary medicine.

**General Veterinary Medicine**

**V. M. 101, 110, 120, 130.** Junior-Senior Conference. Required. Each semester.

A faculty-junior-senior conference for the purpose of reviewing all factors concerned in the diagnosis of animal ailments. One hour a week. Prerequisite: Third- or fourth-year standing in veterinary medicine.



# The Division of College Extension

L. C. WILLIAMS, *Dean and Director*

PAUL W. GRIFFITH, *Associate Dean and Director*

CARL TJERANDSEN, *Director of General Extension*

The Division of College Extension conducts educational programs for Kansas people who are not enrolled as resident students of the College. The principal purpose of these programs is that of disseminating up-to-date, practical information developed through research and experimentation at this and other institutions.

Extension education is broad in its scope and is designed to meet the needs and requests of the people who are directly interested in the entire Land Grant College program.

## ADMINISTRATION

Administrative procedure within the Division of College Extension is conducted by two sections which include eleven departments. These sections and departments are:

### I. Extension Service programs in Agriculture, Home Economics, and Boys' and Girls' 4-H Club Work

1. Extension Information
2. Radio in Extension
3. County Extension Program Administration, Northwest District
4. County Extension Program Administration, Southwest District
5. County Extension Program Administration, Eastern District
6. Boys' and Girls' 4-H Club Work
7. Home Economics in Extension
8. Agricultural Specialists and Programs
9. Engineering in Extension

### II. General Extension

1. Home Study and Community Services
2. Extension Classes, Short Courses and Conferences

## OFFICE OF GENERAL EXTENSION

The Office of General Extension provides opportunities for continuing education to the people of Kansas wherever they may be. It is concerned with extending, wherever practicable, credit and noncredit offerings in a wide variety of fields. It offers educational opportunities for professional training in a variety of areas, for fulfilling citizenship responsibilities, and for the development of appreciations and skills appropriate to the layman in the arts. It also provides consultant service in the areas of community development and group program planning.

## EXTENSION CLASSES, SHORT COURSES, AND CONFERENCES

Upon request, a survey will be made to discover whether sufficient enrollment can be developed to justify offering an extension class. A wide variety of courses are currently being offered at extension centers. Courses offered in the Evening College on-campus carry residence credit; all other extension credit classes carry extension credit only.

Institutes, conferences, seminars, short courses, and forums constitute a rapidly growing part of the program of the Office of General Extension. These activities are developed on a short-term, noncredit basis to meet the needs of particular institutions, agencies, or voluntary associations.

## THE EXTENSION SERVICE

The Extension Service educational program in agriculture, home economics, and boys' and girls' 4-H Club work administered by the Division of Extension is conducted in cooperation with the United States Depart-

ment of Agriculture and the County Agricultural Extension Councils which have been organized in all counties in conformance with the provisions of a legislative act. County agricultural agents, home demonstration agents, and 4-H Club agents are cooperatively employed by the College, the United States Department of Agriculture, and the county councils. Those who are interested in Extension Service education of various types can obtain further information by contacting their county extension agents.

### **EXTENSION SCHOOLS**

Extension schools are meetings of one- or two-day duration held in the various counties and conducted for the purpose of giving practical instruction in agriculture, engineering, and home economics. Most of these schools are organized on a project basis, and they are an important feature in the yearly program of work conducted by each specialist. Results of demonstrations and experiments are given at these meetings, and suggestions are made for their practical application under local conditions.

Extension schools are classified according to the subject matter presented. Each year schools are held in agronomy, soil conservation, plant pathology, veterinary medicine, poultry husbandry, entomology, rodent and predator control, farm management, marketing, foods and nutrition, clothing and textiles, health and sanitation, home management, engineering, home furnishings, farm forestry, agricultural planning, consumer education, and in addition to these specialized meetings, schools of a more general character are held, designed to present the extension educational program best suited to the communities of counties of the state. Community projects and general education information are considered and presented at these meetings.

### **EXTENSION TOURS AND FIELD DAYS**

During the year, particularly in the spring and fall, the agricultural, engineering and home economics specialists assist county extension agents in holding farm and home tours and field days. These tours or field days are held on farms or in homes where a farmer or farm family is conducting a cooperative demonstration on some phase of agricultural production or homemaking. The many new discoveries made by the Agricultural Experiment Station are tried out in the cooperative demonstrations and then shown to the general public attending the tours and field days.

Each year the county extension agents conduct one or more tours or field days on Boys' and Girls' Club work within each community served by a local 4-H Club.

### **STATE, DISTRICT, COUNTY, AND LOCAL FAIRS**

The agricultural and home economics specialists devote some time each year to judging livestock, agricultural and homemaking products at state, county, and local fairs. An excellent opportunity for lectures and demonstration work is furnished, and each specialist endeavors to make his judging work as instructive as possible.

### **FARM AND HOME WEEK**

The purpose of Farm and Home Week is to interest the farmers of the state in methods of production and management that will increase farm profits, to demonstrate to farm women methods of homemaking that will add to the comfort and enjoyment of farm life, and to encourage farm folks in social organizations that will enrich the social life of the rural community.

All meetings, lectures, and demonstrations during Farm and Home Week are free of charge. The United States Department of Agriculture, the Agricultural Experiment Station, the Extension Service agricultural, engineering, and home economics specialists, and leading farmers bring to those in attendance the latest results of investigations in agriculture, home economics, and engineering extension. Problems concerning crops and soils, dairying, beef cattle, horses, hogs, sheep, poultry, horticulture,



farm management, community service, beekeeping, and diseases of animals are discussed by some of the leading agricultural authorities in America. In addition, lectures and demonstrations on foods and nutrition, clothing and textiles, home management, home furnishings, consumer education, and family relations are given.

Many of the statewide livestock breed associations, crop associations, farm management associations, and other similar groups hold their annual meetings at Kansas State College during Farm and Home Week.

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## EXTENSION INFORMATION

LISLE L. LONGSDORF, *Head of Department*

It is the objective of this department to acquaint the people of Kansas with the research findings of this land-grant College, its branch experiment stations, and the United States Department of Agriculture, through the mediums of communication. It also has the responsibility of reporting the progress being made, especially by rural people, in the adoption of recommended scientific methods of farming and homemaking for an improved agricultural industry. All means of communication are utilized in the dissemination of information for the benefit of both rural and town people.

Scientific information, as written in popular version by the departmental staff, is channeled through all practical means of communication, including newspapers, printed publications, circulars and posters, printed annual reports, exhibits, motion pictures, 2 x 2 slides, and radio.

Each week some 400 weekly newspapers of the state, the farm press, and daily newspaper outlets are provided with news stories on research work of the Kansas Agricultural Experiment Station and the extension service.

County agents are provided a weekly press service and are given special training throughout the year in utilizing to the maximum a balanced information program. The department cooperates with all agents in the 105 organized extension service counties, as well as central office staff workers, in planning and executing information programs that will acquaint people of Kansas with the projects being carried.

Each year nearly one million copies of timely, popular extension service and U. S. D. A. publications are printed and distributed.

A limited library of motion pictures and 2 x 2 slides for visual instruction is maintained for use by county agents, field workers, vocational education instructors, and personnel of cooperating agencies of government. Providing exhibits and other visual aids materials represents an important phase of work in the department.

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## RADIO IN EXTENSION

KENNETH E. THOMAS, *Head of Department*

Radio is divided into two phases: (a) Broadcasting of programs over KSAC, an institution-owned, noncommercial, educational station, and (b) broadcasting script and recorded services and live programs over more than sixty cooperating commercial radio stations in Kansas and on our borders.

Station KSAC, the College-owned radio station, is used exclusively for the dissemination of information from this institution. Engineering data would indicate that there is a potential audience of approximately five million listeners when the station is on the air. Three and one-half hours a day are devoted to the broadcasting of programs originating from within all schools of the College and the division of College Extension. Approximately fifty percent of the broadcast time is devoted to all-College programs, while fifty percent is devoted to programs originating from



within the extension service. The College radio station is also used as a "proving ground" for students enrolled in radio courses.

Daily scripts are mailed to cooperating commercial radio stations, and county agents are given assistance in planning local radio programs. Numerous live programs are arranged for extension service and College staff members to broadcast over these stations when the personnel are in the field.

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## COUNTY EXTENSION PROGRAM ADMINISTRATION

HARRY C. BAIRD, *District Agent—Northwest*

FRANK BLECHA, *District Agent—Eastern*

E. H. TEAGARDEN, *District Agent—Southwest*

County agent work is an organized activity of Kansas State College to develop and carry out the extension program as stated in national and state legislation. The Smith-Lever Act passed by Congress in 1914 and amended in 1953 defines extension work as follows:

"Cooperative agricultural extension work shall consist of the giving of instruction and practical demonstrations in agriculture and home economics and subjects relating thereto to persons not attending or resident in said colleges in the several communities and imparting information on said subjects through field demonstrations, publications, and otherwise; and this work shall be carried on in such manner as may be mutually agreed upon by the Secretary of Agriculture and the State Agricultural College or colleges receiving the benefits of this Act."

The 1915 session of the Kansas legislature accepted the provisions of the Smith-Lever Act. The extension program of Kansas State College is conducted in counties of the state in cooperation with county agricultural extension councils. The sole purpose of these councils is to plan and conduct an extension program including agriculture, home economics and 4-H club work among the people of each county. The county agricultural extension council is composed of three representatives from each township and each city not a part of a township. The citizens of voting age in each township and each city entitled to representation on the council elect from their number one to represent agriculture, one for home economics and one for 4-H Club work. The council elects an executive board which handles all business for the council including the employment of county extension agents.

The Smith-Lever Act and subsequent congressional acts authorize appropriations for the support of extension work. These funds are allocated to the states on the basis of rural or farm population. The Kansas legislature also makes biennial appropriations to Kansas State College for the extension program. The boards of county commissioners also appropriate to this program in accordance with a budget developed annually with the executive board of each county agricultural extension council and the Director of Extension.

Supervisory work by the members of this department include the selection and training of persons interested in becoming county extension agents, representing the director of extension in carrying out his responsibilities as imposed by state law, cooperation with the county agricultural extension councils in planning county extension programs, and otherwise developing the cooperative program in the counties as conducted by the county agricultural extension council and Kansas State College.

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## BOYS' AND GIRLS' CLUB WORK

J. HAROLD JOHNSON, *Head of Department*

4-H Club work is conducted by the College in cooperation with the county agricultural extension councils and the United States Department

of Agriculture. Community 4-H clubs are open to all young people between the ages of 10 and 20 years, inclusive. They work under the direction of the county extension agents with the help of local volunteer 4-H Club leaders. County 4-H councils assist the county agents in the supervision and promotion of the 4-H program. 4-H Club members receive valuable help from their county agents and from their local leaders; subject matter material is prepared by specialists and sent out by the state club leader to give members definite information and suggestions on farm and home practices recommended by the College.

The origin of 4-H Club work is obscure. Shortly after 1900, farmers' institutes, farm leaders, and educators, in various parts of the country, made efforts to bring about a more definite connection between rural life and school life. They assisted boys and girls to conduct, at home, various educational demonstrations or contests centered around improved agricultural practices.

It became evident that the educational development of boys and girls was of greater importance than the spread of improved farm and home practices; hence, the 4-H Club program was broadened to include not only projects of a farm and home nature, but many activities such as health, music, conservation of wild life and natural resources, recreation, parliamentary practices, and art. The present 4-H Club program is designed to develop citizenship and leadership among rural young people and to provide opportunity for them to participate with their parents and friends in the adoption of better farm and home practices. Cooperation with the group is promoted, leadership is encouraged, exhibitions and contests are conducted, accurate records and reports are required, and achievements are suitably recognized. Wholesome recreation is promoted, and county and state-wide round-ups, camps, and conferences are arranged.

An educational program for older youth above 4-H Club age is carried on through Young Men and Women in Extension (Y.M.W.). These groups meet regularly for discussions and talks on topics of current interest relating to public policy, homemaking, and agriculture. Community service projects and social activities are important features in the programs of work.

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## HOME ECONOMICS

MAE BAIRD, *Head of Department*

Extension work in home economics is carried on in counties through organized study groups, press, radio, and television. Definite programs are pursued throughout the year by the home demonstration units, 4-H clubs, and special interest groups. Material furnished by the specialists and by home demonstration agents is used by local leaders in their respective communities.

Home demonstration work was made possible in August, 1917, when congress provided funds for the employment of emergency home demonstration agents. The work was instituted under the auspices of city or county organizations, but after a short time the placing of home demonstration agents was deferred until the counties were properly organized for this specific purpose. Since July 1, 1921, a county desiring the services of a home demonstration agent or agents must provide a well-equipped office with adequate stenographic help, transportation facilities, and a county appropriation toward the salaries and expenses of the agent or agents.

The program of work for the various study groups in the county is based on the local situation in the communities. It is evolved through community and committee meetings and includes the development of activities pertaining not only to the home and to the community but also to international problems. On January 1, 1955, 102 counties had appropriations for home demonstration work, and in addition 10 counties had appropriations for associate home demonstration agents.



## AGRICULTURAL SPECIALISTS

WILLIAM G. AMSTEIN, *Head of Department*

This department includes those members of the extension staff who conduct and supervise programs in agricultural education throughout the state. The programs are developed in cooperation with the county extension agents and the residents of the counties through their designated leaders. The department has charge of the scheduling of judges for county and local fairs.

### EXTENSION PROJECTS

The agricultural specialists of the Division work in extension schools and institutes during the winter months, and a portion of this time is devoted to cooperative demonstration work in agriculture, home economics and 4-H Club work. During the remainder of the year, they conduct special extension programs in soil management and crop production, plant pathology, horticulture, animal husbandry, dairying, veterinary medicine, poultry husbandry, entomology, farm management, marketing, agricultural planning, farm forestry, soil conservation, landscape gardening, and rodent and predator control. This phase of the work of the extension specialists is supplemented by cooperative demonstration work. In much of the cooperative work, each specialist has from 10 to 100, or more, cooperators in each county. These men and women work under the direction of the specialists and the county extension agents. They keep records of the work, and demonstration meetings are held at their farms or homes.

The extension specialist takes to the farm and the farm home the results of research work of the Agricultural Experiment Station and the United States Department of Agriculture in a practical, effective, and usable form. He brings back reports of the progress of demonstration work in the field. Likewise he often comes in contact with agricultural problems requiring the attention of research workers.

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## ENGINEERING EXTENSION

JOHN M. FERGUSON, *Head of Department*

The function of the Department of Engineering Extension is to carry on an educational program throughout the state dealing with the application of engineering principles to various phases of agriculture. The work of this department is carried to every county in the state by means of demonstrations, institutes, training schools, publications, news releases, radio programs, and personal contacts.

When the department was first started in 1910, it dealt chiefly with drainage and irrigation. Other subjects have been added, including the control of soil erosion, water conservation, farm structures, farm machinery, conveniences for the farm home, and farm electrification. Much of the work is conducted in cooperation with the county agricultural agent's office in each county. Some work is done in cooperation with various government agencies, some with commercial farm equipment companies, some with structural supply and appliance companies, some with REA cooperatives, and some with public utilities.

All counties in the state are cooperating with the department in demonstration work involving drainage, irrigation, water conservation, and the control of erosion. Standardized plans for hundreds of farm buildings are furnished to farm operators each year. Advice and suggestions for remodeling farm buildings are furnished upon request to several hundred farm families each year. Recommendations are made for the selection, installation, and operation of practical and efficient systems of water supply, sewage disposal, wiring, lighting, insulation, air conditioning, and heating for the rural home. A program on the selection, use, adjustment, and cost of operation of farm machinery is conducted each year for the rural people. A planned program of 4-H Club work is conducted on many of the engineering phases of agriculture.



Farm safety and the prevention of farm fires are a definite part of the over-all engineering extension program.

## HOME STUDY AND COMMUNITY SERVICES

HERBERT MACCOBY, *Head of Department*

This Department has responsibility for offering to the people of Kansas a variety of community services and supervised home study courses.

At the present time, the following kinds of community services are available to groups and organizations through this Department:

1. program kits (including films, film strips, plays, records and pamphlets) on a variety of public affairs topics and issues;
2. speakers on many topics from all departments of the College;
3. consultation and assistance on community organization and community development problems, and on adult education programs concerned with liberal arts or public affairs;
4. especially designed workshops, institutes, conferences, and short courses for groups and organizations concerned with community development and adult education programs in the liberal arts or on public affairs.

Further information about these services may be obtained by writing to the Department.

Over eighty home study courses are available in a number of subject matter fields. Some of these courses are for students working toward high school diplomas, others are for students working toward college degrees, and still others are designed especially for persons not seeking diplomas or degrees but desiring to master particular subjects. All courses for college or high school credit may, however, also be taken for non-credit. Detailed information on the college and high school credit courses offered, regulations, fees, and the procedure for enrollment are described below. Should a student wish to enroll in a home study course, or should he have questions concerning home study work not answered in the information provided below (for example, questions about the special non-credit courses not listed here), he should write to this Department.

### LEARNING THROUGH HOME STUDY COURSES

Supervised home study is individual tutoring by mail. A student is offered the opportunity of continuing his education at his own convenience and in his own home. The teaching is personal and individual.

A home study course consists of a series of lesson assignments in each of which the student is usually assigned readings, studies, problems and investigations, together with a list of questions based on a text, and directions for a written report. When necessary, the instructor supplements the text by including in the lesson assignment an essay in which he provides additional subject material or analysis.

The number of lesson assignments in a course varies in accordance with the following pattern:

**College Credit:** There are 8 assignments for each hour of college credit; thus, for example, a three-hour college credit course has 24 lessons.

**High School Credit:** There are 20 assignments in each high school course.

The questions accompanying each assignment are intended to help the student to better understanding of the subject. After careful study of the assignment, the student is expected to answer the questions carefully and concisely in a written report which he is to mail to the Department. The instructor reads the lesson report carefully and critically, marks it, and then returns it to the student with such comments, suggestions and advice as may be deemed necessary. The student is invited to ask questions and in every way possible seek the advice of his instructor.

If the student takes a course for college or high school credit, he will need to take a final examination. Arrangements for this are described below under "Examinations."

### **TIME ALLOWANCE**

The amount of time a student will need to spend on a home study course will depend on his ability, the extent and kind of his prior preparation, and the extent to which he concentrates on the work. In general, he can expect to spend on any course approximately the same amount of time he would need to spend on it were he to take it in a class.

While there is considerable difference between courses and between students, the average amount of time a student would be likely to need for each lesson assignment in a college credit course is about 5-7 hours and in a high school credit course about 4-5 hours.

The student is expected to complete any course for which he is enrolled within twelve months from the date of enrollment. If he is unable to finish the course within the prescribed time, he may request an extension of time by writing to this Department.

The student may complete the course in which he is enrolled in less than twelve months. However, he may not submit more than 8 assignments in any one course in any one week. This means, then, that the student cannot complete a three-hour college credit course or a high school credit course in less than three weeks, a two-hour college credit course in less than two weeks, and a one-hour college credit course in less than one week. The reason for this limitation is to allow sufficient time for the instructor to return lesson assignments so that the student will have the opportunity to benefit from the instructor's comments before proceeding with the next section of the course.

### **COLLEGE CREDIT**

Credits earned from college courses taken through this Department can be accredited toward an undergraduate degree at Kansas State College or other collegiate institutions in place of comparable courses offered in residence. However, any student who desires to use home study credit for a degree should clear with the dean of the college of his choice to be sure that he is eligible and that the subject will satisfy degree requirements in the curriculum he plans to follow.

Kansas State College and most other collegiate institutions do not grant graduate credit for home study courses.

### **HIGH SCHOOL CREDIT AND DIPLOMAS**

This Department does not grant high school diplomas. If a student is interested in receiving credit toward a diploma by taking our high school home study courses, he should make the necessary arrangements with the principal of the high school from which he is planning to receive his diploma. It is advisable for the student to make such arrangements before he registers for any courses. We suggest that the student take this bulletin directly to the principal of the high school where the student hopes to get his diploma in order to secure the principal's approval of the courses the student wishes to take.

### **TEACHING CERTIFICATES**

This Department does not issue teaching certificates, although all the college credit courses offered by the Department can be applied to teaching certificates within the requirements and limitations established by the State Department of Public Instruction, the responsible agency. A student working toward a certificate should consult with his superintendent of schools or with the Director of Certification, State Department of Public Instruction, Topeka, for certification requirements.

### **ADMISSION**

The home study courses of this Department are available to all persons regardless of their previous academic experience. No transcripts of previous high school or college work are required. Should it seem to this Department that the student lacks sufficient background for the particular course in which he is interested, the student will be so informed.



A student who is planning to apply a home study college credit course to a degree from Kansas State College is advised to meet any prerequisite requirement for the home study course before enrolling in it. The prerequisite for each course is listed in the course description.

Acceptance of an enrollment for a course offered by this Department does not constitute official admission to Kansas State College proper. A student admitted to home study may or may not be admitted for study in residence. If a student is interested in study in residence, he should write directly to the Director of Admissions, Kansas State College.

### ENROLLMENT

Since home study instruction continues throughout the year, enrollment may take place at any time. To enroll, the student should request an application form from the Department and then send his application, together with the appropriate fees, to this Department.

When the application has been approved, the course will be sent to the student, including instructions for study, suggestions for preparation of assignments, and directions for returning assignments.

The student is encouraged to enroll in only one course at a time. No more than two courses may be taken simultaneously unless the student shows that he has sufficient time to devote to the work.

If the student is currently registered in residence at Kansas State College, he will need to present with his application form a permit from the dean of the school in which he is enrolled before he will be allowed to take a home study course through this Department.

### FEEES

#### *A. If the Student is a resident of Kansas:*

1. His enrollment fee for college credit courses will be at the rate of \$6.00 for each credit hour.
2. His enrollment fee for high school credit courses will be \$8.00 for each course.
3. His enrollment fee for any high school or college credit course taken for non-credit will be the same as the fee for the course taken for credit.

#### *B. If the student is not a resident of Kansas:*

1. His enrollment fee for college credit courses will be at the rate of \$8.00 for each credit hour.
2. His enrollment fee for high school credit courses will be \$10.00 for each course.
3. His enrollment fee for any high school or college credit course taken for non-credit will be the same as the fee for the course taken for credit.

Each student pays the postage on the lessons and letters he sends to the Department. The Department pays the postage for sending the assignments to the student and in returning the lessons to the student after they have been read by the instructor.

### REFUND OR TRANSFER OF FEE

Enrollment fees are refundable or transferable as follows:

1. 100% of the enrollment fee will be refunded, or transferred to another course for the same student, if application for refund or transfer is received by this Department within two weeks after the date of enrollment and before any of the assignments have been submitted by the students.
2. 50% of the enrollment fee will be refunded, or transferred to another course for the same student, if application for refund or transfer is received by this Department within one year from the date of enrollment and before one-third of the assignments have been submitted by the student.
3. No refund or transfer will be made if application for refund or transfer is received by this Department after one year has passed



from the date of enrollment or after one-third of the assignments have been submitted by the student.

The special registration fee for college credit courses is not refundable.

### **TEXTBOOKS**

Each student is expected to make his own arrangements for the text-book(s) required in any course he is taking. This Department does not loan, rent or sell textbooks, nor does it receive orders for them.

### **EXAMINATIONS**

The final step for the completion of each course taken for either college or high school credit is a final examination.

This examination may be taken any Saturday morning, or by special arrangement on other days, in the offices of the Department of Home Study and Community Services in Manhattan. For the convenience of students living at a distance from Manhattan, arrangements have been made whereby students taking college credit courses may take their final examinations at any of the other four state schools, or at any of 23 special examination centers located throughout the state on specified dates. Further details with respect to examination centers and dates for examinations will be provided upon enrollment.

The student planning to use a college home study course for credit at a Kansas institution other than the five state colleges in Kansas may take his final examination under a dean of that institution. An out-of-state student may make his own arrangements for proper supervision of his final examination with a dean or other appropriate official of a college in his vicinity.

High school examinations are to be taken under the supervision of the principal of the high school where credit is to be accepted. In special circumstances, a high school examination may be taken under the supervision of the principal of another high school.

### **GRADES**

The final grade a student receives on completion of a home study course is based on both the quality of the work he has shown in preparing his lesson assignments and on the evidence of his final examination. The relative weight of lesson assignments or the final examination in the final grade varies from course to course and depends on the individual instructor. In general, the final examination counts very heavily—at least two-thirds—and a student who fails the final examination is not likely to pass the course.

### **COURSE CERTIFICATES AND TRANSCRIPTS**

Upon the successful completion of any college credit course, the student will receive a certificate. This certificate is not an official transcript. A student desiring an official transcript of the college credits which he has earned by home study should write directly to the Registrar, Kansas State College.

Upon the successful completion of any high school credit course, the student will receive a certificate, and the principal of the high school the student designates will be sent a duplicate copy for school files.

### **VETERANS**

The contract which Kansas State College has with the Veterans Administration does not cover supervised home study courses for veterans. However, veterans are encouraged to enroll directly in courses offered by this Department, paying full fees.

### **UNITED STATES ARMED FORCES INSTITUTE (USAFI)**

Kansas State College has a contract with the United States Government to furnish correspondence instruction under the USAFI plan to

men and women in the armed services. Write to this Department for further information.

### COLLEGE CREDIT COURSES

Students who are planning to apply a home study college credit course to a degree from Kansas State College are advised to meet any prerequisite requirements for the home study course before enrolling in it. Prerequisites are the same as for the equivalent courses in residence.

A home study course which is equivalent to a college credit course taught in residence carries exactly the same course number as the course in residence. A home study course which has no exact equivalent in residence carries a special course number beginning with the letter C.

Prerequisites for a course are indicated in the description of the course. Unless otherwise indicated the prerequisite is simply high school graduation.

#### School of Agriculture

**Agronomy CA 3. Farm Crops A.** 3 semester hours.

An introductory course in agronomy with special emphasis on agonomic problems of Kansas. Equivalent: Agronomy 106, minus 1 hour of laboratory credit. Prerequisite: Bot. 110 or Gen. Stud. 160.

**Animal Husbandry CL 2. History of Breeds.** 2 semester hours.

A history of the development and origin of the principal breeds of cattle, swine, sheep, and horses. No exact equivalent in residence.

**Horticulture CH 1. Elements of Horticulture.** 2 semester hours.

An introductory course in the general principles of plant growing with emphasis on plants of horticultural interest. Equivalent: Hort. 110, minus 1 hour laboratory credit. Prerequisite: Bot. 110 or Gen. Stud. 150.

**Horticulture CH 2. Vegetable Gardening.** 2 semester hours.

A study of vegetable growing from standpoint of home production, especially Kansas gardening. Equivalent: Hort. 189, minus 1 hour of laboratory credit.

