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Kansas State College
BULLETIN

GENERAL CATALOGUE ISSUE

1956-1957

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KANSAS STATE COLLEGE
OF AGRICULTURE AND APPLIED SCIENCE
MANHATTAN

KANSAS STATE COLLEGE BULLETIN



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JULY 1, 1956

KANSAS STATE COLLEGE
OF AGRICULTURE AND APPLIED SCIENCE
MANHATTAN, KANSAS

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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.

CALENDAR

FIRST SEMESTER, 1956-57

Sept. 1, Sat.	Beginning of pay period for 9-month staff.
Sept. 3, Mon.	Holiday, Labor Day.
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.	(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 student recess begins.
Nov. 22, Thurs.	Holiday, Thanksgiving Day.
Nov. 26, 8:00 a.m., Mon.	Classes resume.
Dec. 22, Noon, Sat.	Christmas student recess begins.
Dec. 22, Noon, Sat.	Applications for degrees must be made on or before this date.
Dec. 25, Tues.	Holiday, Christmas Day.
Jan. 1, Tues.	Holiday, New Year's Day.
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.	(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 student recess 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.

CALENDAR (Continued)

SUMMER SESSION, 1957

9-WEEK SUMMER SESSION

June 3, 8:00 a.m., Mon.	Registration for all students including physical examinations, testing, and orientation for new students.
June 4, 7:30 a.m., Tues.	Classes begin. Late enrollment fee \$2.50.
June 8, Noon, Sat.	Regular registration closes for college staff. End of first week. Late enrollment fee \$5.00 for subsequent enrollment.
June 15, Noon, Sat.	Last day to enroll with full assignment.
June 29, Noon, Sat.	Last day for reassignment before mid-session. Last day for dropping courses without a Wd or failure being recorded.
July 4, Thurs.	Holiday, Independence Day.
July 5, 3:00 p.m., Fri.	Applications for degrees must be made on or before this date.
July 5, 5:00 p.m., Fri.	Deficiency reports due in deans' offices.
July 29, 5:00 p.m., Mon.	Grades to registrar for all candidates for degrees, and low grades to deans and student concerned.
July 30, 4:00 p.m., Tues.	Last day subject may be dropped before end of session.
July 31, 4:00 p.m., Wed.	Senate meeting to approve candidates for degrees.
Aug. 2, 5:00 p.m., Fri.	Last day for examinations.
Aug. 2, 5:00 p.m., Fri.	Deficiency reports due in deans' offices.
Aug. 2, 7:30 p.m., Fri.	Commencement.
Aug. 5, Noon, Mon.	Grades to registrar.

NOTE: Registration for short courses will be as announced in the Summer School Catalogue for the individual courses. Registration in each case is the opening morning of the first day.

Tentative CALENDAR

FIRST SEMESTER, 1957-58

Sept. 1, Sun.	Beginning of pay period for 9-months staff.
Sept. 2, Mon.	Holiday, Labor Day.
Sept. 8, 3:00 p.m., Sun.	Convocation for new students and their parents.
Sept. 9-11, Mon.-Wed.	Registration of all students including physical examinations, testing, and orientation for new students.
Sept. 12, 8:00 a.m., Thurs.	Classes begin. Late enrollment fee, \$2.50.
Sept. 14, 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. 5, Sat.	(4th week.) Last day to enroll with full assignment.
Oct. 12, Noon, Sat.	Deficiency reports due in deans' offices (5th week).
Oct. 26, Noon, Sat.	Last day for dropping courses without a Wd or failure being recorded (7th week).
Nov. 9, Noon, Sat.	Mid-semester deficiency reports due in deans' offices (9th week).
Nov. 26, 10:00 p.m., Tues.	Thanksgiving student recess begins.
Nov. 28, Thurs.	Holiday, Thanksgiving Day.
Dec. 2, 8:00 a.m., Mon.	Classes resume.
Dec. 21, Noon, Sat.	Christmas student recess begins.
Dec. 21, Noon, Sat.	Applications for degrees must be made on or before this date.
Dec. 25, Wed.	Holiday, Christmas Day.
Jan. 1, Wed.	Holiday, New Year's Day.
Jan. 6, 8:00 a.m., Mon.	Classes resume.

Calendars for the academic year 1957-58 may be secured by directing a card to the Director of Admissions and Registrar.

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 3,930 acres of land belonging to the College, used for experimental work in agriculture. In addition there are five 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 student's 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 every student 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.

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: The letter which precedes each curriculum indi-

cates the high school subject requirements for admission in the table on page 11.

IN THE SCHOOL OF AGRICULTURE

- (A) Agriculture, B. S. in Agriculture, page 59.
- (A) Agricultural Economics, B. S. in Agriculture, page 60.
 - (Agricultural Administration option), page 60.
 - (Rural Banking option), page 60.
 - (Agricultural Business and Industries option), page 60.
- (D) Technical Agricultural Economics, B. S. in Agriculture, page 61.
- (A) Agricultural Education, B. S. in Agriculture, page 68.
- (A) Dairy Manufacturing, B. S. in Agriculture, page 63.
- (A) Horticulture, B. S. in Agriculture, page 66.
 - (Floriculture option), page 66.
 - (Ornamental Horticulture option), page 66.
 - (Pomology option), page 66.
 - (Vegetable Crops option), page 66.
- (D) Technical Agronomy, B. S. in Agriculture, page 62.
 - (Soil Science option), page 62.
 - (Applied Agronomy and Soil Conservation option), page 62.
 - (Crop Science option), page 62.
 - (Wildlife Conservation option), page 62.
- (A) Agricultural Journalism, B. S. in Agricultural Journalism, page 69.
- (D) Landscape Design, B. S. in Landscape Design, page 67.
- (C) Milling Technology, B. S. in Milling Industry, page 64.
 - (Operation option), page 64.
 - (Chemistry option), page 64.
 - (Administration option), page 64.
- (D) Feed Technology, B. S. in Feed Technology, page 65.
 - (Operation option), page 65.
 - (Nutrition option), page 65.
 - (Administration option), page 65.

IN THE SCHOOL OF ARTS AND SCIENCES

- (E) Art and Painting, B. S., page 93.
- (E) Biological Science, B. S., page 94.
 - (Physical Therapy option), page 96.
 - (Medical Technicians option), page 95.
 - (in connection with pre-veterinary curriculum and veterinary curriculum), pages 116, 248.
- (F) Business Administration, B. S. in Business Administration, page 97.
 - (Accounting option), page 98.
- (D) Chemistry, B. S. in Chemistry, page 99.
- (E) Elementary Education, B. S. in Elementary Education, page 100.
- (E) Secondary Education, B. S., page 101.
- (D) Geology, B. S., page 103.
- (E) Humanities, B. S., page 104.
- (E) Music (Applied), Bachelor of Music, page 105.
 - (Instrument or Voice options)
- (E) Music Education, B. S. in Music Education, page 106.
 - (Instrument or Voice options)
- (D) Pre-medicine, B. S., page 112.
 - (Pre-dental option), page 112.
- (E) Physical Education (Men), B. S. in Physical Education, page 107.
- (E) Physical Education (Women), B. S. in Physical Education, page 108.
- (D) Physical Science, B. S., page 109.
 - (Geophysics option), page 110.
- (D) Physics, B. S., page 111.
- (F) Social Science, B. S., page 113.
- (A) Technical Journalism, B. S. in Technical Journalism, page 115.

IN THE SCHOOL OF ENGINEERING AND ARCHITECTURE

- (G) Agricultural Engineering, B. S. in Agricultural Engineering, page 187.
- (G) Agricultural Engineering, B. S. in Architectural Engineering, page 188.
- (G) Architecture (five years), Bachelor of Architecture, page 189.
- (G) Chemical Engineering, B. S. in Chemical Engineering, page 190.

- (G) Civil Engineering, B. S. in Civil Engineering, page 191.
- (G) Electrical Engineering, B. S. in Electrical Engineering, page 192.
 - (Power option), page 192.
 - (Communication and Electronics option), page 192.
 - (in connection with second degree in Business Administration), page 193.
- (G) Industrial Education, B. S. in Industrial Education, page 194.
- (G) Industrial Engineering, B. S. in Industrial Engineering, page 195.
- (G) Industrial Technology, B. S. in Industrial Technology, page 196.
- (G) Mechanical Engineering, B. S. in Mechanical Engineering, page 198.
 - (Aeronautical option), page 199.
 - (Design option), page 199.
 - (Petroleum Production option), page 199.
 - (Management option), page 199.
- (G) Nuclear Engineering, B. S. in Nuclear Engineering, page 200.

IN THE SCHOOL OF HOME ECONOMICS

- (B) Home Economics with options, B. S. in Home Economics, page 227.
 - (Art in High School option), page 229.
 - (Clothing and Costume Design option), page 229.
 - (Clothing and Textiles Research option), page 229.
 - (Clothing Retail option), page 229.
 - (Costume Design option), page 228.
 - (Crafts option), page 228.
 - (Family and Child Development with Community Services option), page 230.
 - (Family Economics and Finance option), page 231.
 - (Foods and Nutrition Research option), page 231.
 - (Foods Demonstration Work option), page 232.
 - (Homemaking option), page 230.
 - (Household Equipment, Housing and Home Management option), page 231.
 - (Interior Decoration option), page 228.
 - (Nursery School Teaching option), page 230.
 - (Teaching Home Economics in High School option), page 232.
- (B) Dietetics and Institutional Management, B. S. in Home Economics, page 233.
- (B) Home Economics and Journalism, B. S. in Home Economics and Journalism, page 235.
- (B) Home Economics and Nursing, B. S. in Home Economics and Nursing, page 236.
- (B) Restaurant Management, B. S. in Restaurant Management, page 234.

IN THE SCHOOL OF VETERINARY MEDICINE

- Veterinary Medicine, D. V. M., page 248.
 - (for completion of six-year combination of pre-veterinary 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.

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 transcript from the high school principal. Upon receipt of the transcript, the Director of Admissions will notify the student of his admission status and advise him of 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. 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.

For the degree curriculums listed in the previous section on Undergraduate Degrees there are specific admission requirements. Preceding each degree curriculum is a capital letter which corresponds to the same letter on the chart below indicating the high school subject requirements for admission to that curriculum.