**Horticulture CH 3. Floriculture.** 2 semester hours.

A study of garden flowers and house plants, propagation, soils, arrangement, and general horticultural practices. Equivalent: Hort. 196, minus 1 hour of laboratory credit.

**Horticulture CH 7. Landscape Gardening.** 2 semester hours.

A general study of the principles of landscape design; a study in planning and planting home grounds. Equivalent: Hort. 153, minus 1 hour of laboratory credit.

**Poultry Husbandry 104. Farm Poultry Production.** 2 semester hours.

An introductory course in poultry management.

#### School of Arts and Sciences

### ECONOMICS AND SOCIOLOGY

**Economics 110. Economics I.** 3 semester hours.

Introductory study of the fundamental principles of production, distribution, and consumption of goods.

**Sociology 250. Sociology.** 3 semester hours.

A study of the development and functioning of human groups; social and cultural patterns and processes; group interpretation.

**Sociology 290. Rural Sociology.** 3 semester hours.

Social and cultural life of rural people; study of new problems in rural life and analysis of old problems as they are related to the developing ones.



**Sociology OS 4. Community Leadership. 2 semester hours.**

Principles and techniques of leadership; personal qualities of leaders; practical applications of these elements to community organizations. No exact equivalent in residence. Prerequisite: Soc. 250 or Soc. 290.

**EDUCATION****Education 105. Educational Psychology II. 3 semester hours.**

The learning process with special emphasis on the school environment, the teacher, and the evaluation of school learning. Prerequisite: Educ. 100 or Psych. 100.

**Education 135. Methods of Teaching in the Secondary School. 3 semester hours.**

General principles of teaching applied to high school instruction; selection and organization of materials; methods and techniques; individual adaptation; organization and management of classroom. Prerequisite: Educ. 120.

**Education 195. General Methods for Elementary Teachers. 3 semester hours.**

Fundamentals of teaching all subjects commonly taught in the elementary grades; lesson planning and teaching procedures. Prerequisite: Psych. 310.

**Education 415. Educational Sociology. 3 semester hours.**

Development of meaning of American democracy; social problems of the public schools; development of plans for practicing democracy in the public schools. Prerequisite: Education 120.

**Education CP 4. History of Education. 3 semester hours. (Not available 1955-1956.)**

History of education in the United States; study of political, economic and social forces influencing development of schools, private and denominational as well as public. No exact equivalent in residence.

**Education CP 5. Classroom Management. 2 semester hours.**

Practical helps for good classroom organization; plans, records and reports; community relationships, programs and meetings; school atmosphere, motives and incentives; child character, health, and creative play activities; school laws. No exact equivalent in residence.

**Education CP 7. Educational Administration. 3 semester hours.**

Practices, procedures, and problems in administration and organization in elementary and in junior and senior high schools; frequent practical applications for school problems. No exact equivalent in residence.

**Education CP 19. Essentials of Reading. 3 semester hours.**

To help elementary school teachers develop pupils' reading skills and pleasures; to stimulate interest and independent reading; to use diagnostic tests and remedial methods. No exact equivalent in residence.

**ENGLISH****English 125. Written Communications I. 3 semester hours.**

Beginning English for college credit; fundamentals of composition and rhetoric; analyses of thought, content and style; practice in composition.

**English 135. Written Communications II. 2 semester hours.**

Continuation of analyses and practice in composition; types of reasoning; emphasis on an investigative theme. Prerequisite: Eng. 115 or Eng. 125.

**English CCE 2a. Written Communications IIa. 1 semester hour.**

Supplement to English 135 for teacher certification requirements in English. Review of grammar and punctuation, theme writing; dictionary use. No exact equivalent in residence, but in combination with Eng. 135 is equivalent to Eng. 140. Prerequisite: Eng. 125 and Eng. 135.



**English 155. Commercial Correspondence.** 3 semester hours.

Writing of adjustment, collection, credit and sales letters; principles of effective commercial writing. Prerequisite: Eng. 135.

**English 215. English Literature I.** 3 semester hours.

From the early Britons through the end of the 17th century. Prerequisite: Eng. 135.

**English 225. English Literature II.** 3 semester hours.

Through the 18th, 19th and 20th centuries. Prerequisite: Eng. 135.

**English 245. American Literature I.** 3 semester hours.

Through Colonial, Revolutionary and Romantic periods to the Civil War. Prerequisite: Eng. 135.

**English 255. American Literature II.** 3 semester hours.

From Whitman to the present. Prerequisite: Eng. 135.

**English 470. Literature for Children.** 3 semester hours.

For children of various grades and ages; planned especially to meet the needs of mothers and of teachers of rural and of grade schools. Prerequisite: Eng. 135.

**English 480. American Short Story.** 3 semester hours. (Not available 1955-1956.)

A critical study of the short story. Not a course in creative story writing. Prerequisite: Eng. 225 or Eng. 255.

## GEOLOGY AND GEOGRAPHY

**Geology 110. General Geology.** 3 semester hours.

Structural and dynamic features of the earth; the rock-forming minerals; the rocks and their decay; a short history of the earth.

**Geography 210. Principles of Geography.** 3 semester hours.

A general course in college geography; the influence of geography on man and his activities.

## HISTORY AND GOVERNMENT

**History 115. Civilization I.** 3 semester hours.

Ancient civilizations, their rise and fall, and contributions to world civilization; to about 1650.

**History 130. Civilization II.** 3 semester hours.

Civilization since 1650; showing shift from agricultural to industrial and commercial, and approaching scientific and atomic age.

**History 175. United States Before 1865.** 3 semester hours.

A study of the beginnings of our country, its settlement, and its development to the end of the war between the States.

**History 190. United States Since 1865.** 3 semester hours.

The significant forces, movements, and personalities in the development of American life since 1865. International developments.

**History 485. Latin American Nations.** 3 semester hours.

Economic, political, social, and cultural development in Latin American republics; growth of democratic processes. Prerequisite: 3 hours of American history.

**Government 255. American Government.** 3 semester hours.

Origin and development of our governmental form; basic structure, principles, and interpretations of our constitution.

**Government CHC 1. Community Civics.** 2 semester hours.

Study and problems of local, county, and state governments. No exact equivalent in residence.

## LIBRARY ECONOMICS

**Library Economics CLE 1. Book Selection in the Public Library.** 3 semester hours.

Basic principles of selection; standard aids and book-reviewing publications; writing and evaluating book reviews and annotations. No exact equivalent in residence.

**Library Economics CLE 2. Book Selection in the School Library.** 3 semester hours.

Basic principles of selection of books in relation to the reading ability and interests of elementary and secondary school students, and in relation to the school curriculum. No exact equivalent in residence.

**Library Economics CLE 4. Reference.** 3 semester hours.

The scope of reference works; primary and essential reference tools in all fields; reference books in relation to other library materials; the reference worker and the library user. No exact equivalent in residence.

## MATHEMATICS

**Mathematics 110. Solid Geometry.** 2 semester hours.

Prerequisite: Plane geometry and one unit of high school algebra.

**Mathematics 175. College Algebra.** 3 semester hours.

Prerequisite: Plane geometry and one and one-half units of high school algebra.

**Mathematics 190. Plane Trigonometry.** 3 semester hours.

Prerequisite: Plane geometry and one and one-half units of high school algebra.

## PHYSICAL EDUCATION

**Physical Education CPE 1. Personal Hygiene.** 2 semester hours.

Course to meet the state requirement for certification of grade school teachers. No exact equivalent in residence, but in combination with Physical Education CPE 2 is equivalent to Physical Education 136.

**Physical Education CPE 2. Community Health.** 1 semester hour.

Course supplementing Physical Education CPE 1. No exact equivalent in residence, but in combination with Physical Education CPE 1 is equivalent to Physical Education 136.

**Physical Education CPE 3. Playground Activities.** 2 semester hours.

Organization and administration of playground activities; games suitable for different ages. Equivalent: Phys. Educ. 280, minus 1 hour of laboratory credit.

## PSYCHOLOGY

**Psychology 105. Educational Psychology II.** 3 semester hours.

The learning process with special emphasis on the school environment, the teacher, and the evaluation of school learning. Same course as Education 105. Prerequisite: Educ. 100 or Psych. 100.

**Psychology 310. General Psychology.** 3 semester hours.

Human behavior; methods, research, principles. A basic course for teachers and others interested in social science.

**Psychology 615. Psychology of Childhood and Adolescence.** 3 semester hours.

Learning to understand the behavior of children and adolescents through study of the development of structures, capacities, interests and personalities; practical problems applied to successive phases of development. Prerequisite: Psych. 310.

## School of Engineering

**Agricultural Engineering CE 3. Gas Engines and Tractors.** 2 semester hours.

Principles of the internal combustion engine, carburetion, valve tim-



ing, ignition, cooling, lubrication, and fuels; servicing and repair of farm engines and selection of power for agriculture. Equivalent: Agr. Engg. 136, minus 1 hour of laboratory credit.

**Industrial Engineering and Industrial Arts 175. Metals and Alloys.** 2 semester hours.

The manufacture and use of iron, steel, copper, aluminum and their alloys. Prerequisite or concurrent: Chem. 170.

**Machine Design 110. Engineering Drawing.** 2 semester hours.

The selection and use of drawing instruments; construction of geometrical figures; lettering; orthographic projections and sections; pictorial methods of representation.

**Machine Design 115. Descriptive Geometry.** 2 semester hours.

Problems involving the point, line, and plane; the intersection and development of the surfaces of geometric solids; practical applications of the principles involved; emphasis on developing student's ability to visualize drawings in the third angle. Prerequisite: Mach. Des. 110, Math. 110 or equivalent.

**Machine Design 120. Machine Drawing I.** 2 semester hours.

Conventional representation; working drawings; dimensioning; reproduction of drawing; checking for errors; arrangement of title and notes; sheet and metal drafting; single perspective. Prerequisite or concurrent: Mach. Des. 115.

**Machine Design 130. Mechanism.** 3 semester hours.

A careful study of the fundamental elements of machinery with reference to the transmission of motion and force, and to their forms and arrangements in actual machines. Prerequisite: Math. 190, Mach. Des. 115.

**Mechanical Engineering CE 9. Steam Turbines.** 2 semester hours.

Description and explanation of various kinds of steam turbines. No exact equivalent in residence.

**HIGH SCHOOL COURSES**

In offering the following work for high school credit, there is no intention of competing with high schools of the state. It is not the purpose of those who have planned the work to present a full four-year high school course. Students who can attend high school should do so, for in such attendance they will have the benefits to be derived from association with fellow students, as well as many other advantages that will be helpful to students of high school age.

The courses are offered as an aid to those who may be temporarily out of high school, who may not find the work that they desire offered locally, or who wish to work for high school credit during vacation periods. It is not to be expected that a student can progress as rapidly by correspondence study methods as he can by devoting his full time to his work when attending high school. Any student who completes a half year of high school work in a year by correspondence may feel that he has done exceedingly well.

The high school courses will be especially advantageous to prospective college students who have entrance deficiencies. The attempt has been made to have each course closely parallel the comparable course offered by the accredited high schools of the state. The same textbooks have been used wherever feasible, and the credits issued by this department are recognized by the colleges and State Board of Education. Each high school course listed below carries a 1/2 unit of high school credit.

**AGRICULTURE**

		Unit H.S. Credit
PCA	1. Elementary Agriculture I .....	1/2
PCA	2. Elementary Agriculture II .....	1/2



## COMMERCE

PCM	7.	Bookkeeping .....	1/2
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## DRAWING

PCD	3.	Shop Mechanical Drawing I .....	1/2
PCD	4.	Shop Mechanical Drawing II .....	1/2

## ENGLISH

PCE	1C.	Grammar and Composition (first semester, first year) ....	1/2
PCE	2L.	Literature (second semester, first year) .....	1/2
PCE	3C.	Composition (first semester, second year) .....	1/2
PCE	4L.	Literature (second semester, second year) .....	1/2
PCE	5C.	Composition (first semester, third year) .....	1/2
PCE	6L.	Literature (second semester, third year) .....	1/2

## HISTORY AND CIVICS

PCH	5.	American History I .....	1/2
PCH	6.	American History II .....	1/2
PCH	7.	Community Civics .....	1/2
PCH	8.	Constitution of United States .....	1/2
PCH	9.	World History I .....	1/2
PCH	10.	World History II .....	1/2

## MATHEMATICS

PCM	1.	Algebra I .....	1/2
PCM	2.	Algebra II .....	1/2
PCM	3.	Algebra III .....	1/2
PCM	4.	Plane Geometry I .....	1/2
PCM	5.	Plane Geometry II .....	1/2
PCM	6.	Solid Geometry .....	1/2

## SCIENCE

PCS	1.	Physical Geography .....	1/2
PCS	4.	Physiology .....	1/2
PCS	5.	General Science .....	1/2

## SOCIAL SCIENCE

PCC	2.	Elementary Economics .....	1/2
PCC	3.	Elementary Sociology .....	1/2
PCC	4.	Elementary Psychology .....	1/2

# Officers of Administration, Instruction, and Research

(As of February 23, 1955)

## ADMINISTRATIVE AND SERVICE OFFICES

- ROBERT ARTHUR ANDERSON**, Assisat Director of Admissions and Registrar; (1949, 1953).  
B. S., M. S., Kansas State College.
- WILLIAM FREDERICK BAEHR**, Professor and College Librarian (1943).  
B. S. in L. S., M. A., University of Illinois.
- MABEL GERTRUDE BAXTER**, Instructor, College Library (1916, 1947).
- HELEN A. BOCKER**, Temporary Executive Secretary, YWCA (1954).  
B. S., Kansas University.
- MILDRED CAMP**, Assistant Professor, College Library (1927).  
A. B., Eureka College, B. L. S., University of Illinois.
- LELAND AUBREY COREY**, Instructor, College Library (1954).  
A. B., Oklahoma Baptist University; Th. M., Southwestern Baptist Theological Seminary;  
M. A., University of Kansas; M. S., Kansas State College.
- WILLIAM GREGORY CRAIG**, Dean of Students (1951).  
A. B., Middlebury College; M. A., University of Minnesota.
- ELIZABETH HAMILTON DAVIS**, Associate Professor, College Library (1920, 1947).  
A. B., MacMurray College for Women; B. L. S., University of Illinois.
- FLORENCE P. DAY**, Residence Hall Director and Instructor (1953).  
B. S., University of Nebraska; M. S., Kansas State College.
- GRACE EMILY DERBY**, Professor Emeritus; College Library (1911, 1950).  
A. B., Western College for Women.
- AUBREY THORNTON EDWARDS**, Director of Housing; Associate Professor of Psychology (1945, 1949).  
B. S., M. S., Kansas State College.
- GEORGE H. FADENRECHT**, Instructor, College Library (1953).  
B. A., Tabor College; M. A., University of Kansas; M. A. L. S., University of Michigan.
- CLIFFORD CHARLES FORTIN**, Instructor, College Library (1951).  
B. S., M. A., University of Minnesota.
- ELLSWORTH M. GERRITZ**, Professor; Director of Admissions and Registrar (1954).  
B. E., St. Cloud State Teachers College; M. A., Ph. D., University of Minnesota.
- MARY HEATH GIBSON**, Assistant Director of Housing (1954).  
B. S., Kansas State College.
- RANDOLPH FORNEY GINGRICH**, Superintendent of Physical Plant (1923, 1954).  
B. S., University of Nebraska; M. S., Kansas State College.
- DOROTHY MAY HAMER**, Assistant Dean of Women, Emeritus (1941, 1946).  
A. B., University of Illinois; M. A., Columbia University.
- HAROLD HOWE**, Dean of Graduate School; Professor of Agricultural Economics; Agricultural Economist, Agricultural Experiment Station (1925, 1945).  
B. S., Kansas State College; M. S., University of Maryland; Ph. D., University of Wisconsin;  
LL. D., St. Benedict's College.
- DONALD PAUL HOYT**, Counselor; Assistant Professor of Psychology (1954).  
B. S., University of Illinois; M. A., Ph. D., University of Minnesota.
- ARNOLD R. JONES**, Dean of Financial Administration; Professor of Accounting (1928, 1951).  
B. S., University of Kansas; C. P. A., Kansas.
- CARROLL EARL KENNEDY**, Counselor; Instructor in Psychology (1954).  
A. B., Wheaton College; M. S., Kansas State College.
- WENDELL ROBERT KERR**, Veterans Service Officer; Instructor; Assistant to Housing Director (1947, 1948).  
B. S., M. S., Kansas State College.
- LOREN V. KOTTNER**, Director of Activities and The Kansas State Union (1955).  
B. A., Nebraska Wesleyan University.
- BENJAMIN WILLIAM LAFENE**, College Physician (1946, 1948).  
B. S., Michigan State College; M. D., Western Reserve University.

- FRED Y. M. MA**, Instructor, College Library.  
B. L. L., Sun Yat-Sen University; M. A., B. S. in L. S., University of Minnesota.
- JAMES ALLEN MCCAIN**, President (1950).  
A. B., LL. D., Wofford College; M. A., Duke University; Ed. D., Stanford University.
- JESSIE McDOWELL MACHIR**, Registrar, Emeritus (1913, 1943).
- GEORGE LINDEN MEYERS**, Residence Hall Director and Instructor (1954).  
B. S., Colorado Agricultural and Mechanical College.
- MAX W. MILBOURN**, Director of Public Service, Associate Professor Journalism (1949).  
A. B., University of Wichita.
- HELEN MOORE**, Dean of Women (1940).  
A. B., University of Kansas; M. A., Columbia University.
- VIRGINIA R. MOORE**, Residence Hall Director and Instructor (1953).  
B. S., M. S., Central Missouri State College.
- SUMNER BURTON MORRIS**, Director of the Student Counseling Center; Associate Professor of Psychology (1952, 1954).  
B. A., Simpson College; M. A., University of Iowa; Ed. D., Stanford University.
- CAROL LEE OWSLEY**, Instructor, College Library (1942, 1947).  
B. S., M. S., Kansas State College.
- BERNICE HARRIETT PATON**, Assistant Professor, College Library (1947).  
B. A., University of Oklahoma; B. S., Columbia University; M. A., University of Michigan.
- MARTHA H. PATTERSON**, Instructor, College Library (1953).  
B. A., University of Arkansas; B. S. in L. S., University of Illinois.
- ARTHUR F. PEINE**, Director of Development and Endowment (1916, 1953).  
A. B., Illinois Wesleyan University; A. B., Illinois State Normal University; A. M., University of Illinois.
- RALPH H. PERRY**, Comptroller (1946, 1953).  
B. S., Kansas State College.
- CHESTER E. PETERS**, Director of The Placement Bureau (1953).  
B. S., M. S., Kansas State College; Ph. D., University of Wisconsin.
- JANE PRIER**, Residence Hall Counselor and Instructor (1952).
- ALBERT LEROY PUGSLEY**, Dean of Academic Administration; Professor of Structural Engineering (1943, 1951).  
B. S. in C. E., South Dakota State College; M. Arch., Harvard University. Professional Engineer. Registered Architect.
- FRANCIS WARREN REMPEL**, Executive Secretary, YMCA (1954).  
B. A., University of New Mexico; S. T. B., Boston University.
- EDITH MARY RIDGEWAY**, Instructor, College Library (1943).  
A. B., College of Emporia; B. S. in L. S., University of Illinois.
- MARY EILLEN ROBERTS**, Assistant Professor, College Library (1938, 1943).  
B. S., Kansas State College; B. S. in L. S., University of Illinois; A. M., University of Michigan.
- CARL ROBERT ROCHAT**, Director of News Bureau, Associate Professor of Journalism (1953, 1954).  
B. S., Kansas State College; M. S., University of Illinois.
- VIRGINIA ELLEN SMITH**, Residence Hall Director and Instructor (1954).  
Ph. B., University of Chicago; M. A., University of Minnesota.
- PHILIP HOWARD SORENSEN**, Assistant Dean of Students (1952).  
B. A., M. A., State College of Washington.
- MARTHA STUCKY**, Instructor, College Library (1953).  
B. A., Bethel College; M. A., University of Denver.
- MABEL LOUISE THOMAS**, Instructor, College Library (1952).  
B. S., East Tennessee State College; M. A. L. S., George Peabody College.
- ROGER KEITH WALLACE**, Consulting Radiologist (1954).  
B. S., M. S., University of South Dakota; M. D., University of Nebraska.
- MARY C. WEEKS**, Instructor, College Library (1953).  
B. A., Iowa State Teachers College; M. A., University of Wisconsin.
- YVONNE YEATER**, Residence Hall Director and Instructor (1953).  
B. S., Northwest Missouri State College; M. A., University of Syracuse.
- PAUL MCCLURE YOUNG**, Director of Summer School; Professor of Mathematics (1947, 1954).  
A. B., Miami University; M. A., Ph. D., Ohio State University.



### SCHOOL OF AGRICULTURE

- ERWIN ABMEYER**, Assistant Professor of Horticulture; Assistant Pomologist, Northeast Kansas Experiment Fields (1934, 1935).  
B. S., Kansas State College.
- LOUIS CORNELIUS AICHER**, Professor of Animal Husbandry; Animal Husbandman, Agricultural Experiment Station (1921, 1952).  
B. S., Kansas State College.
- KLING LEROY ANDERSON**, Professor of Agronomy; Agronomist, Agricultural Experiment Station (1936, 1946).  
B. S., University of California; M. S., Kansas State College; Ph. D., University of Nebraska.
- LAUREL E. ANDERSON**, Assistant Professor of Agronomy (1953).  
B. S., Minnesota State Teachers College; M. S., University of Minnesota.
- FLOYD WARNICK ATKESON**, Professor and Head of Department of Dairy Husbandry; Dairy Husbandman, in charge, Agricultural Experiment Station (1918, 1935).  
B. S., University of Missouri; M. S., Kansas State College.
- C. HARRY ATKINSON**, Associate Professor of Agronomy; Soil Scientist, Soil Conservation Service, U. S. D. A., Agricultural Experiment Station (1949).  
B. S., M. S., Pennsylvania State College.
- CLIFF ERRETT AUBEL**, Professor of Animal Husbandry; Animal Husbandman, Agricultural Experiment Station (1915, 1938).  
B. S., Pennsylvania State University; M. S., Kansas State College; Ph. D., University of Minnesota.
- THOMAS BURT AVERY**, Professor and Head of Department of Poultry Husbandry; Poultry Husbandman, Agricultural Experiment Station (1937, 1954).  
B. S., M. S., Kansas State College.
- MILBURNE CLINTON AXELTON**, Instructor in Agronomy; Assistant Agronomist, Southwest Kansas Experiment Fields (1929, 1951).  
B. S., Kansas State College.
- FRANK H. BAKER**, Assistant Professor of Animal Husbandry (1953).  
B. S., M. S., Ph. D., Oklahoma Agricultural and Mechanical College.
- ERLE EDWIN BARTLEY**, Associate Professor of Dairy Husbandry; Associate Dairy Nutritionist, Agricultural Experiment Station (1949, 1952).  
B. S., Allahabad University (India); M. S., Ph. D., Iowa State College.
- WILLIAM MAYFIELD BAXTER**, Instructor and Assistant to the Superintendent, Fort Hays Agricultural Experiment Station (1949, 1952).  
B. S., Kansas State College.
- FLOYD WAYNE BELL**, Professor of Animal Husbandry; Animal Husbandman, Agricultural Experiment Station (1918, 1921).  
B. S., Cornell University.
- THOMAS DONALD BELL**, Professor of Animal Husbandry; Animal Husbandman, Agricultural Experiment Station (1950).  
B. S., M. S., University of Idaho; Ph. D., University of Wisconsin.
- ROSCOE C. BELLINGHAM**, Agent, Plant Pathologist, Field Crops Research Branch ARS, U. S. D. A., Fort Hays Branch Agricultural Experiment Station (1952).  
M. S., University of Nebraska.
- ORVILLE WILLARD BIDWELL**, Associate Professor of Agronomy; Assistant Agronomist, Agricultural Experiment Station (1950).  
A. B., Oberlin College; B. S., Ph. D., Ohio State University.
- CHARLES FREDERICK BORTFELD**, Associate Professor of Agricultural Economics; Associate Economist, Agricultural Experiment Station (1948).  
B. S., M. A., University of Nebraska.
- BERNARD JOSEPH BOWLEN**, Temporary Assistant Professor of Agricultural Economics and Temporary Agricultural Economist, Agricultural Experiment Station (1954).  
B. S., University of Alberta (Canada); M. S., Kansas State College; Ph. D., Iowa State College.
- LOWELL BRANDNER**, Associate Professor; Agricultural Editor, Dean's Office (1947, 1953).  
A. B., B. S., Emporia State Teachers College; M. S., Kansas State College.

- JOHN EDWIN BRAUM, Assistant Professor of Agronomy; Assistant Agronomist, East Central Kansas Experiment Fields (1950, 1952).  
B. S., Kansas State College.
- JAMES OSCAR BRAY, Assistant Professor of Agricultural Economics; Assistant Economist, Agricultural Experiment Station (1951).  
B. S., M. S., Purdue University; M. A., University of Chicago.
- PAUL LAWSON BROWN, Soil Scientist, Soil and Water Conservation Research Branch, ARS, U. S. D. A., Fort Hays Branch Agricultural Experiment Station (1948).  
B. S., M. S., Kansas State College.
- HARRY R. BRYSON, Associate Professor of Entomology (1924, 1942).  
B. S., M. S., Kansas State College.
- CHRISTIAN C. BURKHARDT, Instructor in Entomology; Assistant Entomologist (1951).  
B. S., M. S., Kansas State College.
- LORENA M. BURNETTE, Assistant Instructor in Agricultural Economics (1954).  
B. S., Kansas State Teachers College.
- LOREN VIRGIL BURNS, Assistant Professor of Flour and Feed Milling Industries, Agricultural Experiment Station (1952).  
B. S., Washburn Municipal University.
- EDWARD P. CALL, Assistant Professor of Dairy Husbandry (1952).  
B. S., Ohio State University.
- LELAND EVERETT CALL, Professor of Agronomy; Dean and Director, Emeritus (1907, 1946).  
B. S., M. S., Ohio State University.
- RONALD WAYNE CAMPBELL, Associate Professor of Horticulture; Associate Pomologist, Agricultural Experiment Station (1946, 1949).  
B. S., M. S., Kansas State College.
- WILLIAM JOHN CARPENTER, Assistant Professor of Horticulture (1953).  
B. S., University of Maryland; M. S., Ph. D., Michigan State University.
- WILLIAM E. CATHCART, Temporary Instructor in Agricultural Economics (1954).  
B. S., Kansas State College.
- WILLIAM STEVEN CHEPIL, Professor of Agronomy; Agronomist, Agricultural Experiment Station (1948).  
B. S., M. S., University of Saskatchewan (Canada); Ph. D., University of Minnesota.
- ALFRED LESTER CLAPP, Professor of Agronomy; Agronomist, Agricultural Experiment Station (1915, 1939).  
B. S., M. S., Kansas State College.
- THOMAS JOSEPH CLAYDON, Associate Professor of Dairy Husbandry; Associate Dairy Husbandman, Agricultural Experiment Station (1946).  
B. S. A., University of Saskatchewan (Canada); M. S., Ph. D., Iowa State College.
- RUTH ELLA CLIFTON, Assistant Instructor in Agricultural Economics, Agricultural Experiment Station (1947, 1952).  
B. S., M. S., Kansas State College.
- NORMAN R. COLLINS, Assistant Professor of Agricultural Economics; Assistant Agricultural Economist, Agricultural Experiment Station (1954).  
B. S., Kansas State College; M. A., Harvard University.
- JAMES H. COPP, Assistant Professor of Agricultural Economics; Assistant Economist, Agricultural Experiment Station (1954).  
B. A., M. A., University of Minnesota; Ph. D., University of Wisconsin.
- RUFUS FRANCIS COX, Professor and Head of Department of Animal Husbandry; Animal Husbandman, in charge, Agricultural Experiment Station (1930, 1949).  
B. S., Oklahoma Agricultural and Mechanical College; M. S., Iowa State College; Ph. D., Cornell University.
- FLOYD EWING DAVIDSON, Professor and Superintendent, in charge, Mound Valley Branch Agricultural Experiment Station (1934, 1952).  
B. S., M. S., Kansas State College.
- CHARLES DEFOREST DAVIS, Professor of Agronomy, Emeritus (1921, 1949).  
B. S., M. S., Kansas State College.
- GEORGE A. DEAN, Professor and Head of Department of Entomology, Emeritus (1902, 1943).  
B. S., Kansas State Teachers College; M. S., D. Sc., Kansas State College.



- LESTER J. DEPEW**, Instructor in Entomology; Assistant Entomologist, Agricultural Experiment Station (1954).  
B. S., Colorado Agricultural and Mechanical College; M. S., University of Minnesota.
- WILBERT WILLIAM DUTSMAN**, Associate Professor and Superintendent, in charge, Fort Hays Branch Agricultural Experiment Station (1941, 1952).  
B. S., Kansas State College.
- ROSCOE ELLIS, JR.**, Assistant Professor of Agronomy; Assistant Agronomist, Agricultural Experiment Station (1948, 1952).  
B. S., M. S., Kansas State College; Ph. D., University of Wisconsin.
- HENRY CLAIRE ENGBAHL**, Assistant Professor and Assistant Agronomist, Colby Branch Agricultural Experiment Station (1951).  
B. S., University of Nebraska; M. S., University of Wisconsin.
- ANDREW BRIAN ERHART**, Professor and Superintendent, in charge, Garden City Branch Agricultural Experiment Station (1936, 1952).
- ELBERT L. ESHBAUGH**, Assistant Professor of Entomology (1945).  
B. S., M. S., Kansas State College.
- MORRIS BRILEY EWING**, Assistant Professor of Dairy Husbandry; Assistant in Dairy Improvement, Agricultural Experiment Station (1951).  
B. S., University of Missouri.
- EARL LEROY FARMER**, Assistant Professor of Dairy Husbandry; Assistant in Dairy Improvement, Agricultural Experiment Station (1949).  
B. S., University of Missouri.
- EUGENE PATRICK FARRELL**, Associate Professor of Flour and Feed Milling Industries; Milling Technologist, Agricultural Experiment Station (1949, 1954).  
B. S., M. S., Kansas State College.
- FRANCIS DAVID FARRELL**, President, Emeritus; Professor of Rural Institutions (1918, 1943).  
B. S., Utah State Agricultural College; Agr. D., University of Nebraska; LL. D., Washburn Municipal University.
- HURLEY FELLOWS**, Pathologist, U. S. D. A., Cereal Investigations, Agricultural Experiment Station (1925, 1945).  
B. S., Oregon State College; M. S., Ph. D., University of Wisconsin.
- GEORGE ALBERT FILINGER**, Professor of Horticulture; Pomologist, Agricultural Experiment Station (1931, 1946).  
B. S., M. S., Kansas State College; Ph. D., Ohio State University.
- KARL FREDERICK FINNEY**, Professor of Flour and Feed Milling Industries; Chemist, U. S. D. A., Agricultural Experiment Station (1938, 1947).  
A. B., Kansas Wesleyan University; B. S., M. S., Kansas State College.
- FORREST CHARLES FOUNTAINE**, Professor of Dairy Husbandry; Dairy Nutritionist, Agricultural Experiment Station (1947).  
B. S., University of Wisconsin; M. S., Ph. D., University of Minnesota.
- DON LADROYDT GOOD**, Associate Professor of Animal Husbandry; Assistant Animal Husbandman, Agricultural Experiment Station (1947, 1954).  
B. S., Ohio State University; M. S., Kansas State College.
- CLARENCE OWEN GRANDFIELD**, Agronomist, U. S. D. A. (1929).  
B. S., M. S., Kansas State College.
- JAMES KIBLER GREIG, JR.**, Assistant Professor of Horticulture; Assistant Olericulturist, Agricultural Experiment Station (1952).  
B. S., M. S., University of Arkansas.
- HAROLD LEROY HACKEROTT**, Assistant Professor; Assistant Agronomist, Fort Hays Branch Agricultural Experiment Station (1954).  
B. S., M. S., Kansas State College.
- FRED BENTON HADLE**, Instructor in Horticulture; Assistant Pomologist, Agricultural Experiment Station (1951).  
B. S., Kansas State College.
- CHARLES V. HALL**, Assistant Professor of Horticulture (1953).  
B. S., M. S., University of Arkansas.
- RONALD JOHN HANKS**, Agent (Soil Scientist), U. S. D. A. (1953).  
B. S., Brigham Young University; M. S., Ph. D., University of Wisconsin.
- T. L. HARVEY**, Temporary Instructor in Entomology (1954).  
B. S., M. S., Kansas State College.



- WILLIAM C. HASKETT**, Associate Pathologist, U. S. D. A., Agricultural Experiment Station (1952, 1953).  
B. S., Kansas State College; M. S., Ph. D., Iowa State College.
- ROY BARRETT HERRING**, Assistant Professor and Assistant Agronomist, Garden City Branch Agricultural Experiment Station (1951, 1952).  
B. S., M. S., Oklahoma Agricultural and Mechanical College.
- ELMER GEORGE HEYNE**, Professor of Agronomy; Agronomist, Agricultural Experiment Station (1936, 1947).  
B. S., University of Nebraska; M. S., Kansas State College; Ph. D., University of Minnesota.
- JAMES ARTHUR HOBBS**, Associate Professor of Agronomy; Associate Agronomist, Agricultural Experiment Station (1950, 1952).  
B. S., M. S., University of Manitoba (Winnipeg); Ph. D., Purdue University.
- JULIAN ADAIR HODGES**, Professor of Agricultural Economics; Economist, Agricultural Experiment Station (1923, 1941).  
B. S., M. S., University of Kentucky; A. M., Ph. D., Harvard University.
- LEO MICHAEL HOOVER**, Associate Professor of Agricultural Economics; Associate Economist, Agricultural Experiment Station (1947, 1949).  
B. S., Kansas State College; M. S., Iowa State College; Ph. D., Harvard University.
- KEITH HUSTON**, Associate Professor of Dairy Husbandry (1954).  
B. S., M. S., Ph. D., University of Wisconsin.
- JOHN ALEXANDER JOHNSON**, Associate Professor of Flour and Feed Milling Industries; Associate in Milling and Baking Research, Agricultural Experiment Station (1940, 1947).  
B. S., North Dakota Agricultural College; M. S., Kansas State College; Ph. D., University of Minnesota.
- CHARLES OTIS JOHNSTON**, Pathologist, U. S. D. A., Cereal Rust Investigations, Agricultural Experiment Station (1919, 1941).  
B. S., M. S., Kansas State College.
- LLOYD CHARLES JONES**, Assistant Professor and Assistant Agronomist, Mound Valley Branch Agricultural Experiment Station (1947, 1952).  
B. S., Kansas State College.
- RAY ALBERT KEEN**, Assistant Professor of Horticulture; Assistant Ornamental Horticulturist, Agricultural Experiment Station (1947).  
B. S., Kansas State College; M. S., Ohio State University.
- PAUL LEO KELLEY**, Assistant Professor of Agricultural Economics; Assistant Economist, Agricultural Experiment Station (1943, 1947).  
B. S., M. S., Kansas State College.
- FRANK BOONE KESSLER**, Assistant Professor and Assistant Animal Husbandman, Fort Hays Branch Agricultural Experiment Station (1946, 1952).  
B. S., Kansas State College.
- DALE ALPHEUS KNIGHT**, Assistant Professor of Agricultural Economics; Assistant Economist, Agricultural Experiment Station (1948).  
B. S., Kansas State College; M. S., Cornell University; M. A., Ph. D., University of Chicago.
- JAMES ELWOOD KNOX**, Assistant Professor and Assistant Dairy Husbandman, Mound Valley Branch Agricultural Experiment Station (1949, 1952).  
B. S., Mississippi State College.
- HERBERT KNUTSON**, Professor and Head of Department of Entomology (1953).  
A. B., Iowa Wesleyan College; M. S., Southern Methodist University; Ph. D., University of Minnesota.
- JOHN FRANK KONECNY**, Cereal Technologist, Hard Winter Wheat Quality Laboratory, U. S. D. A., Agricultural Experiment Station (1953).  
B. S., Kansas State College.
- JOSEPH WENDELL KOUDELE**, Assistant Professor of Agricultural Economics; Assistant Economist, Agricultural Experiment Station (1947, 1949).  
B. S., University of Nebraska; M. S., University of Minnesota.
- HILMER HENRY LAUDE**, Professor of Agronomy; Agronomist, Agricultural Experiment Station (1911, 1931).  
B. S., Kansas State College; M. S., Texas Agricultural and Mechanical College; Ph. D., University of Chicago.
- FRED A. LAWSON**, Assistant Professor of Entomology (1952).  
B. S., University of Arkansas; M. S., Ph. D., Ohio State University.
- ALVIN ERNEST LOWE**, Associate Professor and Associate Agronomist, Garden City Branch Agricultural Experiment Station (1937, 1952).  
B. S., M. S., Kansas State College.

- FRANK ELLSWORTH LOWRY**, Assistant Professor of Agronomy; Assistant Agronomist, Sandyland Kansas Experiment Fields (1951, 1952).  
B. S., University of Nebraska; M. S., Kansas State College.
- CHARLES WILBUR MCCAMPBELL**, Professor and Head of Department of Animal Husbandry, Emeritus (1910, 1952).  
B. S., D. V. M., B. S. A., Kansas State College.
- JOHN HENRY MCCOY**, Assistant Professor of Agricultural Economics; Assistant Economist, Agricultural Experiment Station (1940, 1948).  
B. S., M. S., Kansas State College.
- DAVID LESLIE MACKINTOSH**, Professor of Animal Husbandry; Animal Husbandman, Agricultural Experiment Station (1921, 1947).  
B. S., University of Minnesota; M. S., Kansas State College.
- ERNEST LEE MADER**, Associate Professor of Agronomy; Associate Agronomist, Agricultural Experiment Station (1948).  
B. S., M. S., Oklahoma Agricultural and Mechanical College.
- MILTON LLOYD MANUEL**, Associate Professor of Agricultural Economics; Associate Economist (Agricultural Cooperatives), Agricultural Experiment Station (1945, 1949).  
B. S., M. S., Kansas State College; Ph. D., University of Minnesota.
- GERMAIN BERNARD MARION**, Associate Professor of Dairy Husbandry (1953).  
B. S., Cornell University; M. S., Ph. D., University of Wisconsin.
- CHARLES FREDERICK MARSH**, Instructor, Agricultural Economics (1954).  
B. S., Kansas State College.
- WILLARD HUNGATE MARTIN**, Professor of Dairy Husbandry; Dairy Husbandman, Agricultural Experiment Station (1925, 1928).  
B. S., Purdue University; M. S., Pennsylvania State College.
- CHARLES C. MICHAEL**, Agricultural Economist, U. S. D. A., Agricultural Research Service, Production Economics Research Branch (1954).  
B. S., M. S., South Dakota State College.
- BYRON SLOANE MILLER**, Associate Professor of Flour and Feed Milling Industries; Chemist, U. S. D. A., Agricultural Experiment Station (1946, 1947).  
B. S., University of Nebraska; M. S., Purdue University; Ph. D., Kansas State College.
- DONALD MILLER**, Assistant Instructor in Flour and Feed Milling Industries (1953).
- GERALD DALE MILLER**, Assistant Professor of Flour and Feed Milling Industries; Assistant Cereal Chemist; Agricultural Experiment Station (1946, 1947).  
B. S., University of Nebraska; M. S., Kansas State College.
- JOHN DAVID MILLER**, Assistant Professor, Assistant Agronomist, Fort Hays Branch Experiment Station (1953).  
B. S., M. S., North Carolina State College; Ph. D., University of Minnesota.
- MAX MILNER**, Professor of Flour and Feed Milling Industries; Cereal Chemist, Agricultural Experiment Station (1947).  
B. S., University of Saskatchewan (Canada); M. S., Ph. D., University of Minnesota.
- GEORGE MONTGOMERY**, Professor and Head of Department of Economics and Sociology (1925).  
B. S., M. S., Kansas State College; Ph. D., University of Minnesota.
- WALTER ASHTON MOORE**, Assistant Professor of Agronomy; Assistant Agronomist, South Central Kansas Experiment Fields (1943, 1951).  
B. S., Kansas State College.
- CLYDE DEWEY MUELLER**, Professor of Poultry Husbandry; Poultry Geneticist, Agricultural Experiment Station (1948).  
B. S., Kansas State College; M. S., Ph. D., Cornell University.
- CLYDE WILLIAM MULLEN**, Assistant Dean; Associate Professor of Agronomy (1937).  
B. S., Oklahoma Agricultural and Mechanical College; M. S., Kansas State College.
- HAROLD EDWIN MYERS**, Assistant Dean and Associate Director, Agricultural Experiment Station; Professor of Agronomy (1929, 1952).  
B. S., Kansas State College; M. S., University of Illinois; Ph. D., University of Missouri.
- CHARLES W. NAUHEIM**, Agricultural Economist, U. S. D. A., Agricultural Research Service, Production Economics Research Branch (1954).  
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- PHILIP NORDIN**, Assistant Professor of Flour and Feed Milling Industries (1954).  
B. S., M. S., University of Saskatchewan (Canada); Ph. D., Iowa State College.
- RAYMOND VERLIN OLSON**, Professor and Head of Department of Agronomy; Agronomist, in charge, Agricultural Experiment Station (1947, 1952).  
B. S., North Dakota Agricultural College; M. S., Ph. D., University of Wisconsin.
- MERTON LOUIS OTTO**, Associate Professor of Agricultural Economics; Associate Economist, Agricultural Experiment Station (1939, 1947).  
B. S., M. S., Kansas State College.
- CARL BENJAMIN OVERLEY**, Assistant Professor of Agronomy; Assistant Agronomist, Kansas Hybrids Association, Agricultural Experiment Station (1946, 1947).  
B. S., Kansas State College.
- REGINALD HENRY PAINTER**, Professor of Entomology (1926, 1941).  
B. A., M. A., University of Texas; Ph. D., Ohio State University.
- RALPH LANGLEY PARKER**, Professor of Entomology; Apiculturist, Agricultural Experiment Station (1925, 1930).  
B. S., University of Rhode Island; Sc. M., Brown University; M. S. in Apiculture, Iowa State College; Ph. D., Cornell University.
- ARLAND WALTER PAULI**, Instructor in Agronomy; Assistant Agronomist, Agricultural Experiment Station (1951, 1952).  
B. S., University of Missouri; M. S., Kansas State College.
- LOYAL FREDERICK PAYNE**, Professor of Poultry Husbandry (1921, 1954).  
B. S., Oklahoma Agricultural and Mechanical College; M. S., Kansas State College.
- ROYCE OWEN PENCE**, Associate Professor of Flour and Feed Milling Industries; Associate Milling Technologist, Agricultural Experiment Station (1927, 1939).  
B. S., M. S., F. M. E., Kansas State College.
- VERLIN HOWARD PETERSON**, Assistant Professor of Agronomy; Assistant Agronomist, Southeast Kansas Experiment Fields (1948, 1954).  
B. S., M. S., Kansas State College.
- WILLIAM MAURICE PHILLIPS**, Assistant Professor and Associate Agronomist, Weed Investigations, Field Crops Research Branch, ARS, U. S. D. A., Fort Hays Branch Agricultural Experiment Station (1952).  
B. S., M. S., Kansas State College.
- ROBERT COOPER PICKETT**, Associate Professor of Agronomy; Assistant Agronomist, Agricultural Experiment Station (1949, 1954).  
B. S., Kansas State College; Ph. D., University of Wisconsin.
- WILLIAM FRANCIS PICKETT**, Professor and Head of Department of Horticulture; Horticulturist, in charge, Agricultural Experiment Station (1918, 1936).  
B. S., M. S., Kansas State College; Ph. D., Michigan State College.
- WILFRED HAROLD PINE**, Professor of Agricultural Economics; Economist, Agricultural Experiment Station (1934, 1949).  
B. S., M. S., Kansas State College; Ph. D., University of Minnesota.
- LEON REED QUINLAN**, Professor of Horticulture; Ornamental Horticulturist, Agricultural Experiment Station (1927, 1931).  
B. S., Colorado Agricultural and Mechanical College; M. L. A., Harvard University.
- DRAYTFORD RICHARDSON**, Professor of Animal Husbandry; Animal Nutritionist, Agricultural Experiment Station (1951).  
B. S., Clemson Agricultural College; M. S., Ph. D., Iowa State College.
- FLETCHER EUGENE RIGGS**, Assistant Professor of Agricultural Economics; Assistant Economist, Agricultural Experiment Station (1948, 1951).  
B. S., M. S., Kansas State College.
- CLIFFORD C. ROAN**, Associate Professor of Entomology (1953).  
B. S., M. S., Ph. D., University of Illinois.
- WILLIAM MAX ROSS**, Associate Professor and Associate Agronomist, Cereal Crops, Field Crops Research Branch, ARS, U. S. D. A., Fort Hays Agricultural Experiment Station (1951, 1954).  
B. S., M. S., Ph. D., University of Illinois.
- OLIVER GEORGE RUSS**, Instructor in Agronomy; Assistant Agronomist, Agricultural Experiment Fields (1949, 1952).  
B. S., M. S., Kansas State College.



- WILLIAM DEAN RUTZ**, Associate Professor of Dairy Husbandry; Associate Dairy Husbandman, Agricultural Experiment Station (1952).  
B. S., Oklahoma Agricultural and Mechanical College; M. S., Kansas State College; Ph. D., University of Wisconsin.
- PAUL EVERETT SANFORD**, Associate Professor of Poultry Husbandry; Poultry Nutritionist, Agricultural Experiment Station (1949).  
B. S., Kansas State College; M. S., Ph. D., Iowa State College.
- LEONARD WILLIAM SCHRUBEN**, Professor of Agricultural Economics; Economist, Agricultural Experiment Station (1949, 1951).  
B. S., Kansas State College; M. S., University of Illinois; M. P. A., M. A., Ph. D., Harvard University.
- GENE EDWARD SCOTT**, Agent, U. S. D. A. (1954).  
B. S., Kansas State College.
- JOHN ALFRED SHELLENBERGER**, Professor and Head of Department of Flour and Feed Milling Industries; Cereal Chemist, in charge, Agricultural Experiment Station (1944, 1945).  
B. S., University of Washington; M. S., Kansas State College; Ph. D., University of Minnesota.
- MERLE DENNIS SHOGREN**, Cereal Technologist, Hard Winter Wheat Quality Laboratory, U. S. D. A., Agricultural Experiment Station (1954).  
B. S., Bethany College; M. S., Kansas State College.
- JOHN BERNARD SJO**, Instructor in Economics and Sociology (1948).  
B. S., M. S., Kansas State College.
- ROBERT FRED SLOAN**, Assistant Professor of Agronomy; Assistant Agronomist, North Central Kansas Agricultural Experiment Fields (1936, 1951).  
B. S., M. S., Kansas State College.
- EDGAR FITZHUGH SMITH**, Associate Professor of Animal Husbandry; Assistant Animal Husbandman, Agricultural Experiment Station (1946, 1954).  
B. S., Texas Agricultural and Mechanical College System; M. S., Kansas State College.
- FLOYD WILLIAM SMITH**, Professor of Agronomy; Agronomist, Agricultural Experiment Station (1946, 1950).  
B. S., Kansas State College; M. S., Ph. D., Michigan State College.
- ROGER CLETUS SMITH**, Professor of Entomology; Entomologist, Agricultural Experiment Station (1920, 1943).  
A. B., Miami University; A. M., Ohio State University; Ph. D., Cornell University.
- WALTER HENRY SMITH**, Assistant Professor of Animal Husbandry; Assistant Animal Husbandman, Agricultural Experiment Station (1948, 1950).  
B. S., M. S., Kansas State College.
- JACK WILLARD SNYDER**, Instructor in Dairy Husbandry; Assistant in Dairy Improvement, Agricultural Experiment Station (1952).  
B. S., West Virginia University; M. S., Michigan State College.
- LEONARD ORLO SORENSON**, Assistant Professor of Agricultural Economics (1954).  
B. A., M. S., University of Minnesota.
- RALPH POLLISTER SOULE, JR.**, Assistant Professor of Animal Husbandry; Assistant Animal Husbandman, Agricultural Experiment Station (1951).  
B. S., M. S., Michigan State College.
- THOMAS BRUCE STINSON**, Assistant Professor and Superintendent, in charge, Tribune Branch Agricultural Experiment Station (1924, 1952).  
B. S., Kansas State College.
- CLARENCE W. SWALLOW**, Instructor in Agronomy; Assistant in Agronomy, Agricultural Experiment Station (1954).  
B. S., Kansas State College.
- LOYD ALLEN TATUM**, Professor of Agronomy; Agronomist, U. S. D. A., Agricultural Experiment Station (1941, 1950).  
B. S., University of Arizona; M. S., Ph. D., Iowa State College.
- FRED CARL THORP**, Agent (Soil Scientist), U. S. D. A., (1954).  
B. S., University of Illinois; M. S., Kansas State College.
- RAY IAMS THROCKMORTON**, Professor of Agronomy; Dean and Director, Emeritus, Agricultural Experiment Station (1911, 1952).  
B. S., Pennsylvania State College; M. S., Kansas State College.
- GLYN OGLE THRONEBERRY**, Agent, U. S. D. A., (1954).  
B. S., New Mexico State College; M. S., Ph. D., Iowa State College.

- LAWRENCE W. VAN MEIR**, Assistant Professor of Economics and Sociology (1947).  
B. S., University of Illinois; M. S., Kansas State College.
- TED LOWELL WALTER**, Assistant Professor and Assistant Agronomist, Colby Branch Agricultural Experiment Station (1951).  
B. S., University of Nebraska; M. S., Colorado Agricultural and Mechanical College.
- CLYDE E. WASSOM**, Assistant Professor of Agronomy (1954).  
B. S., M. S., Ph. D., Iowa State College.
- ARTHUR D. WEBER**, Dean; Director, Agricultural Experiment Station; Professor of Animal Husbandry (1923, 1952).  
B. S., M. S., Kansas State College; Ph. D., D. Sc., Purdue University.
- CARROLL M. WEBSTER**, Assistant Instructor in Agronomy (1953).  
B. S., Kansas State College.
- JOHN D. WHEAT**, Assistant Professor of Animal Husbandry (1954).  
B. S., M. S., Texas Agricultural and Mechanical College; Ph. D., Iowa State College.
- DONALD A. WILBUR**, Professor of Entomology; Entomologist, Agricultural Experiment Station (1928, 1949).  
B. S., Oregon State College; A. M., Ohio State University.
- HOWARD D. WILKINS**, Instructor in Agronomy (1954).  
B. S., M. S., Kansas State College.
- GUY E. WILKINSON**, Assistant Professor of Agronomy; Assistant Agronomist, Garden City Branch Agricultural Experiment Station (1954).  
B. S., M. S., Oklahoma Agricultural and Mechanical College.
- WILLIAM WAYNE WILLIS**, Assistant Professor of Horticulture; Assistant Floriculturist, Agricultural Experiment Station (1944, 1946).  
A. B., College of Emporia.
- CHARLES PEAIRS WILSON**, Associate Director of Agricultural Experiment Station; Associate Professor of Agricultural Economics (1938, 1952).  
B. S., M. S., Kansas State College.
- LAURETSON VAN WITHEE**, Assistant Professor; Assistant Agronomist, Garden City Branch Experiment Station (1947, 1952).  
B. S., Emporia State Teachers College; M. S., University of Nebraska.
- NEIL PARKER WOODRUFF**, Agricultural Engineer, ARS, U. S. D. A. (1949).  
B. S., M. S., Kansas State College.
- VAL W. WOODWARD**, Associate Professor of Agronomy (1954).  
B. S., Utah State College; M. S., Kansas State College; Ph. D., Cornell University.
- GEORGE WILLIAM WRIGHT**, Instructor in Agronomy; Assistant Agronomist, Agricultural Experiment Station (1950, 1952).  
B. S., Kansas State College.
- JAMES WALTER ZAHNLEY**, Professor of Agronomy, Emeritus (1915, 1954).  
B. S., B. S. in Agri., M. S., Kansas State College.

### SCHOOL OF ARTS AND SCIENCES

- NELLIE ABERLE**, Professor of English (1921, 1948).  
B. S., M. S., Kansas State College.
- JAMES EDWARD ACKERT**, Professor of Zoology, Emeritus; Dean of Graduate School, Emeritus (1913, 1950).  
A. B., A. M., Ph. D., University of Illinois.
- MARJORIE ADAMS**, Assistant Professor of English (1954).  
B. A., Louisiana Polytechnic; M. A., Ph. D., University of Texas.
- DONALD L. ALEXANDER**, Assistant Professor of Technical Journalism (1953).  
B. S., Kansas State College.
- OSCAR WILLIAM ALM**, Professor of Psychology (1929, 1933).  
A. B., University of Nebraska; M. A., Columbia University; Ph. D., University of Minnesota.
- INEZ ALSOP**, Associate Professor of History (1923, 1941).  
B. S., Kansas State Teachers College (Emporia); M. S., University of Kansas.
- DONALD JULES AMEEL**, Professor and Head of Department of Zoology; Zoologist, in charge, Agricultural Experiment Station (1937, 1945).  
A. B., Wayne University; M. A., D. Sc., University of Michigan.
- EDGAR MCCALL AMOS**, Associate Professor of Technical Journalism, Emeritus (1921, 1950).  
B. S., Kansas State College.