	English	Algebra	Plane Geom- etry	Solid Geom- etry	Trigo- nometry	Applied Math.	Bus. Arith.	Book- keeping	Gen. Sci. Biolog. Sci. Phys. Sci.	Total
A	3	1	1						1	6
B	3	1	1			1	1	1	1	6
					Choice of one					
C	3	1½	1	½					1	7
D	3	1½	1						1	6½
E	3	1	1			1	1	1	1	5
					Choice of one					
F	3	1							1	5
G	3	{ 1½ ½								
			1	½	½				1	7
					Choice of one-half					

Although a high school graduate will be admitted to the College if he lacks some of these requirements, he must make up any deficiencies in his first year of enrollment. Students lacking required units will not be advanced in classification until the deficiency is removed.

College credit is not granted for subjects taken to make up mathematics deficiencies. Enrollees wishing to study in Engineering and Architecture are enrolled as special students if they lack one unit of either algebra or plane geometry.

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 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 16.)

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 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 Non-graduates

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 deficient 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, non-graduates 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 applied to 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 must 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.

Junior Colleges

Credit earned in an accredited junior college is accepted by Kansas State College and applied hour for hour to satisfy up to one-half of the course requirements of the curriculum chosen. Students who plan their

program carefully and continue successfully without a change of objective can proceed without loss of time or credit. Students contemplating transfer are urged to contact the College early for advisement and to work closely with their junior college adviser in program planning.

A list of Kansas junior colleges which are accredited by the State Department of Education may be secured from that office.

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 thirty 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.

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 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 14.)

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.)

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.

Testing and Pre-enrollment

Each new undergraduate enrollee of the College is required to complete 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 the Manhattan campus by appointment during the summer prior to their beginning college in September. Students who take these tests are not required to repeat them during their enrollment period. The students who come to the College campus during the summer confer with College staff members concerning the results of the tests and the choice of a curriculum. All parts of the enrollment may be com-

pleted in advance so that only the fee remains to be paid when the student appears on the campus in the fall. This opportunity to pre-enroll does not mean that a student cannot take his tests and enroll at the regularly scheduled time in the fall.

Orientation for New Students

An orientation program is provided for all new undergraduate students during the first few days of college. This program is designed to ease the change from high school to college or from college to college.

All new students are required to participate. New students who pre-enrolled are given a different program of orientation. All students are given the opportunity to become acquainted with the College, to meet faculty members and classmates, to get help from advisers, and to attend social functions.

Each entering student receives a program during the summer containing a complete schedule of orientation week activities. It is important that all 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.

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 those 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 registration for physical education and ROTC participation. The Board of Regents and the College require a chest examination.

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.

Veterans of the Armed Forces

The College will carefully 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 by 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, Comptroller's 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 which follows.

Payment of Fees. The incidental fee, the student health fee, the student activities fee, and 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, non-academic and administrative personnel, library books and personnel, equipment and other non-teaching 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 non-teaching aspects of the total instructional program.

Student Health Fee. For a description of the Department of Student Health, see page 26.

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:

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	<u>\$100.00</u>	<u>\$175.00</u>	<u>\$90.00</u>	<u>\$165.00</u>

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

Definition of Residence. 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.

	Veterinary Medicine Students		All Other Students	
	Kansas residents or staff members	Non-residents	Kansas residents or staff members	Non-residents
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 fifteen 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 non-resident. 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 incidental fee*</i>	<i>Students not paying full incidental fee</i>
Two lessons a week for 16-18 weeks	\$35.00	\$42.00
One lesson a week for 16-18 weeks	17.50	23.00
Two lessons a week for 8-10 weeks	17.50	23.00
One lesson a week for 8-10 weeks	8.75	11.50
Separate individual lessons, each	1.50	2.00

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

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 incidental 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 Continuing Education, Division of Extension, see page 261.

Military Uniforms. Every student who takes military training 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. The uniform which is purchased for each advanced course student 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

In addition to the previously mentioned fees, students are required to purchase textbooks, drawing instruments, slide rules, gym suits and other personal equipment and supplies when needed for courses in the curriculum chosen. The cost of these items will vary from semester to semester. Once purchased, many of the items may be used in courses which follow. For many courses second-hand books are satisfactory.

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 classification when he has met all fixed admission requirements for the curriculum in which he is enrolled and has credit in hours 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
Veterinary Medicine	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.		

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

Classes

By order of the Board of Regents, courses of basic freshman subjects require a minimum enrollment of fifteen; other classes require a minimum enrollment of ten, except that certain advanced laboratory and advanced technical classes may have a minimum of seven.

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 Description Key

In the course description in the catalogue, the following abbreviations and codes are used. Courses which do not carry college credit are numbered 0-99; those for undergraduate credit only, 100-399; for undergraduate and graduate credit, 400-799; for graduate credit only, 800-999.

The parentheses () following the course title include the value in semester hours of the course followed by the terms it is offered. Each unit usually represents one lecture or recitation, or 3 hours of laboratory work, per week for a semester. I, II, S indicate the terms in which the course is offered. I means first or fall semester; II, second semester; and S, summer session. I, II mean both semesters. Pr. indicates "Prerequisite." Conc. is the abbreviation for concurrent.

The College Library

The Farrell 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 195,000 bound volumes, besides much unbound material. It receives currently about 5,200 serial publications. As a depository the library receives the documents and other publications of the United States Government, as well as publication 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.

Publications

College publications include the following:

General Catalogue	Home Study Courses	Agricultural Experiment
Student Catalogue	President's Report	Station Bulletins
Graduate Catalogue	Financial Report	Engineering Experiment
Summer Catalogue	Extension Bulletins	Station Bulletins

Student publications include these:

The Kansas State Collegian—newspaper published five days a week.

The Royal Purple—yearbook published annually.

The Student Directory—published annually.

The Kansas Agricultural Student—published quarterly.

The Kansas State Engineer—published monthly during academic year.

Alumni Association publications include *The Trumpet* and the *K-Stater*. The *K-Stater* is published quarterly by the College and the Alumni Association. *The Trumpet* is published bi-monthly, except March, by the College and the Alumni Association.

College Postal Center

The College operates a postal center 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.

Assignments

A student is responsible for fulfilling all the requirements of the curriculum in which he is enrolled. His adviser 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, all deans' offices, 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 as shown on the calendar. Later assignments are made during regular office hours by a student's dean or assigner. 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 17, 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.

A student may not enroll for more than 18 hours including correspondence and extension study unless granted permission by his dean. If the normal assignment in his curriculum is eighteen hours, a student may enroll for one additional hour without special permission.

A student whose grades were B or better during the preceding semester, and who did not have a deficiency of any kind in that period, may apply to his dean for special permission to take additional hours. In no case may the total assignment including correspondence and extension work exceed twenty-one hours.

A regularly enrolled student must have the permission of his dean to do correspondence or extension study while enrolled.

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.

No student may drop a course or change an assignment except by a formal reassignment 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 excellent work	(94-100)
B, for good work	(86-93)
C, for fair work	(78-85)
D, for poor work	(70-77)
F, for failure	

Cr, for credit in required courses for which no letter grade is given.

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 send reports so requested to the students or 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 is reported to the Registrar. An official drop slip from the student's dean constitutes 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 is 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 is reported and designated at 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 must leave all class books on file in the proper department when semester grade cards have been made out. The head of the department keeps 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 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 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 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 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.

ABSENCES

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

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 college-sponsored activity must submit to his coach or sponsor of the event a completed form for each of his classes (Excuse Absence Notification to Instructor, 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 Notifications to Deans) and present a copy of it and the Absence Notifications to Instructors to the respective offices of the academic deans concerned at least twenty-four hours in advance of the departure.

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 absentees 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.

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.

ABSENCE THE DAY BEFORE OR AFTER A HOLIDAY OR STUDENT RECESS

A dean's excuse will be granted only in case of emergency. Instructors will not grant excuses. All classes must convene as usual.

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.

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 undergraduate 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 forty-five 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 considered for sophomore honors.

Bachelor degree candidates who rank in the top ten per cent of their class and who have completed a minimum of sixty semester hours of undergraduate work in residence are considered for honors. Of these, the highest ranked, not to exceed three per cent of the class, may be selected by the Committee to receive diplomas inscribed "With High Honors." The Committee will also designate those who are to receive diplomas inscribed "With Honors."

Candidates for the degrees Doctor of Veterinary Medicine, Master of Science and Doctor of Philosophy are not considered for 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
College Mixed Chorus	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.

Bible Study

The College will accept no courses in sectarian religion but will accept courses in non-sectarian religion from accredited institutions when appropriate for use as electives. The College offers some courses of its own in non-sectarian religion in appropriate general fields such as history, philosophy and English.

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.

Student Personnel Services

Kansas State College has developed a program of student personnel services in the belief that education involves experiences that supplement

classroom training. This philosophy considers the importance of providing the student with a variety of opportunities and services aimed at improving his intellectual development; his vocational interests, aptitudes, and skills; his emotional balance; his social relationships; his moral and religious values; his physical health; and his aesthetic appreciations.

Office of the Dean of Students

The Dean of Students is responsible for maintaining a close relationship with the academic and administrative staffs in helping to interpret student needs. He has the general responsibility for the administration and coordination of the various divisions of the student personnel program which follow.

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. 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.

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.

Office of Director of Housing

FOR MEN

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

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, not subject to refund. 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 FAMILIES

For married students, the College operates 288 (one-bedroom, two-bedroom) apartments, thirty-one spaces to park privately owned non-modern trailers, and fifty-two spaces for modern trailers. 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. The College is planning to have ninety-six permanent apartments for married students available September 1, 1956, and ninety-six more available January 1, 1957. The rent is tentatively set at \$62.50 per month for one-bedroom units and \$67.50 for two-bedroom units including furnishings and utilities. The utilities furnished include heat, water, and 140 KWH of electricity each 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.

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 have here 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 150 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, Publicity, 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. The Bureau is designed to help students and alumni do a better job of meeting and communicating with employers.

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 fifty-seven 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 twenty-four 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 whenever advisable and requested, 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 Student Adviser

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.

Religious Life at the College

The following religious groups offer opportunities for worship in Manhattan: 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 28. There are Y.M.C.A. and Y.W.C.A. offices on the campus. Their program is described in the section on student organizations. The new Memorial Chapel and Danforth Chapel on the campus are for the use of individuals and 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 as they enroll will register their vehicles and will be given identification stickers at that time. 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 is available at the Office of the Dean of Students.