- CLIFFORD W. ANDERBERG, Temporary Assistant Professor of Philosophy (1954).  
B. A., M. A., Ph. D., University of Wisconsin.
- ARTHUR CLINTON ANDREWS, Professor of Chemistry; Physical Chemist, Agricultural Experiment Station (1926, 1952).  
B. S., University of Wisconsin; M. S., Kansas State College; Ph. D., University of Wisconsin.
- ORA JOYE ANSDELL, Instructor in English (1946, 1947).  
B. S., Kansas State College; M. A., University of Michigan; B. L. S., University of Chicago.
- MADALYN AVERY, Associate Professor of Physics (1924, 1946).  
B. S., M. S., Kansas State College.
- RODNEY WHITEMORE BABCOCK, Dean; Professor of Mathematics (1930).  
B. A., University of Missouri; M. A., Ph. D., University of Wisconsin.
- EDGAR SIDNEY BAGLEY, Professor of Economics and Sociology (1940, 1950).  
B. A., M. A., University of California; Ph. D., State University of Iowa.
- HARRY LEIGH BAKER, Professor of Education (1946, 1951).  
A. B., LL. D., Baker University; B. S., Kansas State College; A. M., University of Chicago; Ph. D., Yale University.
- WERNER H. BARTH, Assistant Professor of History, Government, and Philosophy (1953).  
B. A., Baylor University; Ph. D., University of Texas.
- JAMES C. BATES, Professor of Botany and Plant Pathology, Emeritus (1943, 1953).  
A. B., A. M., Ph. D., University of Kansas.
- LAURA FALKENRICH BAXTER, Associate Professor of Education (1927, 1941).  
B. S., M. S., Kansas State College.
- HENRY VOORHEES BECK, Assistant Professor of Geology (1946, 1952).  
B. S., M. S., Kansas State College.
- ALICE MAY BECKER, Temporary Instructor in Physical Education (1954).  
B. S., Kansas State College.
- ALWYN BERLAND, Assistant Professor of English (1953).  
M. A., University of Chicago; M. L. H., Ph. D., University of Cambridge (England).
- WILLIAM RAYMOND BRACKETT, Associate Professor of Physics (1919, 1923).  
B. A., University of Colorado.
- DOROTHY MARY BRADLEY, Temporary Instructor in Economics and Sociology (1954).  
B. S., Northwestern University; M. S., Kansas State College.
- HOWARD RALEY BRADLEY, Assistant Professor of Education (1951).  
B. S., M. S., Kansas State College.
- ARTHUR HILLS BRAYFIELD, Professor and Head of Department of Psychology (1951).  
B. S., Ph. D., University of Minnesota.
- AUGUSTIN WILBUR BREEDEN, Associate Professor of English, Emeritus (1926, 1952).  
B. Ph., M. A., University of Chicago.
- HOWARD BRUBAKER, Professor of Chemistry, Emeritus (1913, 1948).  
B. S., Carleton College; Ph. D., University of Pennsylvania.
- NORMA D. BUNTON, Assistant Professor of Speech (1954).  
B. S., Southwest Texas State Teachers College; M. Ed., University of Texas; Ph. D., State University of Iowa.
- RAYMOND KENNETH BURKHARD, Assistant Professor of Chemistry; Assistant Biochemist, Agricultural Experiment Station (1950, 1952).  
A. B., Arizona State College; Ph. D., Northwestern University.
- MILDRED E. BUZENBERG, Instructor in Economics and Sociology (1949).  
B. A., Michigan State College; M. S., Kansas State College.
- JAMES PHILIP CALLAHAN, Professor of English (1924, 1946).  
B. S., Fort Hays Kansas State College; M. A., University of Kansas.
- ALVIN BOYD CARDWELL, Associate Dean; Director of Bureau of General Research; Professor of Physics (1936, 1953).  
B. S., University of Chattanooga; M. S., Ph. D., University of Wisconsin.
- JAMES CHARLES CAREY, Professor of History (1948, 1954).  
B. A., Nebraska State Teachers College (Wayne); M. A., Ph. D., University of Colorado.
- GEORGE CARROLL, Temporary Instructor in Speech (1954).  
B. S., Northwestern University; M. A., University of Oklahoma.
- ERNEST KNIGHT CHAPIN, Associate Professor of Physics (1923, 1932).  
A. B., M. S., University of Michigan.



- JOSEPH RUDOLPH CHELIKOWSKY**, Professor and Acting Head of Department of Geology (1937, 1953).  
B. A., M. A., Ph. D., Cornell University.
- WILLIAM JAMES CLARK**, Associate Professor of Business Administration (1946, 1948).  
B. S., Kansas State Teachers College (Pittsburg); M. A., State University of Iowa; C. P. A., Kansas.
- ROBERT EDWARD CLEGG**, Professor of Chemistry; Associate Biochemist, Agricultural Experiment Station (1948, 1954).  
B. S., University of Rhode Island; M. S., University of North Carolina; Ph. D., Iowa State College.
- LEO COHAN**, Assistant Professor of Economics and Sociology (1954).  
B. S., M. A., U. C. L. A.
- CHARLES WILLIAM COLVER**, Professor of Chemistry (1919, 1925).  
B. S., M. S., University of Idaho; Ph. D., University of Illinois.
- HOMER CARROLL COMBS**, Professor of English (1952).  
A. B., Georgetown College; M. A., Ph. D., Northwestern University.
- ROBERT WARREN CONOVER**, Professor of English, Emeritus (1915, 1954).  
A. B., M. A., Wesleyan University.
- CHARLES MECLAIN CORRELL**, College Historian; Professor of History, Emeritus (1922, 1950).  
B. S., Kansas State College; Ph. B., Ph. M., University of Chicago.
- RICHARD COY**, Temporary Instructor in Music (1953).  
B. S., Kansas State College.
- GOLDA MILDRED CRAWFORD**, Assistant Professor of Social Sciences in General Studies (1946, 1949).  
B. S., M. S., Kansas State College.
- NAOMI ZIMMERMAN CRAWFORD**, Temporary Instructor in Chemistry (1954).  
B. S., M. S., University of Nebraska.
- WALTER H. CROCKETT**, Assistant Professor of Psychology (1953).  
A. B., M. A., University of Kansas; Ph. D., University of Michigan.
- BERT CROZIER CROSS**, Assistant Professor of Technical Journalism (1952).  
B. A., University of Washington; M. S., University of Oregon.
- BASIL CURNUTTE, JR.**, Assistant Professor of Physics (1954).  
B. S., U. S. Naval Academy; Ph. D., Ohio State University.
- RALPH EUGENE DAKIN**, Assistant Professor of Economics and Sociology (1948).  
B. F. A., M. A., University of Colorado.
- ALLEN PARK DAVIDSON**, Professor of Education (1919, 1930).  
B. S., M. S., Kansas State College.
- EARLE ROSCO DAVIS**, Professor and Head of Department of English (1949, 1950).  
A. B., B. M., Monmouth College; M. A., University of Illinois; Ph. D., Princeton University.
- HALLAM WALKER DAVIS**, Professor of English (1913, 1950).  
A. B., Indiana University; A. M., Columbia University.
- THELMA SCOTT DAWSON**, Instructor in Physical Education (1954).  
B. S., West Virginia University.
- DONALD FRANK DECOU**, Associate Professor of Economics and Sociology (1947).  
B. S., Kansas State Teachers College (Pittsburg); M. B. A., Northwestern University.
- JOHN WESLEY DEMAND**, Associate Professor of Psychology (1940, 1953).  
A. B., University of Kansas; M. S., Kansas State College; Ed. D., University of Colorado.
- PAUL F. DEWEESE**, Assistant Professor of Technical Journalism (1948, 1953).  
B. S., Kansas State College.
- LEONARD WESLEY DEWHIRST**, Instructor in Zoology (1948, 1952).  
B. S., M. S., Kansas State College.
- GILBERT R. DODGE**, Temporary Instructor in Business Administration (1953).  
B. S., Kansas State College.
- THEODORE ORICE DODGE**, Assistant Professor of Business Administration (1946, 1948).  
B. S., Kansas State College; C. P. A., Kansas.
- CARL ALFRED DORF**, Assistant Professor of Chemistry (1931, 1948).  
A. B., Bethany College; M. S., Kansas State College.
- LOUIS HARTWELL DOUGLAS**, Professor of Government (1949).  
A. B., Hastings College; M. A., Ph. D., University of Nebraska.

- RUSSELL DEAN DRAGSDORF**, Associate Professor of Physics; Associate Physicist, Agricultural Experiment Station (1948, 1951).  
S. B., Ph. D., Massachusetts Institute of Technology.
- PAUL M. DUELL**, Temporary Instructor in Chemistry (1953).  
A. B., M. S., Fort Hays Kansas State College.
- GEORGE ORVAL EBBERTS**, Assistant to the Dean; Assistant Professor (1946, 1949).  
B. S., M. S., Kansas State College.
- EARL EUGENE EDGAR**, Professor and Head of Department of General Studies (1946, 1953).  
B. A., DePauw University; M. A., University of Nebraska; Ph. D., University of Cincinnati.
- JOE EISENBACH, JR.**, Assistant to the Dean and Instructor (1948, 1952).  
A. B., B. S., Kansas State Teachers College (Emporia); M. S., Kansas State College.
- ABRAHAM EISENSTARK**, Associate Professor of Bacteriology; Associate Poultry Bacteriologist and Virologist, Agricultural Experiment Station (1951).  
B. A., M. A., Ph. D., University of Illinois.
- WALTER HUGO EITNER**, Instructor in English (1954).  
A. B., University of Denver; A. M., University of Michigan.
- HELEN ELIZABETH ELCOCK**, Professor of English and General Studies (1920, 1947).  
A. B., College of Emporia; A. M., University of Chicago.
- BYRON ELBRIDGE ELLIS**, Professor of Technical Journalism (1949, 1950).  
A. B., Pacific Union College; A. M., University of Southern California.
- LOUIS DANIEL ELLSWORTH**, Professor of Physics (1946, 1954).  
B. S., Case Institute of Technology; M. S., Ph. D., Ohio State University.
- OTTO HERMAN ELMER**, Professor of Botany and Plant Pathology; Plant Pathologist, Agricultural Experiment Station (1927, 1952).  
B. S., M. S., Oregon State College; Ph. D., Iowa State College.
- VIRGINIA H. ENDLY**, Assistant Professor of Education (1954).  
A. B., College of Emporia; M. E., Colorado Agricultural and Mechanical College.
- ALFRED THEODORE ERICSON**, Assistant Instructor in Chemistry, Agricultural Experiment Station (1951, 1953).  
B. S., Kansas State Teachers College (Emporia).
- CONRAD JOHN KERLUF ERIKSEN**, Associate Professor of Economics and Sociology (1946, 1947).  
B. A., University of Kansas; M. B. A., Harvard University.
- LESTER EDGAR ERWIN**, Associate Professor of Bacteriology; Associate Poultry Bacteriologist, Agricultural Experiment Station (1946, 1950).  
B. S., Kansas State College; M. S., Ph. D., Iowa State College.
- CHARLES CLIFFORD EUSTACE**, Assistant Professor of Education (1946).  
B. S., M. S., Kansas State College.
- THOMAS MARION EVANS**, Professor and Head of Department of Physical Education (1942, 1950).  
B. S., Kansas State College; M. S., University of Michigan.
- JACOB OLIN FAULKNER**, Professor of English (1922, 1927).  
B. A., Washington and Lee University; M. A., Pennsylvania State University.
- ARLIN M. FEYERHERM**, Assistant Professor of Mathematics (1953).  
B. S., University of Minnesota; M. S., University of Iowa; Ph. D., Iowa State College.
- LOUIS R. FINA**, Assistant Professor of Bacteriology (1954).  
A. B., M. S., Ph. D., University of Illinois.
- WILLIAM R. FISCHER**, Associate Professor of Music (1948, 1954).  
B. M., M. M., Northwestern University.
- WALTER DUMMER FISHER**, Associate Professor of Economics and Sociology (1951, 1954).  
A. B., Harvard University; Ph. D., University of Chicago.
- EUSTACE VIVIAN FLOYD**, Professor of Physics, Emeritus (1911, 1948).  
B. S., Earlham College.
- VERNON DANIEL FOLTZ**, Professor of Bacteriology and Acting Head of Department; Bacteriologist, in charge, Agricultural Experiment Station (1927, 1952).  
B. S., M. S., Kansas State College.
- FRANK J. FORNOFF**, Associate Professor of Chemistry (1953).  
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- CLARENCE MAXWELL FOWLER**, Associate Professor of Physics (1949, 1951).  
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- JOHN CARROLL FRAZIER**, Professor of Physiology; Plant Physiologist, Agricultural Experiment Station (1926, 1947).  
A. B., DePauw University; M. A., University of Nebraska; Ph. D., University of Chicago.
- NORMAN DUGARD FRENCH**, Assistant Professor of Economics and Sociology (1951).  
B. S., M. S., University of Illinois.
- HOLLY CLAIRE FRYER**, Professor of Mathematics; in charge, Statistical Laboratory, Agricultural Experiment Station (1940, 1945).  
B. S., University of Oregon; M. S., Oregon State College; Ph. D., Iowa State College.
- LEONARD EUGENE FULLER**, Assistant Professor of Mathematics (1952).  
B. A., University of Wyoming; M. S., Ph. D., University of Wisconsin.
- ALBERT FURMAN**, Assistant Professor of Mathematics (1947).  
B. S., M. S., University of New Hampshire.
- PERCY LEIGH GAINNEY**, Professor of Bacteriology; Soil Bacteriologist, Agricultural Experiment Station (1914, 1952).  
B. S., M. S., University of North Carolina; Ph. D., Washington University.
- FRANK CALEB GATES**, Professor of Botany and Plant Pathology; Taxonomist and Ecologist, Agricultural Experiment Station (1919, 1928).  
A. B., University of Illinois; Ph. D., University of Michigan.
- KATHERINE GEYER**, Professor of Physical Education (1927, 1947).  
B. S., Ohio State University; M. A., Columbia University.
- HERSCHEL THOMAS GIER**, Associate Professor of Zoology; Associate Embryologist, Agricultural Experiment Station (1947).  
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- JOHN W. GILBAUGH**, Assistant Professor of Education (1953).  
B. S., M. S., Kansas State Teachers College (Pittsburg); Ed. D., University of Kansas.
- KINGSLEY WALTON GIVEN**, Professor of Speech (1920, 1950).  
B. A., Park College; M. A., State University of Iowa.
- ESTHER BEACHEL GLENN**, Assistant Professor of English (1954).  
A. B., Kansas Wesleyan University; M. S., Kansas State College.
- CHARLES STEVEN GOETZINGER, JR.**, Assistant Professor of Speech (1954).  
B. S., Kent State University; M. S., Ph. D., Purdue University.
- ARTHUR LEONARD GOODRICH**, Professor of Zoology (1929, 1947).  
B. S., College of Idaho; M. S., University of Idaho; Ph. D., Cornell University.
- ZOE MARION GOSS**, Temporary Assistant Professor of Modern Languages (1954).  
B. A., Mount Holyoke College; M. A., Northwestern University.
- FINIS MCCRADY GREEN**, Professor and Head of Department of Education (1948, 1952).  
B. S., Kansas State Teachers College (Pittsburg); M. S., University of Kansas; Ed. D., University of Colorado.
- HILDA ROSINE GROSSMANN**, Assistant Professor of Music (1927, 1932).  
B. M., Chicago Musical College; B. S., Kansas State College; M. A., Stanford University.
- DOROTHY BELLE GUDGELL**, Assistant Professor of Economics and Sociology (1943, 1954).  
B. S., M. S., Kansas State College.
- RALPH EUGENE GUERRANT**, Assistant Professor of Chemistry (1946).  
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- MERLE EDWIN GUGLER**, Assistant Professor of Economics and Sociology (1947, 1948).  
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- ALPHAUS MATTHEW GUHL**, Professor of Zoology; Associate Zoologist, Agricultural Experiment Station (1943, 1954).  
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- JOSEPH VINCENT GUIDA**, Temporary Instructor in Mathematics (1953).  
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- JOSEPH LOWE HALL**, Associate Professor of Chemistry; Associate Chemist, Agricultural Experiment Station (1922, 1949).  
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- LAWRENCE FENOR HALL**, Associate Professor of Education (1926, 1941).  
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- MERLE FREDERICK HANSEN**, Associate Professor of Zoology; Associate Parasitologist, Agricultural Experiment Station (1950, 1951).  
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- EARL DAHL HANSING**, Professor of Botany and Plant Pathology; Plant Pathologist, Agricultural Experiment Station (1935, 1947).  
B. S., University of Minnesota; M. S., Kansas State College; Ph. D., Cornell University.
- MURVILLE JENNINGS HARBAUGH**, Professor of Zoology and General Studies (1929, 1945).  
A. B., A. M., Montana State University; Ph. D., University of Nebraska.
- MARY THERESA HARMAN**, Professor of Zoology, Emeritus (1912, 1950).  
B. A., M. A., Ph. D., Indiana University.
- JOHN ORVILLE HARRIS**, Professor of Bacteriology; Bacterial Physiologist, Agricultural Experiment Station (1941, 1952).  
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- STELLA MAUDE HARRISS**, Assistant Professor of Chemistry, Emeritus (1917, 1953).  
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- LOIS MEISNER HARTLEY**, Temporary Instructor in Chemistry (1954).  
B. S., M. S., Kansas State College.
- JULIA RUTH HARTMAN**, Assistant Professor of Music (1924).  
B. S., Columbia University.
- CARL R. HAUSMAN**, Instructor in Humanities in General Studies (1953).  
A. B., University of Louisville; M. A., Duke University.
- WARD HILLMAN HAYLETT**, Head Track Coach; Professor of Athletics (1928, 1952).  
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- HERBERT HENLEY HAYMAKER**, Professor of Botany and Plant Pathology and General Studies (1917, 1927).  
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B. S., M. S., University of Denver; Ph. D., University of Minnesota.
- SARA CHARLOTTE LARSON**, Instructor in Geography (1946).  
A. B., Knox College; B. E., Illinois State Normal University; M. S., University of Chicago.
- MENDEL ELMER LASH**, Professor of Chemistry (1922, 1947).  
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B. S., Kansas State College; M. S., University of Wisconsin.
- BORIS LEAF**, Professor of Physics (1946, 1954).  
B. S., University of Kansas; Ph. D., University of Illinois.
- LUTHER OMAR LEAVENGOOD**, Professor and Head of Department of Music (1945).  
B. S., University of Kansas; M. M., University of Michigan.
- GEORGE EDWIN LEEDHAM**, Assistant Professor of Music (1949).  
B. M., University of Rochester.
- GUY WILLIAM LEONARD, JR.**, Associate Professor of Chemistry; Associate Chemist, Agricultural Experiment Station (1949, 1952).  
B. S., A. M., Indiana University; Ph. D., Massachusetts Institute of Technology.
- CLARENCE FLAVIUS LEWIS**, Associate Professor of Mathematics (1920, 1926).  
A. B., University of Denver; M. S., Kansas State College.
- LOUIS HENRY LIMPER**, Professor of Modern Languages, Emeritus (1914, 1944).  
A. B., Baldwin-Wallace College; A. M., University of Wisconsin; Ph. D., State University of Iowa.
- WILLIAM GUSTAVE LINDQUIST**, Professor of Music (1921, 1947).  
B. M., Cosmopolitan School of Music.
- ELLIS RIDGEWAY LIPPINCOTT**, Associate Professor of Chemistry (1951).  
B. A., Earlham College; M. A., Ph. D., Johns Hopkins University.
- J. HARVEY LITTRELL**, Assistant Professor of Education (1954).  
A. B., Iowa State Teachers College; M. A., State University of Iowa; Ed. D., University of Missouri.
- CHARLES HOWARD LOCKHART**, Assistant Professor of Zoology (1940, 1947).  
B. S., M. S., Kansas State College.
- GLENN WESLEY LONG**, Assistant Professor of Economics and Sociology (1938, 1945).  
A. B., Baker University; M. S., Kansas State College.
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B. S., University of Massachusetts; M. S., Ph. D., University of Illinois.
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B. S., Battle Creek College; M. A., State University of Iowa.
- ERIC ROSS LYON**, Associate Professor of Physics (1921, 1928).  
A. B., M. S., Phillips University.
- JOHN MAURICE MARR**, Assistant Professor of Mathematics (1953).  
B. S., Central Missouri State College; M. A., University of Missouri; Ph. D., University of Tennessee.
- CHARLES WALTON MATTHEWS**, Professor of English (1921, 1925).  
B. S., Kansas State Teachers College (Pittsburg); M. A., University of Chicago.
- GEORGE WILLARD MAXWELL**, Assistant Professor of Physics (1927, 1928).  
A. B., M. S., University of Michigan.
- ELIZABETH UNGER MCCracken**, Associate Professor of Botany and Plant Pathology; Associate Cytogeneticist, Agricultural Experiment Station (1938, 1950).  
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- MAYNARD LEE McDOWELL**, Assistant Professor of Chemistry (1926, 1945).  
A. B., Central College of Missouri; A. M., University of Missouri; Ph. D., State University of Iowa.
- ROBERT HAROLD MCFARLAND**, Professor of Physics; Associate Physicist, Agricultural Experiment Station (1946, 1954).  
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- KATHERYN ANN MCKINNEY**, Assistant Professor of Physical Education (1946).  
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- KENNETH JAMES McMAHON**, Assistant Professor of Bacteriology (1949, 1954).  
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- CALVIN MEDLIN**, Professor of Technical Journalism (1934, 1949).  
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- LEO EDWARD MELCHERS**, Professor of Botany and Plant Pathology; Plant Pathologist, Agricultural Experiment Station (1913, 1952).  
B. S., M. S., Ohio State University.



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B. S., University of Maine.
- BERNARD J. MERTES**, Head Football Coach and Professor of Athletics (1953, 1955).  
B. S., M. A., State University of Iowa.
- ALLEN DAVID MILLER**, Associate Professor of Government (1946).  
B. A., University of Kansas; M. A., University of Texas.
- CECIL HALE MILLER**, Professor of Philosophy (1945, 1951).  
A. B., University of Kansas; M. A., University of California.
- JORDAN YALE MILLER**, Instructor in English (1950).  
B. A., Yale University.
- WILLIAM ARTHUR MILLER**, Associate Professor of Bacteriology; Associate Dairy Bacteriologist, Agricultural Experiment Station (1947, 1952).  
B. S., Ph. D., University of Illinois; M. S., University of Pennsylvania.
- HOWARD LEE MITCHELL**, Associate Professor of Chemistry; Associate Biochemist, Agricultural Experiment Station (1946, 1952).  
B. S., Oklahoma Agricultural and Mechanical College; Ph. D., Purdue University.
- MAURICE CHARLES MOGGIE**, Professor of Education (1930, 1945).  
B. S., M. S., Kansas State College; Ph. D., Ohio State University.
- GEORGE MONTGOMERY**, Professor and Head of Department of Economics and Sociology (1925, 1947).  
B. S., M. S., Kansas State College; Ph. D., University of Minnesota.
- DORIS PAULINE MOORE**, Temporary Assistant Instructor in Chemistry (1952).  
B. S., Northwestern State College.
- FRITZ MOORE**, Professor and Head of Department of Modern Languages (1934).  
A. B., University of Akron; A. M., Ph. D., University of Illinois.
- ROBERT B. MOORMAN**, Assistant Professor of Zoology (1953).  
B. S., M. S., Ph. D., Iowa State College.
- LAURENCE MORGAN**, Assistant Instructor in Athletics and Athletic Trainer (1951).  
B. S., St. Ambrose College.
- WILLIAM R. MOSES**, Professor of English (1950, 1954).  
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- THIRZA ADELINE MOSSMAN**, Associate Professor of Mathematics (1922, 1946).  
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- LAURENCE A. MULLINS**, Director of Athletics (1951, 1952).  
A. B., University of Notre Dame.
- DONALD FARNHAM MUNRO**, Associate Professor of Modern Languages (1940).  
B. S., M. A., Acadia University (Canada); Ph. D., University of Illinois.
- FRANK LEWIS MYERS**, Assistant Professor of Physical Education (1925, 1947).  
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- ROBERT KIRKLAND NABOURS**, Professor of Zoology, Emeritus (1910, 1945).  
B. Ed., Ph. D., University of Chicago.
- JOHN WILLIAM NEEDHAM**, Assistant Professor of Chemistry (1954).  
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- WALLACE BOYD NELSON**, Associate Professor of Economics and Sociology (1950, 1954).  
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- MARGARET ALICE NEWCOMB**, Associate Professor of Botany and Plant Pathology (1925, 1941).  
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- MERRILL E. NOBLE**, Assistant Professor of Psychology (1954).  
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B. S., Rockhurst College; M. S., Kansas State College.
- JACK IRWIN NORTHAM**, Assistant Professor of Mathematics (1947).  
B. A., New York University; M. A., Michigan State College.
- CARROLL FRANK OAKLEY**, Associate Professor of Physics (1948).  
B. A., Milton College; M. A., University of Michigan.
- OWEN KENNETH O'FALLON**, Associate Professor of Education (1950).  
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- GEORGE ARTHUR OLSON**, Associate Professor of Education (1949).  
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- STUART MCGREGOR PADY, Professor and Head of Department of Botany and Plant Pathology; Mycologist, Agricultural Experiment Station (1952).  
B. A., M. A., McMaster University (Canada); Ph. D., University of Toronto (Canada).
- CLARICE MARIE PAINTER, Assistant Professor of Music (1924).  
Certificate, New England Conservatory of Music.
- S. THOMAS PARKER, Professor of Mathematics (1947, 1951).  
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- FRED LOUIS PARRISH, Professor and Head of Department of History, Government and Philosophy (1927, 1942).  
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**DONALD FOX SHOWALTER**, Associate Professor of Psychology (1928, 1949).

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**RALPH E. SILKER**, Professor and Head of Department of Chemistry; Chemist, in charge, Agricultural and Engineering Experiment Stations (1941, 1948).

B. A., University of Dubuque; M. S., Ph. D., State University of Iowa.

**WEBSTER HARRISON SILL, JR.**, Assistant Professor of Botany and Plant Pathology; Assistant Plant Pathologist, Agricultural Experiment Station (1952).