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 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 activities 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.

College Baptist Student Fellowship is the student group of the College Baptist Church. Theta Epsilon is offered for college women.

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

Evangelical United Brethren Fellowship meets weekly and offers a variety of activities for students of this denomination.

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

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

Kappa Beta is sponsored by the Christian Church for women students.

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

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

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

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.

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.

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.

Departmental Organizations

Agricultural Association
 Agricultural Economics Club
 Agricultural Education Club
 Alpha Alpha Gamma—Women in Architecture and Allied Arts
 Alpha Delta Theta—Medical Technicians
 American Guild of Organists
 Arnold Air Society—Cadet Officers, AFROTC
 Block and Bridle Club—Animal Husbandry Students
 Business Students' Association
 Chancery Club—Pre-law Students
 Club Cervantes—Spanish Club
 Dairy Club
 Engineering Association
 Entomology Club
 Extension Club
 Forensics Union—Debate and Speech
 Future Teachers of America
 Home Economics Art Club
 Home Economics Child Welfare Club
 Home Economics Clothing Retailing Club
 Home Economics Dietetics and Commercial Demonstration Club
 Home Economics Extension Club
 Home Economics Journalism Club
 Home Economics Nursing Club
 Home Economics Teaching Club
 Kansas State College Chapter of Student Affiliates of the American Chemical Society
 Kansas State College Student Branch of the Institute of the Aeronautical Sciences

Kansas State College Student Chapter of the American Institute of Architects
 Kansas State College Student Chapter of the American Veterinary Medical Association
 Kansas State College Student Section of the American Institute of Physics
 Kansas State Horticulture Club
 Klod and Kernel Klub—Agronomy
 Margaret Justin Home Economics Club
 Mathematics Club
 Milling Industry Association
 Phems—Women's Physical Education
 Plow and Pen Club—Agricultural Journalists
 Political Science Club
 Poultry Science Club
 Psychology Club
 Society for Advancement of Management—Industrial Engineers and Technologists
 Student Branch of American Institute of Chemical Engineers
 Student Branch of American Institute of Electrical Engineers
 Student Branch of American Society of Agricultural Engineers
 Student Branch of American Society of Mechanical Engineers
 Student Chapter of American Society of Civil Engineers
 Student Industrial Arts Association
 Student Section of the American Welding Society
 Williston Geology Club

Governing Groups

Arts and Sciences Council
 Board of Student Publications
 Graduate Students' Association
 Independent Organized House Council
 Independent Students' Association
 Interfraternity Council—Fraternities
 Interfraternity Pledge Council—Fraternity and Sorority Pledges

Kansas State College Veterans Organization
 Panhellenic—Sororities
 Religious Coordinating Council—All Student Church Groups
 Student Council—Student Legislative Body
 Student Governing Association—All Students of Kansas State College

Honorary Organizations

Alpha Delta Theta—Medical Technicians
 Alpha Epsilon Rho—Radio Guild
 Alpha Kappa Psi—Business Administration
 Blue Key—National Honorary Fraternity
 Cheerleaders
 Chimes—Junior Women Honorary
 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 Creative Dance

Pershing Rifles—Military
 Phi Alpha Theta—History
 Phi Delta Gamma—Graduate Women
 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
 Sigma Gamma Epsilon—Geology
 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

Phi Kappa Phi—All College
 Pi Mu Epsilon—Mathematics
 Pi Tau Sigma—Mechanical Engineering
 Sigma Gamma Epsilon—Geology
 Sigma Tau—Engineering
 Sigma Xi—Original Research in Science
 Tau Sigma Delta—Architecture
 Theta Sigma Phi—Women Journalists

Interest Groups

Alpha Phi Omega—Scouting Fraternity
 Chaparajos Club—Rodeo and Riding Club
 Clinic Club—Pre-medicine and Pre-dental Students
 Collegiate 4-H Club
 Cosmopolitan Club—Students of Various Nationalities
 Dames Club—Student Wives and Married Women Students
 Frog Club—Aquatics
 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 Masonics Club
 Kansas State Players—Dramatics
 Phi Sigma Chi (Purple Pepsters)—Women's Pep Club
 Pi Epsilon Pi (Wampus Cats)—Men's Pep Club

Interest Groups (Continued)

Promenaders—Square Dance Club
 Quill Club—Creative Writing
 Varsity Rifles
 Whi-Purs—Freshman Women's Pep Club
 Wildcat Fencing Club
 Women's Athletic Association

Women's Auxiliary to the Kansas State Student
 Chapter of the American Veterinary
 Medical Association
 Young Democrats of Kansas State College
 Young Men's Christian Association
 Young Women's Christian Association

SORORITIES AND FRATERNITIES

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 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, 1834 Club (Delta Upsilon).

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, Horticulture 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 governing body of this association is called the Engineering Council. 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.

Those students interested in aeronautics may join the student chapter of the Institute of Aeronautical Science. 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. Pre-law students who are interested in learning about the opportunities and responsibilities in the field of law are eligible for membership.

The Williston 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.

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.

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.

Intercollegiate Forensics

The Kansas State debate squad, discussion, oratory, and other forensic activities are open to all students, regardless of the particular school in which enrolled. The student may participate in intramural forensic activities, and when qualified in intercollegiate competition.

Any student may become a member of the Forensics Union by being elected to represent an organized house or campus group. This Union plans and develops intramural forensic activities.

Qualified upperclass students 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 non-participating 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 non-participants, 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 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 possible on either a curricular or extra-curricular basis. Qualified upperclass students can become members of Alpha Epsilon Rho, national honorary radio-television fraternity.

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 three per cent a year until the loan is due and at six per cent on past-due loans. Usually loans are due within one year after graduation.

The College Student Loan Fund of approximately \$148,000 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 \$179,000 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.

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 Director of Development, Kenneth M. Heywood, 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.

Scholarships and Awards

Each year through the generosity of various corporations, businesses, organizations, and other friends of the College, a number of scholarships and awards are made available to Kansas State students. The majority of these are administered through the General Scholarship Committee, and are designed to assist students who need financial help, and who qualify on the bases of outstanding ability, good character, and good citizenship. The scholarships and awards are listed by Schools and Departments of the College.

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, pre-veterinary 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. Four awards of \$250 each are made annually to students in the Department of Flour and Feed Milling Industries. These scholarships are awarded to one student from each class: freshman, sophomore, junior, or senior. The awards are administered by the Head of the 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

FRONTIER CHEMICAL COMPANY. Two annual awards of \$250 are given to entering freshmen in Chemistry or Chemical Engineering by the Frontier Chemical Company. These awards are granted to persons of high scholastic ability who need financial assistance. Application may be made through the Secretary of the General Scholarship Committee.

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. Applications are made through the Secretary of the General Scholarship Committee.

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.

FRONTIER CHEMICAL COMPANY. (See *Frontier Chemical Company* under *Chemistry*.)

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.

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.

PRE-VETERINARY 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 schol-

arship is administered by the Committee on Veterinary Scholarships, Prizes, and Awards.

FRIBOURG FOUNDATION. (See *Fribourg Foundation* under *Agriculture*.)

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.

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.

CORPORATE ALUMNI SCHOLARSHIPS. A number of scholarships are made available through a fund established by gifts from Kansas State College Alumni who are employees of the General Electric Company and the Lehigh-Portland Cement Company. These gifts are matched by the respective companies. The fund is administered by the General Scholarship Committee, and application may be made to the Secretary of the 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 *Fribourg Foundation* under *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.

CALVIN H. GROVE. This award was established by the will of Kittie M. Grove. An annual award is made available to some young man who shall have been educated at any one of the high schools of Norton County, Kansas, who exhibits highest standards in scholarship. Application may be made to the Secretary of the General Scholarship Committee.

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, pre-armistice 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.

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 School 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. 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.

B'nai B'rith Hillel Foundation. An annual award of \$25 provided by the Women's Grand Lodge of the Kansas Association of B'nai B'rith, to recognize the student who has contributed most during the year to the promotion of brotherhood, goodwill and understanding among the various religious, cultural and ethnic groups on campus.

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 first-year Advanced Course Army ROTC Student—first place.

Association of the U. S. Army Medals. One (1) medal awarded the outstanding second-year Advanced Course Army ROTC student commissioned in the Combat Arms. One (1) medal awarded to the outstanding first-year Advanced Course Army ROTC student—second place.

Distinguished Military Student Badge. Each year, the PMST, with the concurrence of the College President and the deans, may designate certain outstanding Army ROTC students as Distinguished Military Students, who are awarded the Distinguished Military Student Badge.

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 Medals. One (1) medal awarded to the outstanding first-year Basic Course Army ROTC student. One (1) medal awarded to the outstanding second-year Basic Course Army ROTC student.

Sons of the American Revolution Medal. Awarded to the second-year Advanced Course Army ROTC student with outstanding qualities of leadership and military excellence.

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 manufac-

turing 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.

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, non-degree 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 will be offered to accommodate those students who find it inconvenient to attend the full nine-week session.

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

The Graduate School

HAROLD HOWE, *Dean*

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

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

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/or 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, Family Economics and Housing, Foods and Nutrition, Genetics, Geology and Geography, Government, History, Horticulture, 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* and 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 twenty-four hours of the thirty or thirty-two 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 Dean of the Graduate School upon recommendation of the major in-

* See section headed Fees under General Information.

structor and the head of the major department. For doctor's candidates, the approval is made by the Dean 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) Thirty semester hours of graduate credit *including a masters' thesis* of six to eight semester hours; (2) thirty-two 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 Graduate School. If the student desires to publish all or part of his thesis before the master's degree is conferred he must obtain permission from the Dean of the Graduate School.

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 ninety semester hours, including fifty 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 Dean of the Graduate School) 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.

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 \$50 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 \$50 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 \$50 deposit.

All dissertations are microfilmed by a private firm and the abstracts are published in Dissertation Abstracts. The cost to the student is \$20.

If publication of the dissertation, in whole or in part, is made before the degree is conferred, permission must first be obtained from the Dean of the Graduate School. 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 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 concerning 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 Calendar, page 5.)