B. S., West Virginia Wesleyan College; M. A., Boston University; Ph. D., University of Wisconsin.

**SARAH G. SITZ**, Temporary Instructor in Mathematics (1954).

B. S., Iowa State College.

**CHARLES MERWYN SLAGG**, Assistant Professor of Botany and Plant Pathology (1946, 1950).

B. S., M. S., University of Wisconsin.

**FLOYD B. SLOAT**, Assistant Professor of Mathematics (1946, 1947).

B. A., Ouachita College; M. A., University of Arkansas.

**HARRY A. SMITH**, Assistant Instructor in Chemistry (1953).

B. S., University of Arizona.

**MARGARET H. SMITH**, Instructor in Geology and Geography (1946).

A. B., Randolph Macon Woman's College; M. A., University of North Carolina; M. S., University of Chicago.

**BENJAMIN LEVI SMITS**, Assistant Professor of Chemistry, Emeritus (1926, 1952).

B. S., M. S., Ph. D., Michigan State College.

**ROBERT L. SNYDER**, Instructor in Speech (1954).

A. B., Wartburg College; M. A., State University of Iowa.

**VERLE E. SNYDER**, Assistant Professor of Physical Education (1954).

B. S., M. S., Kansas State College.

**ARTHUR BRADLEY SPERRY**, Professor of Geology, Emeritus (1921, 1953).

B. S., University of Chicago.



- KARL STACEY**, Associate Professor of Geography (1943, 1948).  
B. A., M. A., University of Colorado.
- WILLIAM L. STAMEY**, Assistant Professor of Mathematics (1953).  
A. B., Colorado State College; M. A., Ph. D., University of Missouri.
- THOMAS BERNARD STEUNENBERG**, Professor of Music (1947).  
B. M., Northwestern University; M. M., University of Michigan; Ph. D., University of Rochester.
- HARRY MARTIN STEWART**, Professor of Business Administration (1926, 1941).  
A. B., M. B., University of Kansas; C. P. A., Kansas.
- CHARLES WILLIAM STRATTON**, Professor of Music (1927, 1947).  
B. M., M. S., Kansas State College.
- WILLIAM TIMOTHY STRATTON**, Professor of Mathematics, Emeritus (1910, 1951).  
A. B., A. M., Indiana University; Ph. D., University of Washington.
- VIVAN LEWIS STRICKLAND**, Professor of Education, Emeritus (1917, 1950).  
A. B., M. S., Ph. D., University of Nebraska.
- ANNA MARIE STURMER**, Professor of English, Emeritus (1920, 1950).  
A. B., A. M., University of Nebraska.
- VERNE SEBASTIAN SWEEDLUN**, Professor of Social Sciences in General Studies (1941, 1947).  
A. B., Bethany College; M. A., University of Kansas; Ph. D., University of Nebraska.
- MARILYN D. TAVARES**, Instructor in Physical Education (1953).  
B. S., Boston University.
- FRANK JAMES THOMPSON**, Assistant Professor of Physical Education (1937, 1949).  
B. S., Minnesota State Teachers College (Mankato); M. S., M. Ed., M. Ph. Ed., Springfield College.
- WILLIAM R. THRALL**, Instructor in Physical Education (1954).  
B. S., Wisconsin State College (La Crosse); M. S., University of Colorado.
- OTTO WILLIAM TIEMEIER**, Assistant Professor of Zoology; Assistant Wildlife Conservationist, Agricultural Experiment Station (1947, 1948).  
A. B., M. A., University of Kansas; Ph. D., University of Illinois.
- OSCAR WILLIAM TOLLEFSON**, Assistant Professor of Geology (1946).  
B. S., Huron College; M. A., University of Colorado.
- HENRY TUCKER**, Assistant Professor of Mathematics; Assistant Statistical Consultant, Agricultural Experiment Station (1951).  
B. S., New Mexico College of Agriculture and Mechanic Arts; M. A., State College of Washington.
- WILLIAM ALEXANDER VAN WINKLE**, Associate Professor of Chemistry, Emeritus (1922, 1952).  
B. S., M. S., Ph. D., University of Illinois.
- JAMES R. WAILES**, Assistant Professor of Education (1954).  
A. B., M. A., Colorado State College; Ph. D., University of Iowa.
- WARREN VINCENT WALKER**, Assistant Professor of Music (1948, 1952).  
B. A., University of Washington; M. M., Cincinnati Conservatory of Music.
- CHARLES P. WALTERS**, Assistant Professor of Geology (1948).  
B. S., M. S., Kansas State College.
- LOUIS P. WASHBURN**, Professor of Physical Education, Emeritus (1926, 1954).  
B. S., Carleton College; B. P. E., M. P. E., Springfield College.
- RAYMOND AUGUST WAUTHIER**, Assistant Professor of Physical Education (1949).  
B. S., Albion College; M. S., Drake University.
- FOREST L. WHAN**, Professor of Speech (1953).  
B. S., Kansas State College; M. A., University of Illinois; Ph. D., State University of Iowa.
- LOREN EDGAR WHIPPS**, Assistant Professor of Education (1946, 1953).  
B. S., Kansas State College; M. S., Colorado A. and M. College.
- STUART ESTES WHITCOMB**, Professor and Head of Department of Physics; Physicist; Agricultural Experiment Station (1942, 1953).  
B. S., Antioch College; M. S., Syracuse University; Ph. D., Ohio State University.
- ALFRED EVERETT WHITE**, Professor of Mathematics, Emeritus (1909, 1950).  
B. S., M. S., Purdue University.
- MARY FRANCES WHITE**, Assistant Professor of English (1947, 1951).  
B. S., M. S., Kansas State College.

- CARRELL HENRY WHITNAH**, Associate Professor of Chemistry; Associate Chemist, Agricultural Experiment Station (1929, 1949).  
B. A., Ph. D., University of Nebraska; M. S., University of Chicago.
- GEORGE DENT WILCOXON**, Professor of History and General Studies (1946, 1948).  
A. B., M. A., Ph. D., University of California.
- DWIGHT WILLIAMS**, Professor of Government (1926, 1939).  
B. A., LL. B., M. A., University of Minnesota.
- ROBERT WILSON**, Temporary Assistant Professor of Business Administration (1954).  
B. A., B. LL., J. D., Washburn University.
- EDWARD JOSEPH WIMMER**, Professor of Zoology (1928, 1941).  
B. A., M. A., Ph. D., University of Wisconsin.
- MAURICE FREDERICK WINTER**, Professor of Athletics and Head Basketball Coach (1953).  
B. S., University of Southern California.
- GRACE S. WOLDT**, Temporary Instructor in Mathematics (1954).  
A. B., Ohio Wesleyan University.
- MAURICE DUFFIELD WOOLF**, Professor of Education; Director of Reading Clinic (1945, 1952).  
B. S., Northeast Missouri State Teachers College; M. S., Ed. D., University of Missouri.
- HELEN IAMS WROTEN**, Assistant Professor of English (1949).  
B. S., M. S., Kansas State College; Ph. D., University of Illinois.
- PHILIP YOUNG**, Associate Professor of English (1953).  
B. A., Amherst College; Ph. D., University of Iowa.
- WILLIAM FRANK ZORNOW**, Temporary Assistant Professor of History (1951).  
A. B., A. M., Ph. D., Western Reserve University.

### **Department of Air Science**

- CHARLES EDWARD BOERNER, JR.**, Assistant Instructor in Air Science (1954).
- ROBERT KENNETH BOYNTON**, Assistant Instructor in Air Science (1953).
- MILTON VIRGIL BUTLER**, Assistant Instructor in Air Science (1954).  
B. A., Northeastern State College, Tahlequah, Oklahoma; Graduate, Personnel Management School.
- EDWARD STANLEY DOYLE**, Assistant Instructor in Air Science (1952).  
Graduate, Personnel Management School, Turrett Systems.
- JAMES ALLEN GRIFFITH**, Assistant Professor of Air Science (1952).  
B. A., Bluffton College; Graduate, A. F. Cryptographic School, Academic Instructors Course.
- DWIGHT LEROY HARLEY**, Associate Professor of Air Science (1952).  
B. A., Coe College; M. A., State University of Iowa; Graduate, Air University Academic Instructors School, Logistics Staff Officers School.
- JAMES BRYMER HART**, Assistant Instructor in Air Science (1954).  
Graduate, Personnel Management School, Turrett Systems.
- MILFORD FELIX ITZ**, Professor and Head of Department of Air Science (1951).  
B. S., Kansas State College; M. B. A., Columbia University; Graduate, Command and Staff School.
- DALE ALVIN JERMAN**, Assistant Instructor in Air Science (1953).  
Graduate, Personnel Management School, Telephone and Telegraph Repairmen School, Radio Repairmen School.
- ERLAND GODFREY JOHNSON**, Associate Professor of Air Science (1951).  
Graduate, Aircraft Maintenance School and Academic Instructors School.
- LOUIS EVERETT LARSON**, Associate Professor of Air Science (1951).  
B. A., M. A., University of Minnesota; Graduate, Public Relations School, Academic Instructors School.
- RICHARD BEVERLY LEMAR**, Associate Professor of Air Science (1951).  
B. A., University of Nebraska; Graduate, Academic Instructors School.
- HOWARD LEROY MALCHOW**, Assistant Professor of Air Science (1954).  
B. S., Indiana University; Graduate, Air University Academic Instructors School; MATS Heavy Transport School.
- JAMES EDWIN MESSER**, Assistant Instructor in Air Science (1951).
- RALPH DALE OAKLEY**, Instructor in Air Science (1954).  
B. A., University of Oklahoma; Graduate, Air University Academic Instructors School.
- WALTER EDWIN POINDEXTER**, Assistant Professor of Air Science (1954).  
B. A., University of Omaha; Graduate, Academic Instructors Course.



- LAURENCE HOWARD ROBINSON**, Assistant Instructor in Air Science (1953).  
Graduate, Personnel Management School, Administrative Inspector, Administrative Supervisor School.
- OLIVER MARTIN SMITH**, Instructor in Air Science (1954).  
Graduate, Supply School.
- BAYRED ODELL VERMILLION**, Associate Professor of Air Science (1954).  
B. S., Southwestern Missouri State College; Graduate, Air University Academic Instructors School.
- DALE BERTON WARD**, Associate Professor of Air Science (1952).  
B. S., University of Illinois; Graduate, Air University Academic Instructors School; Air Force Instrument School.

### Department of Military Science

- GLENN E. BARTON**, Assistant Instructor in Military Science (1954).
- ROBERT C. BLAIR**, Assistant Professor of Military Science (1953).  
B. S., Clemson Agricultural College.
- LAWRENCE CLIFFORD BROWN**, Professor of Military Science (1954).  
B. S., Syracuse University.
- LOUIS J. BURKE**, Assistant Instructor in Military Science (1953).
- RAY C. CLARK**, Assistant Instructor in Military Science (1954).
- RICHARD L. DINELEY, JR.**, Assistant Professor of Military Science (1954).  
B. S., University of San Francisco.
- DAVID A. DUNSON**, Instructor in Military Science (1954).
- ZIGGI S. GRZYWNOWICZ**, Assistant Professor of Military Science (1954).
- ROBERT L. GUYET**, Assistant Instructor in Military Science (1953).
- WILLIAM H. HASTINGS**, Associate Professor of Military Science (1954).  
B. S., Virginia Military Institute.
- VIRGIL A. HOHL**, Assistant Instructor in Military Science (1954).
- FRED C. MCDANIEL**, Assistant Instructor in Military Science (1952).
- HARRISON M. MURPHY**, Assistant Instructor in Military Science (1954).
- CHARLES M. RAPHUN**, Assistant Professor of Military Science (1952).  
B. S., Kansas State College.
- WILLIAM F. SHEPARD**, Assistant Instructor in Military Science (1954).
- JAMES L. SMITH, JR.**, Associate Professor of Military Science (1953).  
B. S., Kansas State College.
- ROBERT B. TOBIAS, JR.**, Assistant Professor of Military Science (1954).  
B. S., U. S. Military Academy, West Point, New York.
- GORDON W. VACURA**, Associate Professor of Military Science (1953).  
D. V. M., Kansas State College.

### SCHOOL OF ENGINEERING AND ARCHITECTURE

- DRURY BLAKELEY ALEXANDER**, Instructor in Architecture (1953).  
B. Arch., B. S., University of Texas; A. M., Columbia University. Registered Architect.
- CORLISS J. BALLOU**, Instructor in Industrial Engineering and Industrial Arts (1954).  
B. S., Kansas State College.
- PATRICIA H. BISCHOFF**, Assistant Instructor in Architecture and Allied Arts (1954).  
A. B., Western College.
- WAYNE WALLACE BIDSTRUP**, Temporary Instructor in Chemical Engineering (1955).  
B. S., Michigan College of Mining and Technology; S. M., Massachusetts Institute of Technology.
- WILLIAM HENRY BUCKHANNAN**, Temporary Instructor in Chemical Engineering (1955).  
B. S., Kansas State College.
- JOHN HENRY BRENNEMAN**, Instructor in Architecture (1950).  
B. Arch., Iowa State College; M. Arch., Rice Institute. Registered Architect.
- EARLE CONRAD BYERS**, Instructor in Industrial Engineering and Industrial Arts (1946).  
A. B., Greenville College; M. S., Kansas State College.



- WALTER WILLIAM CARLSON, Professor of Industrial Engineering and Industrial Arts, Emeritus (1910, 1950).  
B. S., M. E., Kansas State College. Professional Engineer.
- THEODORE AVERY CHADWICK, Professor of Architecture (1927, 1947).  
B. S., North Dakota Agricultural College; M. Arch., Massachusetts Institute of Technology. Registered Architect.
- EDWIN RICHARD CHUBBUCK, Assistant Professor of Applied Mechanics (1948).  
B. S., M. S., Kansas State College.
- JOHN PAUL CLIFTON, Assistant Professor of Industrial Engineering and Industrial Arts (1947).  
B. S., University of Kansas.
- LOWELL EDWIN CONRAD, Professor of Civil Engineering, Emeritus (1908, 1949).  
B. S., C. E., Cornell College; M. S., Lehigh University. Professional Engineer.
- ROBERT EUGENE CRANK, Assistant Professor of Mechanical Engineering (1947, 1951).  
B. S., M. S., Kansas State College. Professional Engineer.
- JAMES FRED CRARY, Assistant Professor of Applied Mechanics (1947, 1952).  
B. S., Kansas State College. Professional Engineer.
- WILLIAM WESLEY CRAWFORD, Professor of Civil Engineering, Emeritus (1923, 1949).  
B. Di., M. Di., Iowa State Teachers College; A. B., State University of Iowa; B. S., Iowa State College.
- EARL GILBERT DARBY, Professor of Industrial Engineering and Industrial Arts (1941, 1952).  
B. S., M. S., Kansas State College.
- MARTIN DECKER, Instructor in Agricultural Engineering; Assistant Agricultural Engineer, Agricultural Experiment Station (1951).  
B. S., Kansas State College. Professional Engineer.
- HARVEY FREDERICK DIETRICH, Instructor in Industrial Engineering and Industrial Arts (1948).
- MERLE RILEY DODGE, Instructor in Industrial Engineering and Industrial Arts (1943).
- ALLEY HUGH DUNCAN, Professor of Mechanical Engineering (1942, 1954).  
B. S., M. S., Kansas State College. Professional Engineer.
- JACK CLYDE DURGAN, Instructor in Architecture and Allied Arts (1954).  
B. Arch., Oklahoma Agricultural and Mechanical College. Registered Architect.
- MERRILL AUGUSTUS DURLAND, Dean; Professor of Machine Design; Director, Engineering Experiment Station (1919, 1949).  
B. S., M. S., Kansas State College. Professional Engineer.
- GUSTAVE EDMUND FAIRBANKS, Associate Professor of Agricultural Engineering (1941, 1950).  
B. S., M. S., Kansas State College. Professional Engineer.
- FREDERICK CHARLES FENTON, Professor and Head of Department of Agricultural Engineering; Agricultural Engineer, Engineering Experiment Station, Agricultural Experiment Station (1928).  
B. S., M. S., Iowa State College. Professional Engineer.
- ARTHUR ORAN FLINNER, Professor of Mechanical Engineering (1929, 1947).  
B. S., M. S., Kansas State College; S. M., Massachusetts Institute of Technology. Professional Engineer.
- WILLIAM ROY FORD, Associate Professor of Electrical Engineering (1948, 1954).  
B. S. in E. E., B. S. in B. A., M. S., Kansas State College. Professional Engineer.
- FORREST FAYE FRAZIER, Professor of Civil Engineering, Emeritus (1911, 1954).  
C. E., Ohio State University. Professional Engineer.
- JOHN WILLIAM FUNK, Assistant Professor of Agricultural Engineering (1947, 1951).  
B. S., M. S., Kansas State College. Professional Engineer.
- FRANK P. GRAHAM, Instructor in Architecture (1949).  
B. S., Pennsylvania State University; Diploma, School of Planning and Research for Regional Development (London). Registered Architect.
- JAMES DONALD GRAHAM, Assistant Professor of Electrical Engineering (1954).  
B. E. E., Cornell University; M. S., University of Pittsburgh.
- RAYMOND CLARENCE HALL, Assistant Professor of Chemical Engineering (1951, 1952).  
B. S., Iowa State College; M. S., Kansas State College.

- RICHARD EUGENE HANSON**, Instructor in Agricultural Engineering (1951).  
B. S., M. S., Kansas State College.
- KENNETH ALFRED HARKNESS**, Instructor in Agricultural Engineering (1952).  
B. S., Kansas State College.
- HOBART VANCE HAYS**, Instructor in Architecture and Allied Arts (1951, 1954).  
B. F. A., University of Nebraska.
- JOHN CRANSTON HEINTZELMAN**, Professor of Architecture (1947, 1954).  
B. Arch., Massachusetts Institute of Technology; M. Arch., Columbia University. Registered Architect.
- LINN HELANDER**, Professor and Head of Department of Mechanical Engineering (1935).  
B. S., University of Illinois. Professional Engineer.
- JOHN FREDERICK HELM, JR.**, Professor of Drawing and Painting (1924, 1938).  
B. D., Syracuse University; D. F. A., Bethany College.
- LELAND STANFORD HOBSON**, Professor of Industrial Engineering and Industrial Arts; Associate Director, Engineering Experiment Station (1946, 1953).  
B. S., Kansas State College. Professional Engineer.
- WILLIAM HENRY HONSTEAD**, Associate Professor and Acting Head of Department of Chemical Engineering; Associate Chemical Engineer, Agricultural Experiment Station (1943, 1954).  
B. S., M. S., Kansas State College. Professional Engineer.
- ABRAM ELDRED HOSTETTER**, Professor of Industrial Engineering and Industrial Arts (1931, 1952).  
B. S., McPherson College; M. S., Ph. D., Kansas State College.
- ORVILLE DON HUNT**, Professor of Electrical Engineering (1923, 1947).  
B. S., State College of Washington; M. S., Kansas State College. Professional Engineer.
- CLINTON OTTO JACOBS**, Instructor in Agricultural Engineering (1949).  
B. S., M. S., Kansas State College.
- LOUIS MARK JORGENSEN**, Professor of Electrical Engineering, Emeritus (1924, 1954).  
B. S., M. S., Kansas State College. Professional Engineer.
- RUSSELL MARION KERCHNER**, Professor of Electrical Engineering (1922, 1934).  
B. S., University of Illinois; M. S., Kansas State College. Professional Engineer.
- WILLIAM ROBERT KIMEL**, Assistant Professor of Machine Design (1946, 1947).  
B. S., M. S., Kansas State College. Professional Engineer.
- PHILLIP GEORGE KIRMSEY**, Associate Professor of Applied Mechanics (1942, 1954).  
B. S., M. S., University of Minnesota.
- ROYCE GERALD KLOEFFLER**, Professor and Head of Department of Electrical Engineering; Electrical Engineer, Engineering Experiment Station (1916, 1927).  
B. S., University of Michigan; S. M., Massachusetts Institute of Technology. Professional Engineer.
- RUDIGER KNAACK**, Assistant Instructor in Mechanical Engineering (1954).  
Diploma in Engineering, Eng. D., Technical University of Brunswick (Germany).
- LOREN BILLY KNEE**, Instructor in Mechanical Engineering (1951).  
B. S., Kansas State College.
- ALDEN KRIDER**, Assistant Professor of Architecture (1949).  
B. S., M. S., Kansas State College. Registered Architect.
- WILHELM KARL KUBITZA**, Instructor in Civil Engineering (1953).  
Diploma in Engineering, Technical University of Darmstadt (Germany).
- HAROLD LEROY KUGLER**, Professor of Agricultural Engineering (1946, 1950).  
B. S., M. S., Kansas State College.
- GEORGE HERBERT LARSON**, Professor of Agricultural Engineering (1946, 1950).  
B. S., M. S., Kansas State College. Professional Engineer.
- SHANG WU LIN**, Instructor in Applied Mechanics (1951).  
B. S., National Fu-Ton University (China); M. S., Kansas State College.
- EDWIN CURGUS LINDLY**, Assistant Professor of Applied Mechanics (1949, 1954).  
B. S., Oklahoma Agricultural and Mechanical College; M. S., Purdue University. Professional Engineer.
- RALPH IDEN LIPPER**, Assistant Professor of Agricultural Engineering (1946).  
B. S., M. S., Kansas State College. Professional Engineer.
- FRANK JAMES MCCORMICK**, Professor of Applied Mechanics (1939, 1947).  
B. S., M. S., Iowa State College. Professional Engineer.



- JOHN GERALD MCENTYRE**, Associate Professor of Civil Engineering (1946, 1954).  
B. S., M. S., Kansas State College; Ph. D., Cornell University. Professional Engineer.
- WALTER FRANCIS MASON**, Instructor in Machine Design (1954).  
B. S., University of Vermont.
- JOHN A. MAYHALL**, Temporary Instructor in Applied Mechanics (1954).  
B. S., University of Alabama.
- ALVA ERNEST MESSENHEIMER**, Assistant Professor of Machine Design (1942, 1946).  
B. S., Kansas State College. Professional Engineer.
- REED FRANKLIN MORSE**, Professor and Head of Department of Civil Engineering; Civil Engineer, Engineering Experiment Station (1923, 1947).  
B. A. Cornell College; B. S., Iowa State College; M. S., Kansas State College; Ph. D., Cornell University. Professional Engineer.
- DONALD GEORGE MOSS**, Assistant Professor of Electrical Engineering (1948, 1954).  
B. S. in E. E., B. S. in Bus. Adm., M. S., Kansas State College. Professional Engineer.
- HAROLD HANLEY MUNGER**, Associate Professor of Applied Mechanics (1942, 1954).  
B. S., M. S., Kansas State College. Professional Engineer.
- CLARENCE LESLIE NELSON**, Instructor in Industrial Engineering and Industrial Arts (1943).  
B. S., M. S., Kansas State College. Professional Engineer.
- DWIGHT ALVIN NESMITH**, Assistant Professor of Engineering, Engineering Experiment Station (1948, 1953).  
B. S., Northwestern University; M. S., Kansas State College.
- RALPH GRIFFITH NEVINS**, Associate Professor of Mechanical Engineering (1948, 1953).  
B. M. E., M. S., University of Minnesota; Ph. D., University of Illinois. Professional Engineer.
- ROSS IRWIN PAULI**, Assistant Professor of Industrial Engineering and Industrial Arts (1947, 1954).  
B. A., Westmar College; M. S., Kansas State Teachers College (Pittsburg).
- CLINTON ELLICOTT PEARCE**, Professor and Head of Department of Machine Design (1917, 1923).  
S. B., Massachusetts Institute of Technology; M. S., Cornell University. Professional Engineer.
- RICHARD CARTER POTTER**, Assistant Dean; Professor of Mechanical Engineering (1949, 1952).  
B. S., M. S., Ph. D., Purdue University. Professional Engineer.
- JOHN DEWITT RIDDELL**, Instructor in Civil Engineering (1954).  
S. B., Massachusetts Institute of Technology. Professional Engineer.
- EDWARD JAMES RISING**, Assistant Professor of Mechanical Engineering (1954).  
B. M. E., Rensselaer Polytechnic Institute; B. M. E., Syracuse University.
- WALTER FREDERICK ROBOHN**, Assistant Professor of Civil Engineering (1949, 1952).  
B. S., M. S., Kansas State College. Professional Engineer.
- HARVEY DEWEY ROSE**, Assistant Instructor in Mechanical Engineering (1947).  
B. S., Oregon Institute of Technology; B. S., Oregon State College; M. A., University of Portland. Professional Engineer.
- VERNON HART ROSEBRAUGH**, Associate Professor of Civil Engineering (1953, 1954).  
B. S., Oregon Institute of Technology; B. S., Oregon State College; M. A., University of Portland. Professional Engineer.
- CHARLES HENRY SCHOLER**, Professor and Head of Department of Applied Mechanics; Materials Testing Engineer, Engineering Experiment Station 1919, 1923).  
B. S., Kansas State College. Professional Engineer.
- HARRY JAMES SCOFIELD**, Visiting Professor of Mechanical Engineering (1953).  
B. S., Illinois Institute of Technology; M. E., Cornell University. Professional Engineer.
- ROY ANDREW SEATON**, Dean and Director, Professor of Applied Mechanics, Emeritus (1904, 1954).  
B. S., M. S., Kansas State College; S. B., Massachusetts Institute of Technology; Sc. D., Northeastern University. Professional Engineer.
- GABE ALFRED SELLERS**, Professor and Head of Department of Industrial Engineering and Industrial Arts; Industrial Engineer, Engineering Experiment Station (1919, 1946).  
B. S., M. S., Kansas State College.