FIRST SEMESTER, 1956-1957

September 10-12, Monday-Wednesday—Physical examinations for all graduate students enrolling for the first time at Kansas State College.
 September 10-12, 12:45 p.m., Monday-Wednesday—Registration.
 September 13, 8:00 a.m., Thursday—Classes begin.
 October 6, Saturday—Last day to enroll with full assignment.
 October 13, Noon, Saturday—Deficiency reports due in deans' offices (5th week).
 October 27, Noon, Saturday—Last day for dropping courses without a withdrawal or failure being recorded (7th week).
 November 10, Noon, Saturday—Mid-semester deficiency reports due in deans' offices (9th week).
 November 20, 10:00 p.m., Tuesday—Thanksgiving student recess begins.
 November 26, 8:00 a.m., Monday—Classes resume.
 December 1, Saturday—Tentative copy of doctors' dissertations due in departmental offices.
 December 8, Saturday—Tentative copy of doctors' dissertations due in graduate dean's office.
 December 20, Thursday—Tentative copies of masters' theses and reports due in departmental offices.
 December 22, Noon, Saturday—Applications for degrees must be made on or before this date.
 December 22, Noon, Saturday—Christmas student recess begins.
 January 7, 8:00 a.m., Monday—Classes resume.
 January 7, Noon, Monday—Final copies of doctors' dissertations due in graduate dean's office.
 January 7, Noon, Monday—Tentative copies of masters' theses and reports due in graduate dean's office.
 January 11, 4:00 p.m., Friday—Last day subject may be dropped before end of semester.
 January 19, Noon, Saturday—Grades to registrar for candidates for degrees.
 January 21-25, Monday-Friday—Semester examinations.
 January 21, 3:00 p.m., Monday—Final copies of masters' theses and reports due in graduate dean's office. End of period for master's oral examinations.
 January 23, 4:00 p.m., Wednesday—Senate meeting to approve candidates for degrees.
 January 26, 10:00 a.m., Saturday—Commencement.

SECOND SEMESTER, 1956-1957

January 28-30, Monday-Wednesday—Physical examinations for all graduate students enrolling for the first time at Kansas State College.
 January 28-30, 12:45 p.m., Monday-Wednesday—Registration.
 January 31, 8:00 a.m., Thursday—Classes begin.
 February 23, Saturday—Last day to enroll with full assignment.
 March 2, Noon, Saturday—Deficiency reports due in deans' offices (5th week).
 March 16, Noon, Saturday—Last day for dropping courses without a withdrawal or failure being recorded (7th week).
 March 30, Noon, Saturday—Mid-semester deficiency reports due in deans' offices (9th week).
 April 6, Noon, Saturday—Tentative copy of doctors' dissertations due in departmental offices.
 April 13, Noon, Saturday—Tentative copy of doctors' dissertations due in graduate dean's office.
 April 18, 10:00 p.m., Thursday—Easter student recess begins.
 April 23, 8:00 a.m., Tuesday—Classes resume.
 April 23, Noon, Tuesday—Tentative copies of masters' theses and reports due in departmental offices.
 April 25, Noon, Thursday—Final copies of doctors' dissertations due in graduate dean's office.
 April 26, 3:00 p.m., Friday—Applications for degrees must be made on or before this date.
 April 30, Noon, Tuesday—Tentative copies of masters' theses and reports due in graduate dean's office.
 May 11, Noon, Saturday—Last day a subject may be dropped before end of semester.
 May 20-24, Monday-Friday—Semester examinations.
 May 20, Noon, Monday—Grades to registrar for all candidates for degrees.
 May 20, 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 23, 11:00 a.m., Thursday—Senate meeting to approve candidates for degrees.
 May 26, 2:30 p.m., Sunday—Commencement. Field House.

SUMMER SESSION, 1957

June 3, 8:00 a.m., Monday—Registration.
 NOTE: Students may not take work in both the nine-week session and a short course except problem or research courses.
 June 3, 8:00 a.m., Monday—Physical examinations for all graduate students enrolling for the first time at Kansas State College.
 June 4, 7:30 a.m., Tuesday—Classes begin.
 June 15, Noon, Saturday—Last day to enroll with full assignment.
 June 19, Noon, Wednesday—Tentative copy of doctors' dissertations due in departmental offices.
 June 26, Noon, Wednesday—Tentative copy of doctors' dissertations due in graduate dean's office.

June 29, Noon, Saturday—Last day for dropping courses without a withdrawal or failure being recorded.
 July 4, Thursday—Holiday—Independence Day.
 July 5, Noon, Friday—Final copies of doctors' dissertations due in graduate dean's office.
 July 5, 3:00 p.m., Friday—Applications for degrees must be made on or before this date.
 July 5, 5:00 p.m., Friday—Deficiency reports due in deans' offices.
 July 8, Noon, Monday—Tentative copies of masters' theses and reports due in departmental offices.
 July 15, Noon, Monday—Tentative copies of masters' theses and reports due in graduate dean's office.
 July 22, 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 29, 5:00 p.m., Monday—Grades to registrar for all candidates for degrees.
 July 30, 4:00 p.m., Tuesday—Last day subject may be dropped before end of session.
 July 31, 4:00 p.m., Wednesday—Senate meeting to approve candidates for degrees.
 August 2, 5:00 p.m., Friday—Last day for examinations.
 August 2, 7:30 p.m., Friday—Commencement.

FIRST SEMESTER, 1957-1958

September 9-11, Monday-Wednesday—Physical examinations for all graduate students enrolling for the first time at Kansas State College.
 September 9-11, 12:45 p.m., Monday-Wednesday—Registration.
 September 12, 8:00 a.m., Thursday—Classes begin.
 October 5, Saturday—Last day to enroll with full assignment.
 October 12, Noon, Saturday—Deficiency reports due in deans' offices (5th week).
 October 26, Noon, Saturday—Last day for dropping courses without a withdrawal or failure being recorded (7th week).
 November 9, Noon, Saturday—Mid-semester deficiency reports due in deans' offices (9th week).
 November 26, 10:00 p.m., Tuesday—Thanksgiving student recess begins.
 December 2, 8:00 a.m., Monday—Classes resume.
 December 2, Monday—Tentative copy of doctors' dissertations due in departmental offices.
 December 9, Monday—Tentative copy of doctors' dissertations due in graduate dean's office.
 December 17, Tuesday—Tentative copies of masters' theses and reports due in departmental offices.
 December 21, Noon, Saturday—Applications for degrees must be made on or before this date.
 December 21, Noon, Saturday—Christmas student recess begins.
 January 6, 8:00 a.m., Monday—Classes resume.
 January 6, Noon, Monday—Final copies of doctors' dissertations due in graduate dean's office.
 January 6, 4:00 p.m., Monday—Tentative copies of masters' theses and reports due in graduate dean's office.

Calendars for the academic year 1957-58 may be secured by directing a card to the Director of Admissions and Registrar.

Agriculture

ARTHUR D. WEBER, *Dean*

The total program in agriculture at Kansas State College consists of three phases of work. These are resident instruction, research, and extension. The program is coordinated through the Dean of Agriculture, with directors of each of the three phases of work administratively responsible to him. The three directors are the Director of the School of Agriculture, the Director of the Agricultural Experiment Station, and the Director of Extension.

The School of Agriculture

ARTHUR D. WEBER, *Dean*

C. PEAIRS WILSON, *Director*

CLYDE WILLIAM MULLEN, *Assistant Dean*

The instructional program of the School of Agriculture has two objectives. First is to develop in students the qualities of an educated person, including capacity for leadership and human understanding and a philosophy for personal, family, and community living. Second is to prepare the student to enter and advance in the occupation of his choice. Accordingly, curriculums in the School of Agriculture are designed to promote both the liberal and the practical education of the student.

The School of Agriculture prepares students for farming, for the scientific investigations of agricultural problems in state and national agencies, 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 has available approximately 4,000 acres of land which are used for experimental work and instruction. It maintains large and well-equipped laboratories for soil and crop work. Ample greenhouse space is available for problems and research work in crops and soils.

The College herds and flocks include 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

Seven 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.

Any candidate for a degree in Agriculture must have had at least six months of farm experience or substitution for farm experience approved by the Director 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 candidate for a degree in milling industry must have had at least three months' experience in a grain elevator, flour mill, feed mill, bakery, or cereal chemistry laboratory, or the equivalent, before obtaining senior classification.

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

CURRICULUMS IN THE SCHOOL OF AGRICULTURE

Eleven curriculums are available in the School of Agriculture. A brief description of each curriculum follows. Pages on which the curriculum outlines may be found are indicated.

Curriculum in Agriculture (Page 59)

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.

Electives must be officially approved by the Director 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.

Students desiring to prepare themselves for scientific or special work in the field of agriculture may, with the approval of the Director 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.

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 Agricultural Economics (Page 60)

This curriculum trains students for farming and for a wide range of positions in agriculture and industries closely allied with agriculture. Successful farming is dependent upon an application of modern business practices as well as scientific knowledge of plants and animals. Those who serve in agricultural industries also need to understand both agricultural science and economics.

The flexibility of the Curriculum in Agricultural Economics permits the student to acquire effective training for a wide variety of occupations.

Three options are provided and within each option provision is made for a liberal number of elective courses. All students in this curriculum take the same courses during the first two years. In the junior and senior years students take courses in one of the three options: Agricultural Administration, Rural Banking, or Agricultural Business and Industries.

This curriculum is intended primarily for students for whom the Bachelor of Science is expected to be a terminal degree but it also provides a sufficient background for those who later decide to do graduate work in economics or agricultural economics.

The large number of electives in Agricultural Administration (Option A) permits the student to select courses that will train him for work in many fields, including:

Farming
Agricultural Extension
Farm Management
Agricultural Statistics
Land Economics

Production Economics
Agricultural Policy
Cooperative Marketing
Market Analysis
Price Analysis

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. These courses may be accepted as pre-theological

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 are 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 Economics with the Option in Agricultural Administration. They should use the name of this curriculum in filling out information blanks in anticipation of enrollment in Kansas State College, and also indicate the option of their choice.

Training in Agricultural Credit and Banking is provided under Rural Banking (Option B). This Option is of a special interest to students who wish to qualify for employment as agricultural representatives or for positions leading to executive positions in banks, insurance companies, and other lending agencies. However, proper selection of electives also will permit the student to qualify for work in Agricultural Extension and similar work.