- JOHN WALLACE SHUPE**, Associate Professor of Applied Mechanics (1948, 1954).  
B. S., Kansas State College; M. S., University of California.
- WAYNE DELBERT SIEH**, Assistant Professor of Machine Design (1946, 1952).  
B. S., Kansas State College.
- EARL LEROY SITZ**, Professor of Electrical Engineering (1927, 1948).  
B. S., Iowa State College; M. S., Kansas State College. Professional Engineer.
- JACOB JAY SMALTZ**, Professor of Industrial Engineering and Industrial Arts (1940, 1952).  
B. S., Bradley Polytechnic Institute; M. S., Kansas State College.
- HOWARD DEWIGHT SMETHERS**, Assistant Professor of Industrial Engineering and Industrial Arts (1947, 1951).  
B. S., Kansas State Teachers College (Emporia); M. S., Kansas State College.
- BOB LEE SMITH**, Assistant Professor of Civil Engineering (1948, 1953).  
B. S., M. S., Kansas State College. Professional Engineer.
- FLOYD ALONZO SMUTZ**, Professor of Machine Design (1918, 1934).  
B. S., Kansas State College.
- ROLLIN GEORGE TAECKER**, Associate Professor of Chemical Engineering; Associate Chemical Engineer, Agricultural Experiment Station (1947).  
B. S., South Dakota School of Mines and Technology; M. S., Ph. D., University of Wisconsin.
- DELOS CLIFTON TAYLOR**, Associate Professor of Applied Mechanics (1931, 1947).  
B. S., M. S., Kansas State College. Professional Engineer.
- INGOLF EUGENE THORSON**, Associate Professor of Architecture (1948, 1952).  
B. S., University of Washington.
- ELMER JOHN TOMASCH**, Assistant Professor of Architecture and Allied Arts (1947, 1952).  
B. S., Western Reserve University.
- WILSON TRIPP**, Professor of Mechanical Engineering (1936, 1947).  
B. S., M. S., University of California. Professional Engineer.
- CHARLES TURPIN, JR.**, Temporary Instructor in Agricultural Engineering (1954).  
B. S., Kansas State College.
- SHU-LUNG WANG**, Assistant Professor of Chemical Engineering; Assistant Chemical Engineer, Agricultural Experiment Station (1952).  
B. S., M. S., D. Sc., Washington University.
- HENRY TIBBELS WARD**, Professor and Head of Department of Chemical Engineering; Chemical Engineer, Engineering Experiment Station, Agricultural Experiment Station (1948).  
B. S., Ph. D., University of Michigan; M. S., University of Wyoming. Professional Engineer.
- JOSEPH EVANS WARD, JR.**, Associate Professor of Electrical Engineering (1940, 1947).  
B. S., University of Texas; M. S., University of Illinois. Professional Engineer.
- PAUL WEIGEL**, Professor and Head of Department of Architecture and Allied Arts; Architect, Engineering Experiment Station (1921, 1924).  
B. Arch., Cornell University. Registered Architect.
- RONALD WHITELEY**, Professor of Architecture (1947, 1954).  
B. Arch., University of Manitoba (Winnipeg); M. Arch., Harvard University. Registered Architect.
- LEO ANDREW WIRTZ**, Instructor in Electrical Engineering (1947).  
B. S. in E. E., B. S. in B. A., Kansas State College. Professional Engineer.
- JOHN EDMOND WOLFE**, Associate Professor of Electrical Engineering (1946, 1947).  
B. S., M. S., Kansas State College.
- JOE NATE WOOD**, Professor of Machine Design (1936, 1947).  
B. S., State University of Iowa. Professional Engineer.
- CLAUDE LOWELL WOODARD**, Assistant Professor of Industrial Engineering and Industrial Arts (1949, 1954).  
B. S., M. S., Kansas State College.
- SHEE MANG YEN**, Assistant Professor of Mechanical Engineering (1951).  
B. S., Chiao-Tung University (China); M. S., Ph. D., University of Illinois.
- ALLEN ROY YOWELL**, Instructor in Industrial Engineering and Industrial Arts (1947).
- DALE EDWIN ZABEL**, Assistant Professor of Industrial Engineering and Industrial Arts (1946, 1951).  
B. S., M. S., Kansas State College.

**SCHOOL OF HOME ECONOMICS**

- ANNA TESSIE AGAN, Associate Professor of Household Economics; Associate Household Economist, Agricultural Experiment Station (1929, 1943).  
B. S., University of Nebraska; M. S., Kansas State College.
- CORAL KERR ALDOUS, Associate Professor of Family and Child Development (1940, 1947).  
B. S., Utah State Agricultural College; M. A., Columbia University.
- JESS MCFADDEN ALEXANDER, Associate Professor of Art (1946, 1954).  
A. B., Winthrop College; M. A., Columbia University.
- LOIS L. ANDERSON, Assistant Instructor in Foods and Nutrition, Agricultural Experiment Station (1953).  
B. S., Kansas State College.
- LEAH ASCHAM, Professor of Foods and Nutrition, Emeritus; Food Economist, Agricultural Experiment Station (1927, 1951).  
A. B., Ohio Northern University; B. S., Ohio State University; Ph. D., Yale University.
- DOROTHY BARFOOT, Professor and Head of Department of Art (1930, 1935).  
B. A., State University of Iowa; M. A., Columbia University.
- JANE WILSON BARNES, Assistant Professor of Home Economics; Assistant Professor of Household Economics; Assistant Household Economist, Agricultural Experiment Station (1939, 1954).  
B. S., M. S., Kansas State College.
- NINA MYRTLE BROWNING, Associate Professor of Foods and Nutrition (1930, 1943).  
B. S., M. S., Kansas State College.
- ESTHER EVANGELINE CHRISTENSEN, Instructor in Institutional Management (1946).  
B. S., Kansas State College.
- ESTHER MARGARET CORMANY, Associate Professor of Clothing and Textiles; Associate Textile Economist, Agricultural Experiment Station (1936, 1941).  
B. S., M. S., Kansas State College.
- MYRTLE GUNSELMAN CORRELL, Associate Professor of Household Economics; Associate Household Economist, Agricultural Experiment Station (1926, 1937).  
B. S., Kansas State College; A. M., University of Chicago.
- INA FOOTE COWLES, Associate Professor of Clothing and Textiles, Emeritus (1918, 1944).  
B. S., Kansas State College; M. S., University of Wisconsin.
- BARBARA CRAIGIE, Temporary Instructor in Art (1954).  
B. A., University of Minnesota; M. A., University of Missouri.
- ALBERTA MORTON CURRY, Instructor in Clothing and Textiles (1954).  
B. S., New Mexico College of Agriculture and Mechanic Arts; M. S., Texas Technological College.
- HELEN M. DALE, Assistant Instructor in Foods and Nutrition, Agricultural Experiment Station (1954).  
B. S., Kansas State College.
- BARBARA EDITH DENSMORE, Instructor in Clothing and Textiles; Assistant Textile Economist, Agricultural Experiment Station (1950).  
B. S., Michigan State College; M. S., Iowa State College.
- NINA EDELBLUTE, Associate Professor of Institutional Management (1940, 1952).  
B. S., M. S., Kansas State College.
- LYDIA FAUBION, Instructor in Institutional Management (1953).  
B. S., Kansas State College.
- MARIE GERALDINE GAGE, Instructor in Household Economics (1951).  
B. S., Drexel Institute of Technology; M. A., Columbia University.
- ALICE LOUISE GEIGER, Assistant Professor of Art (1945).  
A. B., B. F. A., University of Kansas; M. A., Colorado State College of Education.
- ETHELIND SIGLOCH GIBSON, Temporary Instructor in Foods and Nutrition (1953).  
B. S., University of Rhode Island.
- FRANCES MARIE HAFERMEHL, Temporary Instructor in Art (1954).  
B. F. A., Bethany College.
- VIDA AGNES HARRIS, Associate Professor of Art (1924, 1941).  
B. S., Kansas State College; A. M., University of Chicago.



- DOROTHY LUCILE HARRISON, Professor of Foods and Nutrition, in charge, Home Economics Research; Agricultural Experiment Station (1947, 1953).  
B. S., Dakota Wesleyan University; M. S., Ph. D., Iowa State College.
- MARJORIE MCCALL HEMPHILL, Assistant Professor of Institutional Management (1939, 1954).  
B. S., M. S., Kansas State College.
- KATHARINE PADDOCK HESS, Associate Professor of Clothing and Textiles, Emeritus (1925, 1950).  
B. S., M. S., Kansas State College.
- OPAL BROWN HILL, Assistant Professor of Art (1944, 1954).  
B. S., M. S., Kansas State College.
- ANNA S. HOOPER, Assistant Instructor in Foods and Nutrition, Agricultural Experiment Station (1952, 1953).  
B. S., Kansas State College.
- HAZEL DELL HOWE, Associate Professor of Clothing and Textiles (1936, 1947).  
B. S., M. S., Kansas State College.
- SHIRLEY BROOKS JUDY, Instructor in Institutional Management (1954).  
B. A., DePauw University.
- MARGARET M. JUSTIN, Professor of Home Economics; Dean, Emeritus (1923, 1954).  
B. S., Kansas State College; B. Ed., Columbia University; Ph. D., Yale University.
- ROSAMOND HARRIET KEDZIE, Associate Professor of Art (1938, 1954).  
B. S., Michigan State College; M. A., University of California.
- LEONE BOWER KELL, Professor of Family and Child Development; Family Economist, Agricultural Experiment Station (1927, 1953).  
B. S., M. S., Kansas State College.
- MARTHA MORRISON KRAMER, Assistant Dean; Professor of Home Economics; Professor of Foods and Nutrition (1922, 1945).  
B. S., University of Chicago; M. S., Ph. D., Columbia University.
- LOUISE MORGAN LANGFORD, Temporary Assistant Professor of Family and Child Development (1954).  
A. B., University of Kansas; M. S., Kansas State College.
- ALPHA CORINNE LATZKE, Professor and Head of Department of Clothing and Textiles; Textile Economist, Agricultural Experiment Station (1927, 1935).  
B. S., M. S., Kansas State College.
- BURNADINE LANGSTON LEWIS, Assistant Instructor in Foods and Nutrition, Agricultural Experiment Station (1953).  
B. S., Prairie View Agricultural and Mechanical College; M. S., Colorado Agricultural and Mechanical College.
- GERTRUDE ELISE LIENKAEMPER, Associate Professor of Clothing and Textiles (1941, 1948).  
B. S., Oregon State College; M. A., University of Washington.
- MARGARET MCCULLOUGH, Assistant Instructor in Family and Child Development (1954).  
B. S., Kansas State College.
- EVA MYRTLE MCMILLAN, Associate Professor of Foods and Nutrition (1930, 1939).  
Ph. B., S. M., University of Chicago.
- ABBY LINDSEY MARLATT, Professor of Foods and Nutrition; Food Economist, Agricultural Experiment Station (1945, 1952).  
B. S., Kansas State College; Ph. D., University of California.
- ELSIE LEE MILLER, Assistant Professor of Foods and Nutrition (1941, 1947).  
B. S., M. S., Kansas State College.
- MARIA MORRIS, Associate Professor of Art (1925, 1941).  
B. S., M. S., Kansas State College.
- IVA MANILLA MULLEN, Assistant Professor of Foods and Nutrition (1936, 1947).  
B. S., Kansas State College; M. S., Iowa State College.
- MARGUERITE MARIE NEARNBERG, Instructor in Institutional Management (1952).  
B. S., M. S., Michigan State College.
- REBECCA CECIL NEELY, Assistant Instructor in Foods and Nutrition (1954).  
A. B., Butler University.
- MARGARET ELIZABETH RAFFINGTON, Assistant to the Dean and Assistant Professor of Home Economics; Assistant Professor of Family and Child Development (1938, 1939).  
B. S., M. S., Kansas State College.



- DORETTA MARIE SCHLAPHOFF**, Dean; Professor of Home Economics (1954).  
B. S., University of Nebraska; M. S., Michigan State College; Ph. D., Cornell University.
- BERNICE BROWN SCHONEWEIS**, Assistant Instructor in Foods and Nutrition (1954).  
B. S., Kansas State College.
- LOIS RUTH SCHULZ**, Professor of Family and Child Development; Director of College Nursery School (1947).  
Ph. B., University of Chicago; M. A., University of Michigan; Ed. D., University of California.
- GRACE MABEL SHUGART**, Assistant Professor of Institutional Management (1951).  
B. S., State College of Washington; M. S., Iowa State College.
- WINIFRED SLAGG**, Assistant Instructor in Household Economics (1954).  
B. S., Kansas State College.
- GWENDOLYN LAVERNE TINKLIN**, Assistant Professor and Acting Head of Department of Foods and Nutrition; Assistant Food Economist, Agricultural Experiment Station (1943, 1953).  
B. S., M. S., Kansas State College.
- VONCEIL TODD**, Temporary Instructor in Family and Child Development (1954).  
B. A., William Penn College; M. A., Florida State University.
- CATHERINE TURNER**, Instructor in Institutional Management (1951).  
B. S., Winthrop College; M. S., Woman's College.
- MARGUERITE HARPER UMBERGER**, Temporary Instructor in Household Economics (1954).  
B. S., M. S., Kansas State College.
- FLORENCE HARRIS WALKER**, Instructor in Institutional Management (1928, 1951).  
B. S., M. S., Kansas State College.
- BESSIE BROOKS WEST**, Professor and Head of Department of Institutional Management (1928).  
A. B., M. A., University of California; M. S., Michigan State Normal College.
- BEULAH DOROTHEA WESTERMAN**, Professor of Foods and Nutrition; Food Economist, Agricultural Experiment Station (1941, 1947).  
B. S., University of Missouri; M. S., University of Chicago; Ph. D., University of Illinois.
- JENNIE WILLIAMS**, Professor of Family and Child Development (1932, 1947).  
B. S., M. S., Kansas State College; Graduate, University of Michigan School of Nursing.
- CAROLINE ANDERSON YOUNG**, Assistant Instructor in Household Economics (1954).  
Carnegie Institute of Technology; University of Iowa.
- MERNA BEATRICE ZEIGLER**, Associate Professor of Institutional Management (1939, 1947).  
B. S., M. S., Kansas State College.

## **SCHOOL OF VETERINARY MEDICINE**

- JAMES HENRY BURT**, Professor of Anatomy, Emeritus (1909, 1947).  
V. S., Ontario Veterinary College (Canada); D. V. M., Ohio State University.
- EMBERT HARVEY COLES, JR.**, Assistant Professor of Pathology (1953).  
D. V. M., Kansas State College; M. S., Iowa State College.
- JAMES HAWLEY COWAN**, Assistant Professor of Surgery and Medicine (1952).  
V. M. D., University of Pennsylvania.
- RALPH R. DYKSTRA**, Dean, Emeritus; Professor of Surgery (1911, 1948).  
D. V. M., Iowa State College.
- LAWRENCE EARLE EVANS**, Assistant Professor of Anatomy (1951, 1952).  
M. S., D. V. M., Kansas State College.
- DEAN SYDNEY FOLSE**, Associate Professor of Pathology; Associate Pathologist, Agricultural Experiment Station (1952).  
B. S., D. V. M., Texas Agricultural and Mechanical College; M. S., Kansas State College.
- EDWARD RAYMOND FRANK**, Professor of Surgery and Medicine (1926, 1935).  
B. S., M. S., D. V. M., Kansas State College.
- EDWIN JACOB FRICK**, Professor and Head of Department of Surgery and Medicine (1919, 1935).  
D. V. M., Cornell University.
- HOWARD EUGENE GILL**, Assistant Professor of Surgery and Medicine (1952).  
B. S., D. V. M., Kansas State College.

DENNIS DONALD GOETSCH, Assistant Professor of Physiology; Assistant Physiologist, Agricultural Experiment Station (1952, 1954).  
B. S., D. V. M., Kansas State College.

WILLIAM HAROLD HAY, Assistant Professor of Surgery and Medicine (1952, 1954).  
B. S., D. V. M., Kansas State College.

MERLIN LEMOYNE KAEBERLE, Temporary Instructor in Surgery and Medicine (1954).  
A. B., University of South Dakota; B. S., D. V. M., Colorado Agricultural and Mechanical College.

ALICE DAY KIMBALL, Instructor in Pathology, Emeritus; Assistant Pathologist, Agricultural Experiment Station (1934, 1947).  
B. S. Kansas State College.

CHARLES HOWARD KITSELMAN, Professor of Pathology; Pathologist, Agricultural Experiment Station (1919, 1933).  
V. M. D., University of Pennsylvania; M. S., Kansas State College.

ELDEN EMANUEL LEASURE, Dean; Professor of Physiology; Veterinarian, in charge, Agricultural Experiment Station (1926, 1948).  
D. V. M., M. S., Kansas State College.

JOHN WALLACE LUMB, Professor of Anatomy (1924, 1951).  
D. V. M., M. S., Kansas State College.

WILLIAM MAX MCLEOD, Professor and Head of Department of Anatomy (1919, 1944).  
D. V. M., Iowa State College.

JACOB EUGENE MOSIER, Professor of Surgery and Medicine (1945, 1954).  
D. V. M., M. S., Kansas State College.

FAYNE HIGGINS OBERST, Professor of Surgery and Medicine (1943, 1954).  
D. V. M., Kansas State College.

LEE MILES RODERICK, Professor of Pathology; Pathologist, Agricultural Experiment Station (1938).  
D. V. M., Ohio State University; B. S., M. S., North Dakota Agricultural College; Ph. D., University of Chicago.

EARL JOHN SPLITTER, Associate Professor of Pathology; Assistant Pathologist, Agricultural Experiment Station (1946, 1954).  
D. V. M., M. S., Kansas State College.

RICHARD ALLEN SPRING, Instructor in Surgery and Medicine (1954).  
D. V. M., Michigan State College.

MELVIN JOHN SWENSON, Associate Professor of Physiology; Associate Physiologist, Agricultural Experiment Station (1950, 1952).  
D. V. M., Kansas State College; M. S., Ph. D., Iowa State College.

MARVIN JOHN TWIEHAUS, Professor and Head of Department of Pathology; Pathologist, Agricultural Experiment Station (1937, 1950).  
D. V. M., M. S., Kansas State College.

GRAVERS K. L. UNDERBJERG, Professor and Head of Department of Physiology; Physiologist, Agricultural Experiment Station (1948).  
B. S., Royal Veterinary and Agricultural College (Copenhagen); D. V. M., Ph. D., Iowa State College.

JOHN LESLIE WEST, Professor of Pathology (1953).  
D. V. M., Kansas State College; M. S., Ph. D., University of Wisconsin.

## DIVISION OF EXTENSION

### Residence Staff

GERTRUDE EDNA ALLEN, Professor and Extension Specialist in Foods and Nutrition (1929, 1947).  
B. S., University of Minnesota; M. S., Kansas State College.

WILLIAM GERALD AMSTEIN, Professor of Horticulture and Head of Department of Agricultural Specialists (1929, 1952).  
B. S., Amherst College; M. S., Kansas State College.

HARRY CHARLES BAIRD, Professor of Extension Education and District Agent (1919, 1952).  
B. S., Kansas State College.

MAE BAIRD, Professor, Department Head and State Home Demonstration Leader (1954).  
B. S., University of Nebraska; M. A., Columbia University.

- CLARENCE EDWARD BARTLETT, Extension Economist in Farm Management (1937, 1947). Clay Center.  
B. S., University of Nebraska.
- ELLEN MARGARET BATCHELOR, Assistant Professor and Extension Specialist in Home Crafts (1917, 1953).  
B. S., Kansas State College.
- SHIRLEY MARGENE BESSEY, Instructor and Extension Specialist in Recreation (1952).  
B. S., Colby College.
- FRANK GEARHART BIEBERLY, Associate Professor and Extension Specialist of Agronomy (1941, 1949).  
B. S., M. S., Kansas State College.
- ADA GRACE BILLINGS, Professor of History and Government, Home Study (1921, 1946).  
B. S., M. S., Kansas State College.
- FRANK OTTO BLECHA, Professor of Extension Education and District Agent (1917, 1948).  
B. S., M. S., Kansas State College.
- ROBERT ARTHUR BOHANNON, Assistant Professor and Extension Specialist in Soil Testing (1951, 1953).  
B. S., Michigan State College; M. S., Kansas State College.
- EDWIN RALPH BONEWITZ, Assistant Professor and Extension Specialist in Dairy Husbandry (1943, 1949).  
B. S., Kansas State College.
- MARY ELSIE BORDER, Associate Professor of Junior Extension; Assistant State Club Leader (1927, 1944).  
B. S., Ohio State University; M. A., Columbia University; M. S., Cornell University.
- VIVIAN BAHR BRIGGS, Assistant Professor and Extension Specialist in Family Life (1946, 1951).  
B. S., University of Nebraska; M. S., Kansas State College.
- MARTHA ESTHER BRILL, Assistant Professor and Extension Specialist in Health (1946, 1948).  
B. S., Kansas State College; R. N., University of Kansas.
- GLENN MORTON BUSSET, Assistant Professor of Junior Extension and Assistant State Club Leader (1941, 1948).  
B. S., Kansas State College.
- MOODY DALE CANNON, Assistant Professor and Extension Agricultural Engineer (1953).  
B. S., Oklahoma Agricultural and Mechanical College; M. S., University of Missouri.
- EUGENE ARTHUR CLEAVINGER, Professor and Extension Specialist in Agronomy (1926, 1947).  
B. S., Kansas State College.
- JOHN HERBERT COOLIDGE, Professor of Agricultural Economics and Extension Economist in Farm Management (1926, 1949).  
B. S., M. S., Kansas State College.
- MIRIAM LENORE DEXTER, Assistant Professor of Technical Journalism and Assistant Extension Editor (1944, 1947).  
B. S., M. S., Kansas State College.
- ANNABELLE JEANETTE DICKINSON, Instructor in Extension Education and District Home Demonstration Agent (1940, 1953).  
B. S., Fort Hays Kansas State College.
- ISABEL NAOMI DODRILL, District Home Demonstration Agent (1941, 1954).  
B. A., Fort Hays Kansas State College; B. S., Kansas State College.
- CARL GEORGE ELLING, Professor and Extension Specialist in Animal Husbandry, Emeritus (1907, 1951).  
B. S., Kansas State College.
- VERA MAY ELLITHORPE, Associate Professor and Extension Specialist in Home Management (1939, 1947).  
B. S., M. S., Kansas State College.
- JOANNE EZZARD, Extension Specialist in Consumer Education (1954).  
B. S., Berea College (Kentucky); M. S., Kansas State College.
- JOHN MOSES FERGUSON, Professor and Head of Department of Engineering Extension (1937, 1945).  
B. S., Kansas State College.



- MARY GENEVIEVE FLETCHER, Associate Professor and Extension Specialist in Foods and Nutrition (1936, 1947).  
B. S., M. S., Kansas State College.
- RICHARD C. FRANKLIN, Assistant Professor, Home Study and Community Services (1954).  
A. B., Ohio Wesleyan; M. A., Ohio State University.
- LOUELLA NAN FRANKS, Instructor and Extension Specialist in Foods and Nutrition (1953).  
B. S., Drury College.
- HAROLD GREEN GALLAHER, Assistant Professor and Extension Specialist in Farm Forestry (1951).  
B. S., University of Missouri.
- DELL EDWARD GATES, Assistant Professor and Extension Specialist in Entomology (1948, 1950).  
B. S., M. S., Kansas State College.
- GEORGE ALBERT GEMMELL, Professor of Education, Home Study, Emeritus (1918, 1952).  
B. S., Kansas State Teachers College (Pittsburg); B. S., M. S., Kansas State College; Ph. D., University of Missouri.
- GEORGE WILLIS GERBER, Assistant Professor and Extension Economist in Dairy Marketing (1936, 1949).  
B. S., Kansas State College.
- OTIS BENTON GLOVER, Associate Professor of Extension Education and District Supervisor (1929, 1947).  
B. S., Kansas State College.
- PAUL WILSON GRIFFITH, Associate Dean and Associate Director (1935, 1950).  
B. S., M. S., Kansas State College.
- MARGARET BERYL GUY, Instructor and Extension Specialist in Clothing and Textiles (1951, 1953).  
B. S., Kansas State College.
- WILLIAM DONALD GUY, Extension Economist in Farm Management (1951, 1953). Chanute.  
B. S., Kansas State College.
- FRANK ALEXANDER HAGANS, Associate Professor of Extension Education and District Supervisor (1930, 1951).  
B. S., Kansas State College.
- CHARLES ADRIAN HAGEMAN, Extension Economist in Farm Management (1936, 1953). Hutchinson.  
B. S., Kansas State College.
- GEORGE CHRIST HALAZON, Instructor and Extension Specialist in Predator and Pest Control (1954).  
B. S., M. S., University of Wisconsin.
- JOHN BONAR HANNA, Assistant Professor of Junior Extension; Assistant State Club Leader (1934, 1947).  
B. S., Kansas State College.
- HAROLD BYRON HARPER, Assistant Professor and Extension Soil Conservationist (1932, 1946).  
B. S., Kansas State College.
- H. MARIE HENDERSHOT, District Home Demonstration Agent (1944, 1955).  
B. S., Kansas State College.
- RUSSELL LOUIS HERPICH, Assistant Professor and Extension Irrigation Engineer (1951, 1953).  
B. S., M. S., Kansas State College.
- ARTHUR LAWRENCE HJORT, Administrative Assistant (1947, 1948).  
B. S., Kansas State College.
- RAY MITCHELL HOSS, Assistant Professor of Agricultural Economics and Extension Economist in Marketing (1935, 1946).  
B. S., Kansas State College.
- CHARLES YETMAN FREY HOYT, Assistant Professor, 4-H State Club Leader (1954).  
B. S., Idaho State College; M. S., State College of Washington.
- CLARENCE ROY JACCARD, Professor of Agricultural Economics and Extension Economist in Agricultural Planning (1922, 1947).  
B. S., Kansas State College.