Agricultural Business and Industries (Option C) combines training in agricultural science and economics with a core of courses in business administration. It is intended to prepare students for employment in analytical, sales, and executive positions in the many industries that directly serve agriculture.

Curriculum in Technical Agricultural Economics (Page 60)

The Curriculum in Technical Agricultural Economics is designed to provide training for professional work in agricultural economics. Requirements in mathematics, statistics, and economics are more rigorous than in the Curriculum in Agricultural Economics. It is expected that students who complete this curriculum will be especially well qualified to do graduate work in agricultural economics and for employment by both private firms and government agencies in positions that require analytical and statistical training.

Curriculum in Technical Agronomy (Page 62)

The Curriculum in Technical Agronomy is designed to provide training for students interested in professional work in agronomy. Four options are provided so that students may specialize in one of four different areas. Soil Science (Option A) is intended to prepare students for professional work in soils at the bachelor's level and for graduate work. Applied Agronomy and Soil Conservation (Option B) is intended to prepare students for professional work in the general fields of agronomy. Crop Science (Option C) 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.

To aid in the evaluation of their credits, all transfer students should indicate the option of their choice at the time they submit their credits for evaluation.

Curriculum in Dairy Manufacturing (Page 63)

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 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 Director of the School of Agriculture.

Curriculums in Flour and Feed Milling Industries (Page 64)

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.

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.

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 another college or university, and who choose one of the curriculums in milling, should indicate in which of the curriculums they expect to major, and designate the option of their choice.

Curriculum in Horticulture (Page 66)

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.

Curriculum in Landscape Design (Page 67)

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 preparation of landscape plans. Those completing the curriculum are eligible to receive the degree of Bachelor of Science in Landscape Design.

Curriculum in Agricultural Education (Page 68)

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 courses in agricultural economics, agronomy, animal husbandry, dairying, entomology, horticulture, and poultry husbandry.

The curriculum 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.

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, Principles 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.

Curriculum in Agricultural Journalism (Page 69)

This curriculum is for those who wish to obtain specialized knowledge in a phase 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, radios, 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 industries that process agricultural products or manufacture products for use on farms or ranches.

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 Director of the School of Agriculture.

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.

County Extension Work

The Curriculum in Agriculture and the Curriculum in Agricultural Economics 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 year.

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 another part of this catalogue under the title, "Home Study and Community Services."

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.

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
Gl. Gg.	110	Gen. Geology	3	Spch.	105	Oral Comm. I	2
Chem.	210	Chemistry I	5	Bot.	110	Gen. Botany	5
A. H.	106	El. of An. Husb. ....2 and		Chem.	230	Chem. II Rec.	3
A. H.	113	El. of An. Husb. Lab. 1 or		A. H.	106	El. of An. Husb. ....2 and	
D. H.	104	El. of Dairying	3	A. H.	113	El. of An. Husb. Lab. 1 or	
		Air or Military Science ..	1	D. H.	104	El. of Dairying	3
Gn. Ag.	004	Freshman Assembly	0			Air or Military Science ..	1
Gn. Ag.	003	Agr. Seminar	0	Gn. Ag.	003	Agr. Seminar.....	0
Ph. Ed.	010	Physical Education M	0	Ph. Ed.	010	Physical Education M	0
Total			15	Total			16

SOPHOMORE

Hort.	110	El. of Hort. Rec.	2	Ec. So.	110	Economics I	3
Hort.	111	El. of Hort. Lab.	1	A. H.	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 or Military Science ..	1
P. H.	104	Farm Poul. Prod. Rec. ..	2	Gn. Ag.	003	Agr. Seminar	0
P. H.	105	Farm Poul. Prod. Lab. ..	1	Ph. Ed.	010	Physical Education M	0
		Air or Military Science ..	1				
Gn. Ag.	003	Agr. Seminar	0				
Ph. Ed.	010	Physical Education M	0				
Total			16	Total			16

JUNIOR

Math.	175	College Algebra	3 or	Entom.	210	Gen. Econ. Entomol.	3
Math.	130	Mathematics in Agr.	3	A. H.	405	Genetics	3 or
A. H.	405	Genetics	3 or	Bact.	140	Agr. Microbiology	3
Bact.	140	Agr. Microbiology	3	Journ.	305	Agr. Journalism	3
Physi.	131	Anat. and Physiology ....3 or		Gn. Ag.	003	Agr. Seminar	0
Bot.	300	El. Plant Physiology	3			Elective	7
Ag. Ec.	206	Farm Organization	3				
Gn. Ag.	003	Agr. Seminar	0				
Engl.	090	English Proficiency	0				
		Elective	5				
Total			17	Total			16

SENIOR

Gn. St.	250	Humanities I	4	Gn. St.	260	Humanities II	4
Gn. Ag.	003	Agr. Seminar	0	Gn. Ag.	003	Agr. Seminar	0
		Elective	12			Elective	12
Total			16	Total			16

Number of hours required for graduation, 128.

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

	Semester Hours
Major Electives	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.	
Minor Agricultural Electives	9
These electives may be taken from one or more departments but must strengthen the student's preparation in agriculture.	
General Electives	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.

Curriculum in Agricultural Economics
B. S. in Agriculture
FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
A. H.	106	El. of An. Husb.	2	Ag. Ec.	200	Intro. to Agr. Econ.	1
A. H.	113	El. of An. Husb. Lab.	1	Chem.	310	Organic Chemistry (Agr.) ..	3
Chem.	110	General Chemistry	5	Math.	145	General Algebra	5
Engl.	125	Written Comm. I	3	Gl. Gg.	110	General Geology	3
Gn. St.	150	Biology I	4	Gn. St.	160	Biology II	4
		Air or Military Science ..	1			Air or Military Science ..	1
Gn. Ag.	004	Freshman Assembly	0	Gn. Ag.	003	Agr. Seminar	0
Gn. Ag.	003	Agr. Seminar	0	Ph. Ed.	010	Physical Education	0
Ph. Ed.	010	Physical Education	0				
Total			16	Total			17

SOPHOMORE

D. H.	104	El. of Dairying	3	Ag. Ec.	203	Econ. of Farm Business ..	3
Agron.	106	Farm Crops	4	Agron.	149	Soils	4
P. H.	104	Farm Poul. Prod. Rec.	2	A. H.	155	Prin. of Feeding	3
P. H.	105	Farm Poul. Prod. Lab.	1	Ec. So.	120	Economics II	3
Engl.	135	Written Comm. II	2			Air or Military Science ..	1
Ec. So.	110	Economics I	3	Spch.	105	Oral Comm. I	2
		Air or Military Science ..	1	Gn. Ag.	003	Agr. Seminar	0
Gn. Ag.	003	Agr. Seminar	0	Ph. Ed.	010	Physical Education	0
Ph. Ed.	010	Physical Education	0				
Total			16	Total			16

JUNIOR

Ag. Ec.	597	Agr. Econ. Stat.	3	Ag. Ec.	290	Rural Sociology	3
Gn. St.	250	Humanities I	4	Journ.	305	Agr. Journalism	3
Gn. Ag.	003	Agr. Seminar	0	Gn. St.	260	Humanities II	4
Engl.	090	English Prof.	0	Gn. Ag.	003	Agr. Seminar	0
		Option A, B, or C	9			Option A, B, or C	6
Total			16	Total			16

SENIOR

Gn. Ag.	003	Agr. Seminar	0	Ag. Ec.	553	Agr. Econ. Summary	2
		Option A, B, or C	18	Gn. Ag.	003	Agr. Seminar	0
						Option A, B, or C	15
Total			18	Total			17

Total hours required for graduation, 132.

OPTION A (Agricultural Administration)

Ag. Ec.	207	Farm Management	3	Entom.	210	Gen. Econ. Entomology ..	3
Ag. Ec.	212	Farm Accounting	3	Hort.	110	El. of Hort.	2
Ag. Ec.	219	Agr. Marketing I	3	Hort.	111	El. of Hort. Lab.	1
Ag. Ec.	561	Land Economics	3			Elective	30
							48

OPTION B (Rural Banking)

Ag. Ec.	207	Farm Management	3	B. A.	330	Principles of Acctg.	3
Ag. Ec.	219	Agr. Marketing I	3	Ec. So.	130	Money and Banking	3
Ag. Ec.	533	Adv. Farm Org.	3	Ec. So.	476	Monetary Credit and	
Ag. Ec.	561	Land Economics	3			Fiscal Policies	2
Ag. Ec.	567	Rural Bank Operations ..	4			Elective	21
Ag. Ec.	569	Agr. Finance	3				
							48

OPTION C (Agricultural Business and Industries)

B. A.	330	Principles of Acctg.	3	Ec. So.	130	Money and Banking	3
B. A.	730	Cost Accounting	3	H. G. P.	295	Business Law I	3
B. A.	405	Bus. Org. and Fin.	3	Psych.	310	Gen. Psychology	3
B. A.	440	Marketing	3			Elective	24
B. A.	—	Business Policy	3				
							48

Elective courses must be distributed among courses offered by the Department of Agricultural Economics, other departments within the School of Agriculture, and departments outside the School of Agriculture. All electives must be officially approved before assignment, by both the Director of the School of Agriculture and the Head of the Department of Economics and Sociology.

Curriculum in Technical Agricultural Economics*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
Chem.	110	General Chemistry	5	Ag. Ec.	200	Intro. to Agr. Econ.	1
Gn. St.	150	Biology I	4	Ec. So.	110	Economics I	3
Math.	175	College Algebra	3	Gl. Gg.	110	General Geology	3
		Air or Military Science ..	1	Gn. St.	160	Biology II	4
Gn. Ag.	004	Freshman Assembly	0	Math.	190	Plane Trig.	3
Gn. Ag.	003	Agr. Seminar	0			Air or Military Science ..	1
Ph. Ed.	010	Physical Education	0	Gn. Ag.	003	Agr. Seminar	0
				Ph. Ed.	010	Physical Education	0
Total			16	Total			17

SOPHOMORE

Agron.	149	Soils	4	Ag. Ec.	203	Econ. of Farm Business ..	3
A. H.	155	Prin. of Feeding	3	Ag. Ec.	597	Agr. Econ. Statistics	3
Ec. So.	120	Economics II	3	Agron.	106	Farm Crops	4
H. G. P.	365	Elementary Logic	3	Ec. So.	130	Money and Banking	3
Math.	215	Anal. Geom. and Calc. I	4	Math.	230	Anal. Geom. and Calc. II	4
		Air or Military Science ..	1			Air or Military Science ..	1
Gn. Ag.	003	Agr. Seminar	0	Gn. Ag.	003	Agr. Seminar	0
Ph. Ed.	010	Physical Education	0	Ph. Ed.	010	Physical Education	0
Total			18	Total			18

JUNIOR

Ag. Ec.	557	Production Economics	3	B. A.	330	Prin. of Accounting	3
A. H.	197	Livestock Production	3	Gn. St.	260	Humanities II	4
Gn. St.	250	Humanities I	4	Gn. Ag.	003	Agr. Seminar	0
Math.	245	Anal. Geom. and Calc. III	4			Elective	11
Spch.	105	Oral Comm. I	2				
Gn. Ag.	003	Agr. Seminar	0				
Engl.	090	English Proficiency	0				
		Elective	2				
Total			18	Total			18

SENIOR

Ec. So.	505	Inter. Economics	3	Ag. Ec.	553	Agr. Econ. Summary	2
Engl.	444	Sci. Report Writing	2	Ag. Ec.	573	Market Prices	3
Math.	725	Stat. Methods I	3	Ec. So.	515	Econometrics	3
Gn. Ag.	003	Agr. Seminar	0	Gn. Ag.	003	Agr. Seminar	0
		Elective	9			Elective	10
Total			17	Total			18

Total hours required for graduation, 140.

Electives: 9 hours in Agricultural Economics; 9 hours in Social Science, not Agricultural Economics; 14 hours general electives.

Curriculum in Technical Agronomy
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
Math.	175	College Algebra	3	Math.	190	Pl. Trigonometry	3
Chem.	210	Chemistry I	5	Chem.	230	Chemistry II Rec.	3
Gl. Gg.	110	Gen. Geology	3	Chem.	250	Chemistry II Lab.	2
A. H.	106	El. of An. Husb.	2	Bot.	110	Gen. Botany	5
		Air or Military Science ..	1			Air or Military Science ..	1
Gn. Ag.	003	Agr. Seminar	0	Gn. Ag.	003	Agr. Seminar	0
Gn. Ag.	004	Freshman Assembly	0	Ph. Ed.	010	Physical Education	0
Ph. Ed.	010	Physical Education	0				
Total			17	Total			16

SOPHOMORE

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

JUNIOR

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

SENIOR

Gn. St.	250	Intro. to Humanities I	4	Gn. St.	260	Intro. to Humanities II....	4
Gn. Ag.	003	Agr. Seminar	0	Gn. Ag.	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.

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	Ag. Ec.	557	Production Econ.	3 or
Agron.		Any courses in soils	6	Ag. Ec.	206	Farm. Org.	3
Hort.	320	El. of Hort.	3	Bot.	401	Plant Path. I	3
Bot.	600	Plant Physiology	4	Entom.	210	Gen. Ec. Entomol.	3
						Electives	23
OPTION C (Crop Science)							
Agron.		Any courses in crops	12	Ag. Ec.	557	Production Econ.	3 or
Agron.		Any course in soils	3	Ag. Ec.	206	Farm Org.	3
Math.	320	El. Statistics	3	Bot.	410	Plant Path. I	3
Bot.	600	Plant Physiology	4	Entom.	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
Entom.	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

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

FIRST SEMESTER				SECOND SEMESTER			
		<i>Course</i>	<i>Scm. Hrs.</i>			<i>Course</i>	<i>Scm. Hrs.</i>
Engl.	125	Written Comm. I	3	Engl.	135	Written Comm. II	2
Gn. St.	150	Biology I	4	Spch.	105	Oral Comm. I	2
Chem.	210	Chemistry I	5	Gn. St.	160	Biology II	4
D. H.	104	El. of Dairying	3	Chem.	230	Chemistry II Rec.	3
		Air or Military Science ..	1	Chem.	250	Chemistry II Lab.	2 or
Gn. Ag.	004	Freshman Assembly	0	D. H.	118	Dairy Cattle Judg.	2
Gn. Ag.	003	Agr. Seminar	0	A. H.	106	El. of An. Husb.	2
Ph. Ed.	010	Physical Education	0	A. H.	113	El. of An. Husb. Lab. ...	1
						Air or Military Science ..	1
				Gn. Ag.	003	Agr. Seminar	0
				Ph. Ed.	010	Physical Education	0
Total			16	Total			17

SOPHOMORE

D. H.	125	Fund. Dairy Tech.	2	D. H.	139	Mkt. Milk and Dy. Insp. .	4
Math.	175	College Algebra	3 or	Bact.	510	Dairy Bacteriology	3
Math.	130	Mathematics in Agr.	3	Bact.	515	Dairy Bacteriology Lab. .	2
Bact.	140	Agr. Microbiology	3	Ec. So.	330	Prin. of Acctg.	3
Chem.	310	Organic Chem. (Agr.) ..	3	Psych.	310	Gen. Psychology	3
Ec. So.	110	Economics I	3			Air or Military Science ..	1
		Air or Military Science ..	1	Gn. Ag.	003	Agr. Seminar	0
Gn. Ag.	003	Agr. Seminar	0	Ph. Ed.	010	Physical Education	0
Ph. Ed.	010	Physical Education	0				
Total			15	Total			16

JUNIOR

D. H.	132	Milk Production	3	D. H.	181	Cheese Making	3
D. H.	146	Butter Making	3	D. H.	188	Dairy Prod. Judg.	1
Engl.	155	Comm'l Corresp.	3	Psych.	705	Psych. Adv. and Sell'g ..	3
Gn. Ag.	003	Agr. Seminar	0	Gn. Ag.	003	Agr. Seminar	0
Engl.	090	English Proficiency	0	Gn. St.	220	Introd. Soc. Sci. II	4
Gn. St.	210	Introd. Soc. Sci. I	4			Elective	7
		Elective	5				
Total			18	Total			18

SENIOR

D. H.	174	Ice Cream Making	3	D. H.	167	Cond. and Pwd. Milk	3
D. H.	195	Adv. Dy. Prod. Judg.	1	D. H.	404	Dairy Seminar	1
D. H.	446	Dairy Plant Mgt.	2	D. H.	453	Tech. Control	3
Gn. Ag.	003	Agr. Seminar	0	Gn. Ag.	003	Agr. Seminar	0
		Elective	10			Elective	9
Total			16	Total			16

Number of hours required for graduation, 132.

† 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 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
Gn. St.	150	Biology I	4	Chem.	250	Chemistry II Lab.	2
Engl.	125	Written Comm. I	3	Gn. St.	160	Biology II	4
Math.	175	College Algebra	3	M. E.	210	Engg. Drawing	2
Millg.	111	Survey of Milling	1	Math.	190	Plane Trig.	3
Gn. Ag.	004	Freshman Assembly	0	Millg.	104	El. of Milling	2
Gn. Ag.	003	Agr. Seminar	0	Gn. Ag.	003	Agr. Seminar	0
Millg.	018	Milling Ind. Seminar	0	Millg.	018	Milling Ind. Seminar	0
		Air or Military Science ..	1			Air or Military Science ..	1
		Physical Education	0			Physical Education	0
Total			17	Total			17

SOPHOMORE

Ec. So.	110	Economics I	3	Engl.	140	Written Comm. IIB	3
Millg.	118	Flow Sheets	2	Millg.	125	Mill. Prac. I	3
Phys.	110	Gen. Physics I	4	Phys.	120	General Phys. II	4
Gn. Ag.	003	Agr. Seminar	0	Gn. Ag.	003	Agr. Seminar	0
Millg.	018	Milling Ind. Seminar	0	Millg.	018	Milling Ind. Seminar	0
		Air or Military Science ..	1			Air or Military Science ..	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	Millg.	460	Qual. Wht. and Flr.	3
H. G. P.	115	Civilization I	3	H. G. P.	130	Civilization II	3
Spch.	105	Oral Comm. I	2	Gn. Ag.	003	Agr. Seminar	0
Gn. Ag.	003	Agr. Seminar	0	Millg.	018	Milling Ind. Seminar	0
Millg.	018	Milling Ind. Seminar	0			Option, A, B, or C	8
Engl.	090	English Proficiency	0			Electives	3
		Option A, B, or C	6				
		Electives	3				
Total			17	Total			17

SENIOR

Millg.	481	Exp. Baking I	3	Engl.	155	Com'l Corres.	3
Gn. Ag.	003	Agr. Seminar	0	Entom.	165	Mill. Entomology	4
Millg.	018	Milling Ind. Seminar	0	Gn. Ag.	003	Agr. Seminar	0
		Option A, B, or C	11	Millg.	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.

OPTION A (Operation)							
Ap. M.	405	Applied Mechanics	4	Math.	215	Anal. Geom. and Calc. I	4
Ap. M.	410	Mech. of Matls. I Rec.	4	Math.	230	Anal. Geom. and Calc. II	4
Ap. M.	474	Fluid Mechanics B	3	Millg.	439	Adv. Flow Sheets	2
Chem.	330	Gen. Org. Chem.	5	Millg.	453	Milling Practice II	3
E. E.	120	Elec. Engg. C Rec.	2	Millg.	418	Flr. and Feed Mill Con.	3
E. E.	124	Elec. Engg. C Lab.	1	Millg.	404	Mill. Tech. I	2
M. E.	215	Descriptive Geometry	2	Millg.	411	Mill. Tech. II	2
M. E.	220	Machine Dwg. I	2	Ec. So.	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	Millg.	425	Flr. and Feed Analysis ..	3
Chem.	590	Phys. Chem. I Lab.	2	Millg.	446	Adv. Wht. and Flr. Test.	3
OPTION C (Administration)							
Ag. Ec.	529	Grain Marketing	3	Psych.	310	Gen. Psychology	3
Chem.	330	Gen. Org. Chem.	5	H. G. P.	295	Business Law I	3
Chem.	435	Quantitative Analysis	4	A. H.	155	Prin. of Feeding	3
Ec. So.	130	Money and Banking	3	Math.	320	El. of Statistics	3
Ec. So.	330	Prin. of Accounting	3	Math.	340	App. El. of Statistics	2
Ec. So.	405	Bus. Org. and Finance	3	Millg.	425	Flour and Feed Analysis	3
Ec. So.	450	Sales Management	3	Millg.	200	El. of Feed Manufacture	8
Ec. So.	455	Labor Econ. I	3				