- MARION EVERT JACKSON**, Assistant Professor and Extension Specialist in Poultry Husbandry and Egg Marketing (1945).  
B. S., Purdue University.
- JOHN HAROLD JOHNSON**, Professor of Junior Extension and Head of Department of Boys' and Girls' Club Work; State Club Leader (1927, 1947).  
B. S., Kansas State College; M. S., George Washington University.
- NAOMI MARIE JOHNSON**, Associate Professor and Extension Specialist in Clothing and Textiles (1938, 1950).  
B. S., M. S., Kansas State College.
- CLAUDE LEWIS KING**, Assistant Professor and Extension Specialist in Plant Pathology (1934, 1946).  
B. S., Kansas State College.
- RICHARD FRANKLIN KING, JR.**, Assistant Professor and Extension Specialist in Dairy Husbandry (1938, 1953).  
B. S., Kansas State College.
- MARGARET A. KOENIG**, District Home Demonstration Agent (1929, 1931) (1955).  
B. S., Kansas State College.
- ARTHUR S. KRIVAL**, Instructor in English, Home Study and Community Services (1954).  
B. A., M. A., University of Missouri.
- REUBEN CARL LIND**, Professor of Agronomy and Extension Specialist in Soil Conservation (1933, 1950).  
B. S., Kansas State College.
- JAMES WALTON LINN**, Professor and Extension Specialist in Dairy Husbandry, Emeritus (1924, 1944).  
B. S., Kansas State College.
- LISLE LESLIE LONGSDORF**, Professor of Technical Journalism and Head of Department of Extension Information; Extension Editor (1927, 1946).  
B. S., M. S., University of Wisconsin.
- HAROLD CLYDE LOVE**, Assistant Professor of Agricultural Economics and Extension Economist in Farm Management (1935, 1948).  
B. S., M. S., Kansas State College.
- VERL EPHRAIM MCADAMS**, Assistant Professor and Extension Specialist in Animal Husbandry (1934, 1952).  
B. S., Kansas State College.
- EVERETT LYNN MCCLELLAND**, Extension Economist in Farm Management (1936, 1954). Colby.  
B. S., Kansas State College.
- VELMA MAYSLER MCGAUGH**, Associate Professor of Junior Extension; Assistant State Club Leader (1943, 1951).  
B. S., Kansas State College.
- RAYMOND DWIGHT MCKINNEY**, Assistant Professor, Extension Economist in Farm Management (1954).  
B. S., Nebraska University; M. Ph., Harvard University.
- HERBERT HENRY MACCOBY**, Associate Professor of Sociology, Home Study and Community Services (1950, 1953).  
A. B., Western Reserve University; M. A., Columbia University.
- EARL THOMAS MEANS**, Extension Economist in Farm Management (1935, 1945). Everest.  
B. S., Kansas State College.
- ELLA MABLE MEYER**, Assistant Professor of Extension Education and District Home Demonstration Agent (1925, 1940).  
B. S., Kansas State College.
- MAX BYRON MILLER**, Assistant Professor of Agriculture, Home Study (1946, 1951).  
B. S., M. S., Kansas State College.
- LUCILLE ERNA MORDY**, Instructor in Education, Home Study (1947, 1948).  
B. S., Kansas State Teachers College (Emporia); M. S., Kansas State College.
- WENDELL AUSTIN MOYER**, Assistant Professor and Extension Specialist in Animal Husbandry (1941, 1952).  
B. S., Kansas State College.
- GLADYS MYERS**, Associate Professor and Extension Specialist in Home Management (1930, 1947).  
B. S., Kansas State College; M. S., Cornell University.

- LEONARD FAY NEFF, Associate Professor of Extension Education and District Supervisor (1924, 1947).  
B. S., Purdue University.
- DEVERE VINCENT NELSON, Instructor and Assistant Director, Radio Station KSAC (1954).  
B. S., Kansas State College.
- MELVIN WILLIAM OSBURN, Associate Professor and Extension Specialist in Veterinary Medicine (1952).  
D. V. M., Iowa State College.
- CHARLES ELWOOD PARKS, Assistant Professor and Extension Specialist in Landscape Architecture (1949, 1950).  
B. S., University of Illinois.
- FLOYD HOLMES PATTISON, Professor of Mechanical Engineering, Home Study (1919, 1927).  
B. S., Kansas State College; M. S., Massachusetts Institute of Technology.
- ROGER E. REGNIER, Assistant Professor of Junior Extension and Assistant State Club Leader (1934, 1947).  
B. S., Kansas State College.
- CLARENCE RICHARD ROBERTS, Instructor and Extension Specialist in Horticulture (1954).  
B. S., M. S., Oklahoma Agricultural and Mechanical College.
- RAYMOND WAYNE ROBINSON, Assistant Professor, Extension Economist in Marketing Information (1954).  
B. S., M. S., Oklahoma Agricultural and Mechanical College.
- MARTINE AUGUSTA SEATON, Professor and Extension Specialist in Poultry Husbandry (1928, 1946).  
B. S., University of Missouri.
- WALTER ELSWORTH SELBY, Assistant Professor of Engineering Extension and Extension Agricultural Engineer (1944, 1947).  
B. S., Kansas State College.
- ETHEL WATSON SELF, Assistant Professor and Extension Specialist in Home Management (1929, 1943).  
B. S., M. S., Kansas State College.
- HAROLD GLEASON SHANKLAND, Associate Professor of Technical Journalism and Associate Extension Editor (1943, 1948).  
A. B., College of Emporia.
- JOHN FREDERICK SMERCHEK, Extension Economist in Farm Management (1942, 1950). Greensburg.  
B. S., Kansas State College.
- GEORGIANA HOPE SMURTHWAITE, Professor of Extension Education and Extension Specialist, Home Economics Program Development (1924, 1954).  
B. S., Utah State College; M. S., Kansas State College.
- WINONA MCNEIGHT STARKEY, Instructor and Extension Specialist in Home Furnishings (1944, 1952).  
B. S., M. S., Kansas State College.
- HAROLD EARL STOVER, Professor of Engineering Extension and Extension Agricultural Engineer (1936, 1954).  
B. S., Kansas State College.
- LOT FORMAN TAYLOR, Professor and Extension Specialist in Animal Husbandry (1935, 1953).  
B. S., M. S., Kansas State College.
- EARL HICKS TEAGARDEN, Professor of Extension Education and District Agent (1929, 1952).  
B. S., Kansas State College.
- MARJORIE ANN TENNANT, Instructor in Technical Journalism and Assistant Extension Editor (1947, 1952).  
B. S., Kansas State College.
- KENNETH EUGENE THOMAS, Assistant Professor and Director, Radio Station KSAC (1951, 1954).  
A. B., Southwestern College; M. S., Kansas State College.
- CARL TJERANDSEN, Professor and Director of General Extension.  
B. A., State College of Washington; M. A., University of Washington.



- MARY RUTH VANSKIKE, Assistant Professor of Extension Education and District Home Demonstration Agent (1943, 1954).  
B. S., Kansas State College; M. S., University of Maryland.
- ROMAN J. VERHAALLEN, Associate Professor, Home Study and Community Services (1954).  
B. A., M. A., Ph. D., Wyoming University.
- EUGENE DECATUR WARNER, Associate Professor of Technical Journalism and Associate Extension Editor (1935, 1947).  
B. S., Kansas State College.
- LEO THEODORE WENDLING, Assistant Professor of Engineering Extension and Extension Agricultural Engineer (1947, 1949).  
B. S., Kansas State College.
- NORMAN VINCENT WHITEHAIR, Associate Professor of Agricultural Economics and Extension Economist in Grain Marketing (1946, 1954).  
B. S., Kansas State College.
- MARY CHRISTINE WIGGINS, Associate Professor and Extension Specialist in Clothing and Textiles (1930, 1947).  
B. S., Kansas State College; M. S., Columbia University.
- LOUIS COLEMAN WILLIAMS, Dean and Director (1915, 1947).  
B. S., Kansas State College.
- LUTHER EARL WILLOUGHBY, Professor and Extension Specialist in Agronomy (1918, 1944).  
B. S., Kansas State College.

### County Agricultural Agents

- JOHN ORLO ALLMAN, JR., Stanton County (1949, 1951). Johnson.
- LAWRENCE PAUL ANDRA, Stevens County (1954). Hugoton.
- JOE W. ARMSTRONG, Woodson County (1954). Yates Center.
- CHARLES JACK BAIRD, Chautauqua County (1953, 1954). Sedan.
- EVANS EUGENE BANBURY, Sherman County (1940). Goodland.
- W. H. BARKER, Cherokee County (1950). Columbus.
- JOHN WINFIELD BARTON, Cowley County (1950, 1951). Winfield.
- FREEMAN E. BIERY, Jewell County (1953). Mankato.
- BENNIE BIRD, Clark County (1950). Ashland.
- ELMER WARFORD BLANKENHAGEN, Riley County (1950, 1952). Manhattan.
- WILLIS LEE BLUME, Haskell County (1948). Sublette.
- LEE JUSTIN BREWER, Chase County (1936, 1952). Cottonwood Falls.
- ARLO ALLEN BROWN, Stafford County (1942, 1944). St. John.
- DONALD ALBERT BROWN, Franklin County (1950, 1951). Ottawa.
- HERBERT WILLIAM BULK, Nemaha County (1949, 1952). Seneca.
- ELGIN R. BUTTON, McPherson County (1943, 1950). McPherson.
- HAL DEAN BYARLAY, Lincoln County (1953). Lincoln.
- WALTER W. CAMPBELL, Osage County (1943). Lyndon.
- KENNETH DALE CARSON, Bourbon County (1953). Fort Scott.
- CHARLES L. CASEBOLT, Osborne County (1954). Osborne.
- MONTE CHARLES CLARK, Kiowa County (1950). Greensburg.
- ROGER KENNETH COLBY, Cloud County (1948, 1952). Concordia.
- LOUIS WILTON COOPER, Ottawa County (1945, 1947). Minneapolis.
- LAWRENCE JOSEPH COX, Mitchell County (1954). Beloit.
- MANFORD L. COX, Chase County (1945, 1954). Cottonwood Falls.
- VERNON S. CRIPPEN, Seward County (1920, 1947). Liberal.
- JOHN FREDERICK DEMOTT, Jackson County (1953). Holton.
- ORVILLE FREDERICK DENTON, Woodson County (1949). Yates Center.
- RICHARD I. DEYOE, Finney County (1954). Garden City.
- DARRELL DEAN DICKEN, Scott County (1942, 1953). Scott City.
- HARRY G. DUCKERS, JR., Wyandotte County (1943, 1948). Kansas City.

GEORGE RICHARD DUNN, Edwards County (1949). Kinsley.  
DALE H. EDELBLUTE, Harvey County (1947, 1952). Newton.  
KERMIT VERNON ENGLE, Ellsworth County (1936, 1946). Ellsworth.  
RAY WADE ETHERIDGE, Greenwood County (1954). Eureka.  
DONALD LLOYD FLENTIE, Leavenworth County (1952). Leavenworth.  
LESLIE P. FRAZIER, Rice County (1944, 1953). Lyons.  
HOBART W. FREDERICK, Reno County (1941, 1953). Hutchinson.  
RAYMOND GLENN FRYE, Sumner County (1943, 1953). Wellington.  
JEWELL OLIVER GEBHART, Washington County (1945, 1954). Washington.  
PAUL GILPIN, Smith County (1946). Smith Center.  
HARVEY E. GOERTZ, Brown County (1937, 1950). Hiawatha.  
LAURENZ S. GREENE, Phillips County (1952, 1953). Phillipsburg.  
LESTER EDWARD GRIFFITH, Wilson County (1949, 1950). Fredonia.  
OTIS RAY GRIGGS, Reno County (1949, 1954). Hutchinson.  
HENRY PAUL GRONWOLLER, Decatur County (1952). Oberlin.  
PAUL B. GWIN, Geary County (1921). Junction City.  
CHARLES TOMAS HALL, Johnson County (1934, 1939). Olathe.  
ALFRED EUGENE HARRIS, Meade County (1938, 1940). Meade.  
WALLACE WAYNE HARRIS, Johnson County (1954). Olathe.  
EDWIN HEDSTROM, Marshall County (1935, 1951). Marysville.  
ROGER LYMAN HENDERSHOT, Harper County (1946, 1951). Anthony.  
REX LEON HENRY, Clay County (1952). Clay Center.  
CLARENCE ATHEL HOLLINGSWORTH, Greenwood County (1937, 1953). Eureka.  
WILLIAM ALLEN HONEYMAN, Lane County (1951). Dighton.  
CHARLES MORITZ HUND, Ellis County (1954). Hays.  
CLARENCE IMEL, Kingman County (1950). Kingman.  
DONALD WALTER INGLE, Sedgwick County (1930, 1947). Wichita.  
ARTHUR OTTO JACOBS, JR., Republic County (1945, 1953). Belleville.  
KENNETH RALPH JAMESON, Comanche County (1953, 1954). Coldwater.  
RICHARD LOUIS JEPSON, Sheridan County (1953). Hoxie.  
LEONARD BEN JOHNSON, JR., Rush County (1950). La Crosse.  
MORRIS LYLE JOHNSON, Mitchell County (1954). Beloit.  
RUSSELL KLOTZ, Labette County (1943, 1950). Altamont.  
WILBUR S. KRAISINGER, Pratt County (1947, 1950). Pratt.  
THERON C. KREHBIEL, Sumner County (1954). Wellington.  
RICHARD S. KUBIK, Thomas County (1949). Colby.  
MERLIN ELMER LINE, Kearny County (1946, 1949). Lakin.  
MARVIN CARL ANDREW LUNDQUIST, Barton County (1954). Great Bend.  
WALTER DEAN MCKEE, Morton County (1950, 1954). Elkhart.  
BRUCE EDWARD McLAURY, Miami County (1950, 1953). Paola.  
GERALD ORESTES McMASTER, Rooks County (1951). Stockton.  
KENNETH LEROY McREYNOLDS, Clay County (1949, 1954). Clay Center.  
ALVIN EDWARD MALEY, Morris County (1953). Council Grove.  
ALVIS MANIS, JR., Rice County (1954). Lyons.  
E. CLIFFORD MANRY, Pawnee County (1940, 1947). Larned.  
DAROLD DEAN MARLOW, Wabaunsee County (1950). Alma.  
JOHN VIRGIL MAXWELL, Elk County (1951). Howard.  
FRANKLIN XAVERIUS MILLER, Ness County (1947, 1948). Ness City.  
MAHLON C. MORLEY, Neosho County (1954). Erie.  
DOUGLAS HAROLD MORRIS, Marion County (1954). Marion.  
WESLEY GALE MULLEN, Russell County (1950, 1952). Russell.

LEE EDWARD NELSON, Norton County (1954). Norton.  
 KENNETH DALE NEWELL, Barber County (1952, 1953). Medicine Lodge.  
 OSCAR WOODROW NORBY, Finney County (1942, 1952). Garden City.  
 ROBERT FRED NUTTLEMAN, Montgomery County (1941, 1944). Independence.  
 BRYCE ORR, Coffey County (1953). Burlington.  
 CALVIN COOLIDGE ORR, Pottawatomie County (1950). Westmoreland.  
 GENE OWEN OTT, Graham County (1953). Hill City.  
 FRANK L. OVERLEY, Brown County (1954). Hiawatha.  
 IRL WALLACE PARKER, JR., Linn County (1953). Mound City.  
 RALPH STANLEY PARSONS, Lyon County (1952). Emporia.  
 VICTOR EUGENE PAYER, Butler County (1939, 1943). El Dorado.  
 CHARLES WILLIAM POTUCEK, JR., Greeley County (1953). Tribune.  
 LEON G. RANDOLPH, Sedgwick County (1949, 1951). Wichita.  
 ROBERT OTT RETHORST, Pawnee County (1954). Larned.  
 CLIFTON ALLAN RISINGER, Anderson County (1939, 1953). Garnett.  
 BRACE DONALD ROWLEY, Saline County (1941, 1952). Salina.  
 JOHN RALPH SCHLENDER, Cheyenne County (1950, 1951). St. Francis.  
 JOSEPH LYMAN SHAWCROFT, Logan County (1951). Oakley.  
 NORMAN R. SHEETS, Wallace County (1951). Sharon Springs.  
 GEORGE W. SIDWELL, Trego County (1919, 1952). Wakeeney.  
 DEAL D. SIX, Douglas County (1935). Lawrence.  
 JOHNNY E. SLOUP, Marion County (1948, 1952). Marion.  
 BEVERLY DAVID STAGG, Norton County (1946). Norton.  
 FRANCIS E. STAMBAUGH, Ness County (1954). Ness City.  
 NELSON E. STROUD, Jefferson County (1952). Oskaloosa.  
 JAMES W. STURDEVANT, Crawford County (1948, 1952). Girard.  
 WARREN C. TEEL, Shawnee County (1939, 1953). Topeka.  
 MILTON N. THOMAS, Gray County (1949, 1952). Cimarron.  
 WILTON BRADLEY THOMAS, Dickinson County (1946, 1952). Abilene.  
 WAYNE MERRILL THOMPSON, Hamilton County (1952). Syracuse.  
 DANNY DALE TRAYER, Hodgeman County (1950, 1951). Jetmore.  
 WAYNE HOWARD TYLER, Johnson (1954). Olathe.  
 KENNETH EMIL URBAN, Dickinson County (1954). Abilene.  
 CLARENCE WILLIAM VETTER, Atchison County (1943). Effingham.  
 MARSHALL FRANCIS WALKER, JR., Grant County (1949, 1951). Ulysses.  
 JAY ALFRED WEST, Doniphan County (1952). Troy.  
 HERMAN W. WESTMEYER, Ford County (1936, 1947). Dodge City.  
 WILBUR WALDO WHITE, Gove County (1942, 1954). Gove.  
 JACK H. WILSON, Wichita County (1946, 1950). Leoti.  
 PAUL HENRY WILSON, Barton County (1946, 1947). Great Bend.

#### **County Home Demonstration Agents**

CLEDA PACE ADAMS, Ellis County (1953). Hays.  
 MAHALA MARY ARGANBRIGHT, Norton County (1949, 1951). Norton.  
 MARGARET ELIZABETH ARWOOD, Smith County (1954). Smith Center.  
 FRANCES NORIENE BENDER, Johnson County (1954). Olathe.  
 ROSELLA MARGARETTA BERRY, McPherson County (1950, 1953). McPherson.  
 RUTH HELEN BISHOP, Nemaha County (1947). Seneca.  
 CORA ALICE BLACKWILL, Kearny County (1948, 1950). Lakin.  
 BLANCHE BROOKS, Clay County (1941, 1951). Clay Center.  
 GWYNDOLYN J. BRUNKHORST, Wabaunsee County (1954). Alma.



BARBARA JEAN BUFFINGTON, Anderson County (1954). Garnett.  
BILLIE JEAN BURNETTE, Riley County (1954). Manhattan.  
JEAN K. CARLSON, Lyon County (1950, 1954). Emporia.  
ANNA GRACE CAUGHORN, Coffey County (1944, 1952). Burlington.  
ROSEMARY ALTHEA CRIST, Seward County (1950). Liberal.  
ANITA MAE DALQUIST, Edwards County (1954). Kinsley.  
PHYLLIS DUELL, Cloud County (1954). Concordia.  
JOAN VERLENE ENGLE, Marion County (1954). Marion.  
MARY OLIVE EVANS, Lincoln County (1953, 1954). Lincoln.  
PAULINE W. FERRELL, Geary County (1952, 1954). Junction City.  
NEOSHO LOUISE FREDENBERG, Morris County (1953). Council Grove.  
ALMA H. GILES, Linn County (1949, 1954). Mound City.  
NELLIE LINDSAY GLENN, Osage County (1941, 1954). Lyndon.  
PAULA ROSE GLOVER, Douglas County (1949, 1952). Lawrence.  
CHRISTINA MAE GROTH, Grant County (1954). Ulysses.  
MAY BETH HERNDON, Rush County (1953). La Crosse.  
MARIAN V. HESTER, Barton County (1953). Great Bend.  
VIRGINIA SUE HIGGINS, Marion County (1953). Marion.  
DEBORAH HOBBLE, Ford County (1946, 1947). Dodge City.  
MARY DEAN HOLLE, Doniphan County (1953). Troy.  
ARLISS EVELYN HONSTEAD, Jackson County (1946, 1949). Holton.  
KAY BERNBECK HORCHEM, Lane County (1954). Dighton.  
GERTRUDE HOVE, Montgomery County (1949). Independence.  
MARY NADINE HOWARD, Rooks County (1952, 1953). Stockton.  
DOROTHY LOUISE HOYT, Haskell County (1952, 1953). Sublette.  
RUTH K. HUFF, Pawnee County (1931, 1952). Larned.  
DOROTHY MAXINE JOHNSON, Wichita County (1954). Leoti.  
HELEN ESTHER JOHNSON, Miami County (1954). Paola.  
JUANITA BILLINGTON JOHNSON, Crawford County (1948) Girard.  
MARY MILDRED KALB, Osborne County (1954). Osborne.  
CHRISTINE KIESEL, Pratt County (1953, 1954). Pratt.  
BEVERLY LOUISE KINDLER, Decatur County (1951, 1952). Oberlin.  
PATRICIA GALLAGHER KINEN, Cheyenne County (1950, 1951). St. Francis.  
ALDEAN LAUREE KNOCH, Russell County (1954). Russell.  
EMALYN ANN LARSON, Stanton County (1954). Johnson.  
ELEANORA LEIKAM, Gray County (1954). Cimarron.  
BETTY GRACE MCBEE, Atchison County (1952, 1954). Effingham.  
MILDRED MARIE MCCALVEY, Ellsworth County (1950, 1953). Ellsworth.  
BARBARA JEANNE MCCANDLESS, Meade County (1952, 1953). Meade.  
PATRICIA JEAN MALLUM, Pottawatomie County (1953). Westmoreland.  
EVA PEARL MANSFIELD, Leavenworth County (1953). Leavenworth.  
MARGARET NETTLETON MAUK, Salina County (1944, 1947). Salina.  
MARY E. MEEK, Woodson County (1953). Yates Center.  
ALICE LOUISE MILLER, Rice County (1953). Lyons.  
DIXIE IRENE MOLZ, Stafford County (1953). St. John.  
JUNE RYBURN MONTGOMERY, Dickinson County (1954). Abilene.  
DOROTHY LOUISE NEEDHAM, Republic County (1953). Belleville.  
ERMA M. NEELLY, Ness County (1950). Ness City.  
RUTH A. OWENS, Seward County (1954, 1955). Liberal.  
RACHEL FEATHERGILL PALMER, Sedgwick County (1941, 1954). Wichita.  
INEZ PASS, Ottawa County (1947, 1949). Minneapolis.

THELMA E. PIERCE, Cowley County (1951). Winfield.  
 ARRIA NEAL PTACEK, Sheridan County (1954). Hoxie.  
 MARGARET ANN RAMSDALE, Barber County (1954). Medicine Lodge.  
 IRLENE MARIE RAWLINGS, Allen County (1954). Iola.  
 KATHERINE ELIZABETH REECE, Chase County (1954). Cottonwood Falls.  
 VELDA FRANCES RANKIN, Sumner County (1952). Wellington.  
 CLAYRE DONNELLY RATZLAFF, Cherokee County (1948). Columbus.  
 NANCY LEE RICHARDSON, Scott County (1954). Scott City.  
 PEARL S. ROOTS, Graham County (1950). Hill City.  
 EILEEN M. RYAN, Harvey County (1948, 1950). Newton.  
 MARY JOAN SAGE, Phillips County (1953). Phillipsburg.  
 MARY ANN SCHMITZ, Chautauqua County (1954, 1955). Sedan.  
 DORTHEA ANN SCHROEDER, Wyandotte County (1942, 1950). Kansas City.  
 WANDA JUNE SCOVEL, Hodgeman County (1953). Jetmore.  
 JOAN J. SEACAT, Clark County (1952). Ashland.  
 LUCILLE MAY SHAFER, Butler County (1949, 1951). El Dorado.  
 DOROTHY D. SILLERS, Hamilton County (1950, 1953). Fredonia.  
 MABEL RACHEL SMITH, Rice County (1929, 1953). Lyons.  
 VIRGINIA MARGARET SMITH, Anderson County (1951, 1952). Garnett.  
 KATHRYN SUGHRUE, Finney County (1937, 1954). Garden City.  
 DOROTHY ANNA VANSKIKE, Kingman County (1952, 1953). Kingman.  
 FAYE EVELYN VICE, Labette County (1946, 1947). Altamont.  
 MILDRED LUCILLE WALKER, Jewell County (1952). Mankato.  
 MARIAN JUNE WALTERS, Kiowa County (1950, 1953). Greensburg.  
 MAE K. WEAVER, Barton County (1952). Great Bend.  
 KATHERYN FAIRES WEINHOLD, Washington County (1950). Washington.  
 RUTH IRENE WELLS, Jefferson County (1952, 1954). Oskaloosa.  
 MARY EILEEN WENDLAND, Greenwood County (1953). Eureka.  
 LUCILLE ROSENBERGER WHIPPS, Shawnee County (1943, 1955). Topeka.  
 ELIZABETH WONER, Harper County (1948, 1950). Anthony.  
 MARY D. ZIEGLER, Shawnee County (1928, 1930). Topeka.

#### **County Club Agents**

DALE J. APEL, Saline County (1953). Salina.  
 JOHN HAYDEN BARNES, Brown County (1953). Hiawatha.  
 ROBERT FRANKLIN BARNES, Russell County (1953). Russell.  
 WILLIAM HENRY BORST, Osborne County (1953). Osborne.  
 JAMES R. CHILDERS, Reno County (1944, 1954). Hutchinson.  
 BILLY DEAN COLLINS, Nemaha County (1954). Seneca.  
 HARLAND G. COPELAND, Ford County (1954). Dodge City.  
 TALMADGE LONDON ENGLS, Neosho County (1950). Erie.  
 CECIL LAVERNE EYESTONE, Montgomery County (1946). Independence.  
 MERLE LINTON EYESTONE, Shawnee County (1947). Topeka.  
 JOHN JOSEPH FEIGHT, JR., Cowley County (1952, 1953). Winfield.  
 KENNETH WILLIAM FROMM, McPherson County (1953). McPherson.  
 ALBERT HAROLD GOTTSCH, Jefferson County (1954). Oskaloosa.  
 LOREN FRANCIS GOYEN, Riley County (1951, 1954). Manhattan.  
 EVELYN HABERMAN, Sedgwick County (1949, 1953). Wichita.  
 EARL LEMAN HART, Clay County (1947, 1954). Clay Center.  
 ROGER HECHT, Miami County (1952). Paola.  
 RICHARD ALAN JAMESON, Franklin County (1951, 1952). Ottawa.

J. WILLIS JORDAN, Labette County (1953). Altamont.  
DONALD LEE LAWRENCE, Lyon County (1949). Emporia.  
DONALD GLEN LOYD, Crawford County (1948, 1949). Girard.  
DONALD DEAN MCCALLUM, Greenwood County (1953). Eureka.  
KENNETH EUGENE MCGINNESS, Johnson County (1954). Olathe.  
RICHARD CYRUS MASON, Kingman County (1950, 1951). Kingman.  
THOMAS R. MAXWELL, Allen County (1954). Iola.  
PAUL HENRY MAYGINNES, Wyandotte County (1951). Kansas City.  
JOHN EDWARD MEANS, Atchison County (1953). Effingham.  
ARMIN OTTO SAMUELSON, Harvey County (1946, 1952). Newton.  
JOHN HORATIO SCHESSER, Leavenworth County (1953). Leavenworth.  
FORREST LEROY SMITH, Barton County (1950, 1952). Great Bend.  
WILLIAM RICHARD SWEARINGEN, Pratt County (1952). Pratt.  
WILLIAM VINCENT VANSKIKE, Finney County (1950, 1954). Garden City.  
KENNETH EARL VISSER, Marshall County (1952). Marysville.  
EDWARD DALE WATSON, Rice County (1943, 1952). Lyons.  
LOWELL DELMER WICKHAM, Butler County (1950). El Dorado.  
WILLIAM GRANT WILLIS, Harper County (1950, 1954). Anthony.  
RICHARD WAYNE WINGER, Sumner County (1948, 1953). Wellington.  
LLOYD LESLIE WISEMAN, Marion County (1947, 1950). Marion.  
THURMAN STERLING WREN, Cherokee County (1949). Columbus.  
GARNETT ALLAN ZIMMERLY, Republic County (1953). Belleville.



## Record of Enrollment and Degrees Conferred, 1863-1954

YEAR	Summer school .....	Housekeepers' short course .....	Dairy Mfg. short course .....	Dairy short course ..	Farmers' short course .....	Apprentice .....	Special .....	Preparatory .....	Subfreshman .....	Vocational school ..	Freshman .....	Sophomore .....	Junior .....	Senior .....	Graduate .....	Counted twice .....	Net total .....	Graduated .....	Advanced degrees ..
1863-'64								92			14						106		
1864-'65								91			14	8					114		
1865-'66								99			21	3	5				127		
1866-'67								118			11	7	1	5			142	5	
1867-'68								103			6	5	1				115		1
1868-'69								137			10	10	2		1		160		
1869-'70								119			10	12	1				142		
1870-'71								118			13	5	4	5			145	5	5
1871-'72								129			20	11	3	5	2	2	168	3	1
1872-'73																	173	2	1
1873-'74								137			24	14	3	6			184	5	
1874-'75								103			26	10	2	2			143	2	1
1875-'76																	238	5	
1876-'77																	232	9	1
1877-'78								75			42	23	5	5			152	4	
1878-'79								1			89	89	16	12			214	9	2
1879-'80								1			166	61	35	11	2		276	7	2
1880-'81								6			178	48	24	9	2		267	8	
1881-'82								5			227	50	19	11			312	9	2
1882-'83								4			241	60	30	12			347	12	3
1883-'84								2			255	92	26	18	2		395	17	
1884-'85								2			271	71	36	16	5		401	14	1
1885-'86								1			273	91	35	24	4		428	21	2
1886-'87											303	100	44	24	10		481	21	5
1887-'88											305	92	46	27	2		472	22	1
1888-'89											266	103	41	28	7		445	25	1
1889-'90								1			307	105	63	28	10		514	27	2
1890-'91											343	135	50	53	12		593	52	2
1891-'92											336	139	62	37	10		584	35	
1892-'93											339	110	66	43	20		587	39	9
1893-'94											275	141	72	42	25		555	39	6
1894-'95								5			276	108	89	64	39		572	57	3
1895-'96								3			353	121	67	71	32		647	66	5
1896-'97								6			321	163	69	62	46		734	55	8
1897-'98				6		9	15	77			316	174	77	82	57	10	803	69	10
1898-'99				26		35	40	110			306	177	92	65	40	21	871	53	10
1899-1900		24		57	47	50	32	162			376	163	109	69	27	22	1094	58	3
1900-'01		47		72	109	79	23	318			348	183	80	74	40	52	1321	60	9
1901-'02		41		66	125	87	19	298			396	206	120	65	32	59	1396	52	3
1902-'03		63		38	123	78	36	342			471	229	141	86	24	57	1574	55	
1903-'04	17	51		16	122	72	33	443			403	206	161	114	20	36	1605	102	1
1904-'05	15	88		24	99	12	30	500			289	198	122	117	26	43	1462	107	2
1905-'06	18	92		28	118		46	598			373	214	145	110	30	64	1690	96	4
1906-'07	18	134		23	179		48	144	511		411	269	140	133	24	88	1937	119	5
1907-'08	29	188		26	173		42	134	528		450	357	202	148	26	82	2192	116	4
1908-'09	25	168		18	197		42	134	521		491	381	243	171	28	86	2308	139	12
1909-'10	22	152	4	111	124		87	89	453		456	417	286	170	26	70	2305	144	2
1910-'11	31	160	9	26	285		107		364		533	412	288	248	34	59	2407	205	2
1911-'12	94	160	14		280		85		580		337	461	288	261	44	81	2523	230	6
1912-'13	282	175	11		289		129		654		444	432	355	268	55	166	2928	230	4
1913-'14	370	149	12		223		112			658	516	431	324	327	64	159	3027	283	8
1914-'15	472	127	18		199	98	120			560	575	368	383	321	48	200	3089	223	6
1915-'16	536	85	17		207	188	175			484	605	454	305	401	76	219	3314	341	18
1916-'17	586	103	14		228	191	172			422	693	471	378	282	68	279	3339	197	13
1917-'18	481	84	8		119	135	138			231	483	349	294	238	36	190	2406	216	17
1918-'19	519	25	5		160	400	199			216	810	322	254	201	34	144	2991	167	7
1919-'20	415	57	3	6	117	362	271			224	894	400	297	273	44	167	3376	260	11
1920-'21	604	30	10		96	278	270			280	878	602	318	273	42	294	3395	249	14
1921-'22	820	19	10		59	173	221			297	931	628	422	296	125	813	3560	272	28
1922-'23	884	19	8		55	83	163	12		220	1004	656	460	401	118	457	3626	341	31
1923-'24	978	12	7		43	57	161	3		167	1160	657	458	413	171	475	3812	342	43
1924-'25	1120	14	14		55	54	139	3		47	1391	679	467	347	185	486	4031	335	53
1925-'26	947	12	11		41	29	89				1494	725	512	344	182	384	4019	341	51
1926-'27	959		18		52		71		19		1311	854	509	411	179	300	4083	357	77
1927-'28	966		20		57		88		7		1039	819	584	500	167	418	3878	428	70
1928-'29	920		18		51		57		9		1084	743	584	537	197	321	3879	461	84
1929-'30	902		13		59		70		9		1128	787	581	554	432	548	3987	469	91

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## RECORD OF ENROLLMENT AND DEGREES CONFERRED, 1863-1954—CONCLUDED

YEAR	Summer school .....	Housekeepers' short course .....	Dairy Mfg. short course .....	Dairy short course ..	Farmers' short course .....	Apprentice .....	Special .....	Preparatory .....	Subfreshman .....	Vocational school ..	Freshman .....	Sophomore .....	Junior .....	Senior .....	Graduate .....	Counted twice .....	Net total .....	Graduated .....	Advanced degrees ..
1930-'31.....	995		24		52		50		7		1077	790	605	528	506	589	4045	424	91
1931-'32.....	1059		12		29		54				933	752	633	572	572	688	3928	486	119
1932-'33.....	995						72				666	596	552	590	518	630	3359	523	118
1933-'34.....	655						61				707	558	520	522	327	422	2928	423	70
1934-'35.....	722						52				1081	616	548	557	316	456	3436	470	52
1935-'36.....	989						69				1330	820	660	574	391	572	4261	478	72
1936-'37.....	917						64				1326	947	774	623	440	634	4457	521	90
1937-'38.....	890						67				1297	972	810	787	409	537	4695	637	92
1938-'39.....	911						61				1246	959	864	855	463	559	4800	720	86
1939-'40.....	920						61				1306	958	926	871	490	622	4910	710	79
1940-'41.....	935						40				1284	969	905	900	524	655	4902	734	85
1941-'42.....	880						17				1274	926	807	748	417	590	4479	617	68
1942-'43.....	1178						21				1234	717	587	717	253	846	3861	646	28
1943-'44†.....	1181						21				1234	717	587	717	217	888	3786		
1943-'44.....	911						18				483	371	312	440	193	619	2109	390	28
1944-'45.....	881						48				601	383	289	260	196	594	2064	261	27
1945-'46.....	2785						227				1730	771	524	468	331	1784	5052	464	55
1946-'47.....	2859						183				3453	1910	1019	856	383	2849	7814	779	102
1947-'48.....	2446						97				2100	2325	1595	1123	456	1976	8166	988	118
1948-'49†.....	2246						64				1883	1768	1927	1753	550	1825	8366	1488	178
1949-'50.....	1808						44				1941	1692	1512	1952	775	82	7834	1902	219
1950-'51.....	1582						42				1802	1487	1263	1446	850	58	6867	1421	222
1951-'52.....	1043						36				1670	1167	1026	1097	649	47	5598	1017	193
1952-'53.....	1032						47				1987	1170	950	1009	650	82	5731	966	150
1953-'54.....	1246						94				1976	1287	916	960	759	62	5930	939	159

\* Figures above this column include neither graduate students in summer session, nor undergraduate students pursuing undergraduate work.

† Beginning with this year this summary is made at the close of the summer session instead of at the close of the spring semester as before.

‡ Beginning with this year, summer school students are included under the captions: Special, Freshman, Sophomore, Junior, Senior, and Graduate.

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## COLLEGE REGISTRATION, 1953-1954

SCHOOL	Men	Women	Total
<b>SCHOOL OF AGRICULTURE</b>			
Graduate students .....	116	2	118
Seniors .....	235	2	237
Juniors .....	126		126
Sophomores .....	187		187
Freshmen .....	379	1	380
Special Students .....	1		1
<b>SCHOOL OF ARTS AND SCIENCES</b>			
Graduate students .....	215	50	265
Seniors .....	294	153	447
Juniors .....	152	122	274
Sophomores .....	367	208	575
Freshmen .....	541	292	833
Special Students .....	5	9	14
<b>SCHOOL OF ENGINEERING AND ARCHITECTURE</b>			
Graduate students .....	44		44
Seniors .....	275	4	279
Juniors .....	111		111
Sophomores .....	236	3	239
Freshmen .....	416	2	418
Special Students .....	29	1	30
<b>SCHOOL OF HOME ECONOMICS</b>			
Graduate students .....	1	34	35
Seniors .....		133	133
Juniors .....		89	89
Sophomores .....	3	158	161
Freshmen .....	3	224	227
Special Students .....			
<b>SCHOOL OF VETERINARY MEDICINE</b>			
Graduate students .....	8		8
Seniors .....	57		57
Juniors .....	61		61
Sophomores .....	61		61
Freshmen .....	63		63
Special Students .....			
Totals .....	3986	1487	5473
Dual curriculum .....	27	2	29
Net totals .....	3959	1485	5444
<b>SUMMER SCHOOL, 1954</b> .....	786	460	1246
Totals .....	4745	1945	6690
Counted twice .....	547	213	760
Net grand totals .....	4198	1732	5930
<b>GRADUATE SCHOOL</b>			
Graduate students in summer school .....	319	121	440
Counted twice .....	179	34	213
Net in summer school .....	140	87	227
Graduate students in regular sessions .....	384	86	470
Net in all sessions .....	524	173	697
Graduate students in absentia .....	57	16	73
Undergraduate students carrying graduate work .....	58	4	62



## Degrees Conferred in the Year 1954

SCHOOL	Men	Women	Total
<b>SCHOOL OF AGRICULTURE (B. S.)</b> .....	180	1	181
Agriculture .....	161	1	162
Agricultural Journalism .....	3	.....	3
Landscape Design .....	2	.....	2
Milling Industry .....	14	.....	14
<b>SCHOOL OF ARTS AND SCIENCES (B. S.)</b> .....	286	129	415
Bachelor of Science .....	165	75	240
Business Administration .....	92	5	97
Elementary Education .....	.....	26	26
Industrial Chemistry .....	6	.....	6
Bachelor of Music .....	.....	1	1
Music Education .....	1	9	10
Physical Education .....	17	6	23
Technical Journalism .....	5	7	12
<b>SCHOOL OF ENGINEERING AND ARCHITECTURE (B. S.)</b> .....	162	1	163
Agricultural Engineering .....	11	.....	11
Architectural Engineering .....	12	1	13
Bachelor of Architecture .....	20	.....	20
Chemical Engineering .....	6	.....	6
Civil Engineering .....	26	.....	26
Electrical Engineering .....	25	.....	25
Industrial Arts .....	14	.....	14
Industrial Engineering .....	1	.....	1
Mechanical Engineering .....	37	.....	37
<b>SCHOOL OF HOME ECONOMICS (B. S.)</b> .....	.....	122	122
Home Economics .....	.....	100	100
Home Economics and Journalism .....	.....	5	5
Home Economics and Nursing .....	.....	17	17
<b>SCHOOL OF VETERINARY MEDICINE (D. V. M.)</b> .....	58	.....	58
Veterinary Medicine .....	58	.....	58
<b>Total undergraduate degrees</b> .....	686	253	939
<b>GRADUATE SCHOOL (M. S.)</b> .....	117	25	142
Agricultural Economics .....	3	.....	3
Agricultural Education .....	1	.....	1
Agricultural Engineering .....	2	.....	2
Agronomy .....	11	.....	11
Animal Husbandry .....	7	.....	7
Architectural Engineering .....	2	.....	2
Architecture .....	1	.....	1
Art .....	.....	2	2
Bacteriology .....	3	1	4
Botany and Plant Pathology .....	4	.....	4
Chemical Engineering .....	5	.....	5
Chemistry .....	6	.....	6
Clothing and Textiles .....	.....	3	3
Dairy Husbandry .....	1	.....	1
Economics .....	3	.....	3
Education .....	20	2	22
Electrical Engineering .....	1	.....	1
English .....	2	6	8
Entomology .....	6	.....	6
Family and Child Development .....	.....	2	2
Flour Milling .....	4	.....	4
Foods and Nutrition .....	.....	3	3
Geology .....	6	.....	6
History .....	3	.....	3
Household Economics .....	.....	1	1
Institutional Management .....	.....	3	3
Mathematics .....	2	.....	2
Mechanical Engineering .....	2	.....	2
Music .....	1	1	2
Physical Education .....	7	.....	7
Physics .....	5	.....	5
Physiology .....	1	.....	1
Poultry Husbandry .....	2	.....	2
Psychology .....	2	1	3
Speech .....	1	.....	1
Zoology .....	3	.....	3

## Degrees Conferred in the Year 1954—Concluded

SCHOOL	Men	Women	Total
GRADUATE SCHOOL (Ph. D.) .....	17	.....	17
Agronomy .....	3	.....	3
Animal Nutrition .....	3	.....	3
Bacteriology .....	5	.....	5
Chemistry .....	3	.....	3
Entomology .....	3	.....	3
Total degrees conferred in 1954 .....	820	278	1098

Tabulation for First and Second Semester 1953-1954

(New and different students)

SCHOOL OF AGRICULTURE

	Freshmen		Sophomores		Juniors		Seniors		Specials		Totals		Total
	M	W	M	W	M	W	M	W	M	W	M	W	
Agriculture .....	177		90		67		106				440		440
Agriculture (Two-Year) .....	23		4								27		27
Agric. Administration .....	58		29		25		45				157		157
Agric. Education .....	65		25		10		36				136		136
Agric. Journalism .....	4	1	7		2		5				18	1	19
Dairy Manufacturing .....	6				3		4				13		13
Feed Technology .....	10		12		5		5				32		32
Horticulture (Spec.) .....	7		3		3		3	2			16	2	18
Landscape Design .....	6		4				3				13		13
Milling Administration .....	5		2		3		8				18		18
Milling Chemistry .....			2				4				6		6
Milling Technology .....	5		3		1		7				16		16
Soil Conservation .....			1		1		7				9		9
Technical Agronomy .....	13		5		6		2				26		26
Special Student .....									1		1		1
TOTAL .....	279	1	187		126		235		1		928	3	931

SCHOOL OF ARTS AND SCIENCES

Humanities .....	35	48	15	35	11	25	14	38			75	146	221
Social Science .....	59	23	37	30	31	12	49	30			176	95	271
Biological Science .....	28	25	36	21	16	8	26	11			106	65	171
Business Administration .....	171	28	114	15	61	8	118	5			464	56	520
Chemistry .....	4	1	6		2		8				19	1	21
Citiz. Education .....							5	1			5	1	6
Elementary Education .....	10	121	5	70	3	52		36			18	279	297
Geology, Applied .....	11		2		1		2				16		16
Music, Applied .....	1	2	1	1				1			2	4	6
Music Education .....	5	16	5	4		4		10			10	34	44
Physical Education .....	51	16	17	17	7	5	19	7			94	45	139
Physical Science .....	46	1	30	4	13	1	37	8			14	1	15
Physics .....	3		2		2		9				16		16
Pre-Veterinary .....	98	1	83								181	1	182
Technical Journalism .....	19	10	14	11	5	7	7	6			45	34	79
Special Students .....									5	9	5	9	14
TOTAL .....	541	292	367	208	152	122	294	153	5	9	1359	784	2143

SCHOOL OF ENGINEERING AND ARCHITECTURE

Agricultural Engg. ....	23		9		8		16				56		56
Architectural Engg. ....	15		6		4		19	1			44	1	45
Architecture .....	42	1	28	2	13		42	3			125	6	131
Chemical Engg. ....	39		17	1	10		9				75	1	76
Civil Engg. ....	57		37		21		41				156		156
Electrical Engg. ....	73		61		17		62				213		213
Industrial Arts .....	20		10		6		22				58		58
Industrial Engg. ....	7	1	6		5		2				20	1	21
Mechanical Engg. ....	129		60		26		62				277		277
Nuclear Engineering .....	11		2		1						14		14
Special Students .....									29	1	29	1	30
TOTAL .....	416	2	236	3	111		275	4	29	1	1067	10	1077

SCHOOL OF HOME ECONOMICS

Home Economics .....		171		114		65		113			463	463
Diet. and Inst. Mngt. ....		11	2	12		6		11		2	40	42
Home Econ. & Journ. ....		10		10		5		9			34	34
Home Econ. and Nursing .....		32		22		13					67	67
Restaurant Management .....	3		1							4		4
TOTAL .....	3	224	3	158		89		133		6	604	610

SCHOOL OF VETERINARY MEDICINE

Veterinary Medicine .....	63		61		61		57				242		242
Total Undergraduate .....	1402	519	854	369	450	211	861	292	35	10	3602	1401	5003
Dual Assignment .....			4		1	1	22	1			27	2	29
Net Total Undergraduate .....	1402	519	850	369	449	210	822	291	35	10	3575	1399	4974
Graduate School .....											430	88	518
Total .....											4005	1487	5492
Undergraduate Students Taking Graduate Work .....											46	2	48
GRAND TOTAL .....											3959	1485	5444



# Tabulation for Summer Session 1954

## SCHOOL OF AGRICULTURE

	Freshmen		Sophomores		Juniors		Seniors		Specials		Totals		Total
	M	W	M	W	M	W	M	W	M	W	M	W	
Agriculture .....	5		11		7		8				31		31
Agriculture (Two-Year) .....	2										2		
Agric. Admin. ....	3		3		3		2				11		11
Agric. Education .....	6		1				5				12		12
Dairy Manufacturing .....	2										2		2
Feed Technology .....	1		2								3		3
Horticulture (Spec.) .....							1				1		1
Landscape Design .....	1										1		1
Milling Admin. ....			1		1		1				3		3
Milling Technology .....			1								1		1
Soil Conservation .....					1						1		1
Technical Agronomy .....	1				2		1				4		4
Special Student .....									1		1		1
<b>TOTAL</b> .....	<b>21</b>		<b>19</b>		<b>14</b>		<b>18</b>		<b>1</b>		<b>73</b>		<b>73</b>

## SCHOOL OF ARTS AND SCIENCES

Humanities .....	3	6	1	6	3	3	1	6	1	.....	9	21	30
Social Science .....	6	6	7	14	4	6	7	6	.....	.....	24	32	56
Biological Science .....	3	3	8	2	4	3	7	.....	.....	.....	22	8	30
Business Admin. ....	12	2	20	1	10	1	17	.....	.....	.....	59	4	63
Chemistry .....	1	.....	1	.....	1	.....	1	.....	.....	.....	4	.....	4
Elementary Education .....	2	36	8	44	7	39	3	22	.....	.....	20	141	161
Geology, Applied .....	.....	1	1	.....	.....	.....	1	.....	.....	.....	2	1	3
Music, Applied .....	.....	2	.....	.....	.....	.....	.....	1	.....	.....	.....	3	3
Music Education .....	.....	2	.....	3	.....	.....	.....	1	.....	.....	.....	6	6
Physical Education .....	5	.....	2	2	1	.....	5	.....	.....	.....	13	2	15
Physical Science .....	5	1	9	.....	3	.....	4	1	.....	.....	21	2	23
Physics .....	.....	.....	2	.....	1	.....	2	.....	.....	.....	5	.....	5
Pre-Veterinary .....	12	.....	16	.....	.....	.....	.....	.....	.....	.....	28	.....	28
Technical Journalism .....	5	.....	3	3	2	3	2	2	.....	.....	12	8	20
Special Students .....	.....	.....	.....	.....	.....	.....	.....	.....	6	29	6	29	35
TOTAL .....	54	59	78	75	36	55	50	39	6	29	225	257	482

## SCHOOL OF ENGINEERING AND ARCHITECTURE

Agricultural Engg. ....	4			1	2			7	7
Architectural Engg. ....	2			4	4			10	10
Architecture .....	4	6	1		10			20	22
Chemical Engg. ....	5	3		4	3			15	15
Civil Engg. ....	3	4		1	9			17	17
Electrical Engg. ....	16	10		4	14	2		46	46
Industrial Arts .....	3	1		1	5			10	10
Industrial Engg. ....		1		1				2	2
Mechanical Engg. ....	9	10		6	10			35	35
Nuclear Engg. ....	3							3	3
Special Student .....						1	1	1	1
TOTAL .....	49	35	1	22	57	1	2	1	168

## SCHOOL OF HOME ECONOMICS

Home Economics .....	17	16	17	14		64	64		
Diet. and Inst. Mngt. ....	1	1		1		3	3		
Home Econ. and Journalism ..	1	2	1	1		5	5		
Home Econ. and Nursing .....	3	2				5	5		
Restaurant Management .....	1					1	1		
Special Students .....					2	2	2		
TOTAL .....	1	22	21	18	16	2	1	79	80

## SCHOOL OF VETERINARY MEDICINE

Veterinary Medicine .....	6	1									7		7
Total Undergraduate .....	131	81	133	97	72	73	125	56	10	32	471	339	810
Dual Assignment .....							4				4		4
Net Total Undergraduate .....	131	81	133	97	72	73	121	56	10	32	467	339	806
Graduate School .....											326	121	447
Total .....											793	460	1253
Undergraduate Students Taking Graduate Work .....											7		7
GRAND TOTAL .....											786	460	1246

# Tabulation for First, Second and Summer Semester 1953-1954

(New and different students)

## SCHOOL OF AGRICULTURE

	Freshmen		Sophomores		Juniors		Seniors		Specials		Totals		Total
	M	W	M	W	M	W	M	W	M	W	M	W	
Agriculture .....	204		87		87		90				468		468
Agriculture (Two-Year) .....	26		6								32		32
Agric. Admin. ....	37		32		27		40				136		136
Agric. Education .....	63		30		13		37				143		143
Agric. Journalism .....	4	1	7		4		4				19	1	20
Dairy Manufacturing .....	4				4		3				11		11
Feed Technology .....	11		13		7		3				34		34
Horticulture (Spec.) .....	6		3		4		2	2			15	2	17
Landscape Design .....	4		4		1		2				11		11
Milling Admin. ....	7		2		4		7				20		20
Milling Chemistry .....			2				4				6		6
Milling Technology .....	6		4		3		5				18		18
Technical Agronomy .....	8		2		4		1				15		15
Soil Conservation .....			2		6		5				13		13
Special Students .....									3		3		3
<b>TOTAL</b> .....	<b>380</b>	<b>1</b>	<b>194</b>		<b>164</b>		<b>203</b>	<b>2</b>	<b>3</b>		<b>944</b>	<b>3</b>	<b>947</b>

## SCHOOL OF ARTS AND SCIENCES

Humanities .....	27	53	13	36	15	38	14	28	1	.....	70	155	225
Social Science .....	52	24	42	31	32	21	48	23	.....	.....	174	99	273
Biological Science .....	25	20	28	18	23	14	18	7	.....	.....	94	59	153
Business Admin. ....	176	34	101	16	79	10	100	4	.....	.....	456	64	520
Chemistry .....	1	1	6	.....	4	1	8	.....	.....	.....	19	2	21
Elementary Education .....	7	124	10	100	9	83	3	37	.....	.....	29	344	373
Geology, Applied .....	11	1	5	.....	2	.....	4	.....	.....	.....	22	1	23
Music, Applied .....	1	3	1	2	.....	.....	.....	2	.....	.....	2	7	9
Music Education .....	6	12	4	5	.....	5	1	9	.....	.....	11	31	42
Physical Education .....	42	17	19	18	10	10	16	4	.....	.....	87	49	136
Physical Science .....	44	2	25	4	19	1	31	7	.....	.....	119	14	133
Physics .....	3	.....	3	.....	3	.....	8	.....	.....	.....	17	.....	17
Pre-Veterinary .....	105	1	96	.....	.....	.....	.....	.....	.....	.....	201	1	202
Tech. Journalism .....	16	9	15	13	8	7	5	7	.....	.....	44	36	80
Special Students .....	.....	.....	.....	.....	.....	.....	.....	.....	13	36	13	36	49
TOTAL .....	516	301	367	243	204	190	257	128	20	36	1358	898	2256

## SCHOOL OF ENGINEERING AND ARCHITECTURE

Agricultural Engg. ....	28		10		9		16				63		63
Architectural Engg. ....	23		9		10		14	1			56	1	57
Architecture .....	33	1	25	2	21	1	33	2			112	6	118
Chemical Engg. ....	48		21	1	13		7				89	1	90
Civil Engg. ....	66		42		28		34				170		170
Electrical Engg. ....	82		63		33		51		2		231		231
Industrial Arts .....	15		9		14		15				53		53
Industrial Engg. ....	4		1				2				7		7
Mechanical Engg. ....	151		73		43		51				318		318
Nuclear Engg. ....	13		2		1		1				17		17
Special Students .....									36	1	36	1	37
TOTAL .....	463	1	255	3	172	1	224	3	38	1	1152	8	1161

## SCHOOL OF HOME ECONOMICS

Home Economics .....	1	191	122	97	96	1	506	507
Diet. and Inst. Mngt. ....		14	2 12	9	8	2	43	45
Home Econ. and Journalism ..		11	10	7	6		34	34
Home Econ. and Nursing .....		32	21	13			66	66
Restaurant Management .....	3		1			4		4
Special Students .....						2	2	2
TOTAL .....	4	248	3 165	126	110	2	7 651	658

## SCHOOL OF VETERINARY MEDICINE

Veterinary Medicine .....	62	.....	61	.....	61	.....	57	.....	.....	.....	241	.....	241
Total Undergraduate .....	1425	551	880	411	601	317	741	243	55	39	3702	1561	5263
Dual Assignment .....			4	.....	1	1	23	1	.....	.....	28	2	30
Net Total Undergrad. ....	1425	551	876	411	600	316	701	242	55	39	3674	1559	5233
Graduate School .....											582	177	759
Total .....											4256	1736	5992
Undergraduate Students Taking Graduate Work .....											58	4	62
GRAND TOTAL.....											4198	1732	5930

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