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

	<i>Course</i>	<i>Sem. Hrs.</i>
Chem.	210 Chemistry I	5
Gn. St.	150 Biology I	4
Engl.	125 Written Comm. I	3
Math.	175 College Algebra	3
Millg.	111 Survey of Milling	1
Gn. Ag.	004 Freshman Assembly	0
Millg.	018 Milling Ind. Seminar	0
Gn. Ag.	003 Agr. Seminar	0
	Air or Military Science ..	1
	Physical Education	0

Total 17

SECOND SEMESTER

	<i>Course</i>	<i>Sem. Hrs.</i>
Chem.	230 Chemistry II Rec.	3
Chem.	250 Chemistry II Lab.	2
Gn. St.	160 Biology II	4
M. E.	210 Engg. Draw.	2
Math.	190 Plane Trig.	3
Millg.	104 El. of Milling	2
Gn. Ag.	003 Agr. Seminar	0
Millg.	018 Milling Ind. Seminar	0
	Air or Military Science ..	1
	Physical Education	0

Total 17

SOPHOMORE

D. H.	104	El. of Dairy.	3 or
A. H.	106	El. of A. H. Lec.	2 and
A. H.	113	El. of A. H. Lab.	1
Ec. So.	110	Economics I	3
Millg.	118	Flow Sheets	2
Millg.	200	El. of Feed Mfg.	3
Phys.	110	Gen. Physics I	4
Spch.	105	Oral Comm. I	2
Gn. Ag.	003	Agr. Seminar	0
Millg.	018	Milling Ind. Seminar	0
		Air or Military Science ..	1
		Physical Education	0

Total 18

Engl.	140	Written Comm. IIB	3
Phys.	120	Gen. Physics II	4
P. H.	104	Farm Poul. Prod. Rec.	2
P. H.	105	Farm Poul. Prod. Lab.	1
Gn. Ag.	003	Agr. Seminar	0
Millg.	018	Milling Ind. Seminar	0
		Air or Military Science ..	1
		Physical Education	0
		Option A, B, or C	5

Total 16

JUNIOR

Agron.	135	Mkt. Grading Cer.	3
A. H.	155	Prin. of Feeding	3 or
Chem.	730	Prin. of An. Nutr.	3
Physi.	131	Anat. and Physiology	3
Gn. Ag.	003	Agr. Seminar	0
Millg.	018	Milling Ind. Seminar	0
Engl.	090	English Proficiency	0
		Option A, B, or C	5
		Electives	3

Total 17

Ec. So.	465	Labor Management	2
Millg.	210	Feed Form. and Blend. ..	3
Gn. Ag.	003	Agr. Seminar	0
Millg.	018	Milling Ind. Seminar	0
		Option A, B, or C	9
		Electives	3

Total 17

SENIOR

H. G. P.	115	Civilization I	3
Millg.	600	Feed Tech. I	3
Gn. Ag.	003	Agr. Seminar	0
Millg.	018	Milling Ind. Seminar	0
		Option A, B, or C	8
		Electives	3

Total 17

Entom.	165	Mill. Ent.	4
H. G. P.	130	Civilization II	3
Gn. Ag.	003	Agr. Seminar	0
Millg.	018	Milling Ind. Seminar	0
		Option A, B, or C	7
		Electives	3

Total 17

Total number of hours required for graduation, 136.

OPTION A (Operation)

Ap. M.	405	Applied Mechanics	4	M. E.	230	Mechanism	3
Ap. M.	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
M. E.	215	Descriptive Geom.	2	Millg.	601	Feed Tech. II	3
M. E.	220	Machine Drawing I	2	Millg.	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	Millg.	425	Flr. and Feed Analysis	3

OPTION C (Administration)

Chem.	330	Org. Chemistry	5	Ec. So.	450	Sales Management	3
Chem.	435	Quantitative Analysis	4	H. G. P.	295	Bus. Law I	3
Ec. So.	130	Money and Banking	3	Math.	320	El. of Stat.	3
Ec. So.	330	Principles of Acct.	3	Math.	340	Applied El. of Stat.	2
Ec. So.	405	Bus. Org. and Fin.	3	Millg.	425	Flr. and Feed Analysis	3
Ag. Ec.	529	Grain Marketing	3				

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	Spch.	105	Oral Comm. I	2
Gl. Gg.	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 or Military Science ..	1	Ec. So.	330	Prin. of Acetg.	3
Gn. Ag.	004	Freshman Assembly	0			Air or Military Science ..	1
Gn. Ag.	003	Agr. Seminar	0	Gn. Ag.	003	Agr. Seminar	0
Ph. Ed.		Physical Education	0	Ph. Ed.		Physical Education	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	Ec. So.	110	Econ. I	3
Bot.	690	Tax. Bot. Fl. Pl.	3			Air or Military Science ..	1
		Air or Military Science ..	1	Gn. Ag.	003	Agr. Seminar	0
Gn. Ag.	003	Agr. Seminar	0	Ph. Ed.		Physical Education	0
Ph. Ed.		Physical Education	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	Gn. St.	260	Intro. to Humanities II ..	4
A. H.	405	Genetics	3	Entom.	210	Gen. Ec. Entomol.	3
Bot.	410	Plant Path. I	3	Hort.	411	Lit. of Hort.	2
Gn. St.	250	Intro. to Humanities I ..	4	Gn. Ag.	003	Agr. Seminar	0
Gn. Ag.	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

Entom.	425	Hort. Entomol.	2	Hort.	404	Spraying	3
Agron.	530	Soil Fertility	3	Bot.	420	Hort. Crop Diseases	3
Hort.	425	Hort. Seminar	1	Journ.	305	Agr. Journalism	3
Gn. Ag.	003	Agr. Seminar	0	Gn. Ag.	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: Women, 128; men, 132.

OPTION A (Floriculture)				OPTION B (Ornamental Horticulture)			
Hort.	139	Plant Materials I	3	Hort.	132	Nursery Practice	3
Hort.	132	Nursery Practice	3	Bot.	670	Plant Ecology	3
Hort.	182	Gh. Cons. and Mgt.	3	Hort.	139	Plant Materials I	3
Hort.	196	El. of Floriculture	3	Hort.	146	Plant Materials II	3
Hort.	217	Comm. Floriculture I	3	Hort.	453	Planting Design	2
Hort.	224	Comm. Floriculture II	3	Hort.	418	Arboriculture	3
Hort.	203	Floral Arrgt. I	2			Social Science Courses* ..	6
		Social Science Courses* ..	6			Electives†	17
		Electives†	14	OPTION D (Vegetable Crops)			
OPTION C (Pomology)				Hort.		Vegetable Courses	8
Hort.		Any Pomology Courses	9	Hort.	175	Pres. Food by Freezing ..	3
Hort.	189	Veg. Gardening	3	Hort.	160	Small Fruits	3
Bact.	140	Agr. Microbiology	3	Hort.	140	Agr. Microbiology	3
Hort.	175	Pres. Food by Freezing ..	3	D. H.	104	El. of Dairying	3 or
D. H.	104	El. of Dairying	3 or	P. H.	104	Farm. Poul. Prod. Lec. 2 and	
P. H.	104	Farm. Poul. Prod. Lec. 2 and		P. H.	105	Farm. Poul. Prod. Lab. ..	1
P. H.	105	Farm. Poul. Prod. Lab. ..	1			Social Science Courses* ..	6
		Social Science Courses* ..	6			Electives†	14
		Electives†	13				

* 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

	<i>Course</i>	<i>Sem. Hrs.</i>
Bot.	120 Gen. Botany	5
Gn. St.	110 Man's Phys. World I	4
Engl.	125 Written Comm. I	3
Arch.	120 Freehand Draw. I	2
M. E.	210 Engg. Draw.	2
	Air or Military Science ..	1
Gn. Ag.	004 Freshman Assembly	0
Gn. Ag.	003 Agr. Seminar	0
Ph. Ed.	Physical Education	0

SECOND SEMESTER

	<i>Course</i>	<i>Sem. Hrs.</i>
Hort.	110 El. of Hort. Rec.	2
Hort.	111 El. of Hort. Lab.	1
Gn. St.	120 Man's Phys. World II	4
Engl.	135 Written Comm. II	2
Spch.	105 Oral Comm. I	2
Arch.	124 Freehand Draw. II	2
Math.	190 Plane Trig.	3
	Air or Military Science ..	1
Gn. Ag.	003 Agr. Seminar	0
Ph. Ed.	Physical Education	0

Total 16 or 17

Total 16 or 17

SOPHOMORE

Hort.	150 Lands. Gardening	3
Arch.	230 El. of Arch. I	4
Arch.	106 Shades and Shadows	1
Arch.	285 Hist. Paintg. and Sculp. 3	
Bot.	410 Plant Pathology I	3
Bot.	690 Tax. Bot. Flrg. Plts.	3
	Air or Military Science ..	1
Gn. Ag.	003 Agr. Seminar	0
Ph. Ed.	Physical Education	0

Total 17 or 18

Gl. Gg.	410 Geomorphology	4
Arch.	234 El. of Arch. II	4
Arch.	111 Perspective Drawing	1
Arch.	200 Apprec. of Arch.	3
Arch.	130 Pencil Sketch.	2
Bot.	670 Plant Ecology	3
	Air or Military Science ..	1
Gn. Ag.	003 Agr. Seminar	0
Ph. Ed.	Physical Education	0

Total 17 or 18

JUNIOR

Hort.	474 Theo. Lds. Des.	2 or
Hort.	446 Lands. Constr.	3
Hort.	139 Plant Materials I	3
C. E.	120 Surveying I	2
Agron.	149 Soils	4
Arch.	160 Water Color I	2
Gn. Ag.	003 Agr. Seminar	0
Engl.	090 English Proficiency	0
	Electives	3

Total 16 or 17

Hort.	453 Planting Design	2 or
Hort.	439 Community Planning	3
Hort.	146 Plant Materials II	3
Entom.	210 Gen. Econ. Ent.	3
C. E.	125 Surveying II	3
Gn. Ag.	003 Agr. Seminar	0
	Electives	4

Total 15 or 16

SENIOR

Hort.	460 Lands. Design I	4
Hort.	446 Lands. Constr.	3 or
Hort.	470 Theo. Lands. Des.	2
Gn. St.	210 Introd. Soc. Sci. I	4
Gn. Ag.	003 Agr. Seminar	0
	Electives	6

Total 16 or 17

Hort.	467 Lands. Design II	4
Hort.	439 Community Planning	3 or
Hort.	453 Planting Design	2
Gn. St.	220 Introd. Soc. Sci. II	4
Journ.	305 Agr. Journalism	3
Gn. Ag.	003 Agr. Seminar	0
	Electives	3

Total 16 or 17

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

Curriculum in Agricultural Education

B. S. in Agriculture

(For Vocational Agriculture Teachers)

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
Bot.	110	Gen. Botany	5	D. H.	104	El. of Dairying	3
Psych.	310	Gen. Psychology	3	Chem.	110	General Chemistry	5
A. H.	106	Elem. of An. Husb.	2	Gl. Gg.	110	General Geology	3
A. H.	113	Elem. of An. Husb. Lab. ..	1	Spch.	105	Oral Comm. I	2
I. E.	180	Welding	1			Air or Military Science ..	1
		Air or Military Science ..	1	Gn. Ag.	003	Agr. Seminar	0
Gn. Ag.	004	Freshman Assembly	0	Ph. Ed.	010	Physical Education	0
Gn. Ag.	003	Agr. Seminar	0				
Ph. Ed.	010	Physical Education	0				
Total			16	Total			16

SOPHOMORE

Chem.	310	Org. Chemistry (Agr.)	3	Agron.	106	Farm Crops	4
Educ.	100	Educ. Psychology I	3	A. H.	155	Prin. of Feeding	3
Spch.	205	Parl. Law	1	Ec. So.	110	Economics I	3
Hort.	110	El. of Horticulture Rec. ..	2	Educ.	105	Educ. Psychology II	3
Hort.	111	El. of Horticulture Lab. ..	1	Ag. E.	120	Farm Power	3
Agron.	149	Soils	4			Air or Military Science ..	1
Ag. E.	110	Farm Mechanics	2	Gn. Ag.	003	Agr. Seminar	0
		Air or Military Science ..	1	Ph. Ed.	010	Physical Education	0
Gn. Ag.	003	Agr. Seminar	0				
Ph. Ed.	010	Physical Education	0				
Total			17	Total			17

JUNIOR

Agron.	160	Soil Management	3	Ag. E.	212	Farm Accounting	3
A. H.	197	Livestock Production	3	P. H.	104	Farm Poul. Prod. Rec. ..	2
A. H.	134	Prin. of Livestock Sel.	3	P. H.	105	Farm Poul. Prod. Lab. ..	1
A. H.	204	El. of Meat Proc. <i>and</i> ..	2	Entom.	210	Gen. Econ. Entomology ..	3
A. H.	211	Meat Processing <i>or</i> ..	1	Journ.	305	Agr. Journalism	3
D. H.	132	Milk Production I	3	Educ.	120	Prin. of Sec. Education ..	3
Bot.	410	Plant Pathology I	3	Ag. E.	115	Farm Machinery Repair ..	3
Educ.	505	Voc. Education	3	Gn. Ag.	003	Agr. Seminar	0
Gn. Ag.	003	Agr. Seminar	0				
Engl.	090	English Proficiency	0				
Total			18	Total			18

SENIOR

Ag. Ec.	218	Marketing Farm Prods. ..	3	A. H.	225	An. Husb. Practicums	2
Ag. Ec.	206	Farm Organization	3	Agron.	114	Grain Gradg. and Judg. ..	2
Educ.	255	Meth. of Teaching Agr. ..	3	P. H.	133	Poultry Practicums	2
Ag. E.	410	Farm Bldgs. Constr.	3	Educ.	265	Tchg. Partic. in Agr.	3
Ag. E.	415	Agr. Engg. Applications ..	2	Ag. E.	405	Farm Mechanics Meth. ..	3
H. G. P.	255	Amer. Government	3	Ec. So.	290	Rural Sociology	3
Gn. Ag.	003	Agr. Seminar	0	Gn. Ag.	003	Agr. Seminar	0
Total			17	Total			15

Number of hours required for graduation, 134.

Curriculum in Agricultural Journalism*B. S. in Agricultural Journalism***FRESHMAN**

FIRST SEMESTER				SECOND SEMESTER			
		<i>Course</i>	<i>Sem. Hrs.</i>			<i>Course</i>	<i>Sem. Hrs.</i>
Gn. Ag.	003	Agr. Seminar	0	Gn. Ag.	003	Agr. Seminar	0
Gn. Ag.	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
Gl. Gg.	110	General Geology	3			Air or Military Science ..	1
		Air or Military Science ..	1	Ph. Ed.		Physical Education	0
Ph. Ed.		Physical Education	0	Journ.	050	Tech. Journ. Lec.	0
Spch.		Oral Comm. I	2	Journ.	105	Graphic Arts Survey	2
Journ.		Tech. Journ. Lec.	0	Journ.	115	Typography Lab.	1
		Agr'l elective	3			Agr'l elective	3
Total			17	Total			17

SOPHOMORE

Gn. Ag.	003	Agr. Seminar	0	A. H.	405	Genetics	3
H. G. P.	365	Elementary Logic	3 or	Gn. Ag.	003	Agr. Seminar	0
Math.	130	Mathematics in Agr.	3	Ag. Ec.	290	Rural Sociology	3 or
		Air or Military Science ..	1	Gl. Gg.	210	Prin. of Geography	3
Ph. Ed.		Physical Education	0			Air or Military Science ..	1
Journ.	050	Tech. Journ. Lec.	0	Ph. Ed.		Physical Education	0
Journ.	220	Reporting I	2	Journ.	050	Tech. Journ. Lec.	0
Journ.	221	Reporting I Lab.	1	Journ.	225	Reporting II	3
Zool.	110	Gen. Zoology	5			Agr'l elective	7
		Agr'l elective	5	Total			17
Total			17	Total			17

JUNIOR

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

SENIOR

Gn. Ag.	003	Agr. Seminar	0	Ag. Ec.	537	Agricultural Policy	3
Gn. St.	250	Intro. to Human. I	4	Gn. Ag.	003	Agr. Seminar	0
Journ.	050	Tech. Journ. Lec.	0	Gn. St.	260	Intro. to Human. II	4
Journ.	405	Reporting III	3	Journ.	050	Tech. Journ. Lec.	0
		Agr'l elective	3	Journ.	450	Rural Press	2 or
		Elective	7	Journ.	315	Radio and TV News	2
Total			17	Journ.	485	Interp. of Contemp.	
Total			17			Affairs	3
						Elective	5
Total			17	Total			17

Number of hours required for graduation, 136.

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.

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

- 200. Introduction to Agricultural Economics.** (1) II. A survey of the field of agricultural economics with emphasis on the problems with which agricultural economics is concerned. To be taken during the first year a student may be majoring in the Department of Agricultural Economics.
- 203. Economics of the Farm Business.** (3) I, II. 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. Pr.: Ec. So. 110, Math. 145 or 175, or consent of the instructor.
- 206. Farm Organization.** (3) I, II. Economic forces affecting the organization and operation of the farm business. Two hours rec. and three hours lab. a week. Pr.: Ec. So. 110, Agron. 149, A. H. 155.
- 207. Farm Management.** (3) I, II. Organization and management of the farm with special emphasis on principles and methods of analyzing factors which affect production and marketing decisions. Pr.: Ag. Ec. 203, Agron. 149, A. H. 155.
- 212. Farm Accounting.** (3) I, II. 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. Pr.: Ec. So. 110.
- 218. Marketing of Farm Products.** (3) I, II. An introduction to marketing functions, types of agencies involved in marketing, market organization and regulation, marketing efficiency and price-making forces. Pr.: Ec. So. 110.
- 219. Agricultural Marketing I.** (3) I. The organization and structure of the market for agricultural products with special emphasis on principles and methods of analysis of marketing forces. Pr.: Ec. So. 120, Ag. Ec. 203.
- 220. Rural Bank Operations and Services.** (4) II. A study of the organization and services of banks in rural areas, and legal phases of bank operations. The day-to-day operations of individual banks, including management and personnel problems. Lectures from rural banks. Pr.: Ec. So. 130 and enrollment in Rural Banking option or consent of instructor.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 527. Agricultural Marketing II.** (3) II. Advanced principles of marketing and techniques of market analysis with emphasis on solving problems which arise in the marketing system. Pr.: Ag. Ec. 219.

- 528. Advanced Agricultural Marketing.** (3) Offered on sufficient demand. Emphasis on application of advanced techniques of economic analysis to particular areas of agricultural marketing. Student will select for concentrated study one of the following fields: Livestock Marketing, Grain Marketing, Dairy Marketing, Egg and Poultry Marketing, Demand and Price Analysis, Cooperative Marketing. Pr.: Ag. Ec. 527, or consent of instructor.
- 529. Grain Marketing.** (3) I, II. Price influences and relationships, buying and selling problems, domestic and export trade; grain trade organization and regulation. Three hours rec. a week. Pr.: Ec. So. 110.
- 533. Advanced Farm Organization.** (3) II. Advanced studies of factors affecting the successful organization and operation of farms. Two hours rec. and three hours lab. a week. Pr.: Ag. Ec. 206.
- 537. Agricultural Policy.** (3) I, II. 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. Pr.: Ec. So. 110; senior standing.
- 545. Conservation of Natural Resources.** (2) II, even years. A survey of the major natural resources in the United States, and the development of principles for their conservation. Pr.: Ec. So. 110; junior standing.
- 549. World Agriculture.** (3) II. 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. Pr.: Ec. So. 110 or Gn. St. 160; senior standing.
- 553. Agricultural Economics Summary.** (2) I, II. Summarization and correlation of courses pursued in college; problems requiring application of principles and broad understanding of the field; contemporary economic developments. Two hours rec. a week. Pr.: Senior standing.
- 557. Production Economics.** (3) I, II. The principles underlying the combination of elements of production with particular reference to agriculture. Three hours rec. a week. Pr.: Ec. So. 110.
- 561. Land Economics.** (3) I, II. Relation of population to land supply; property rights in land; land tenure; land utilization including conservation; land valuation; land taxation. Three hours rec. a week. Pr.: Ec. So. 110.
- 562. Seminar in Land Economics.** (2) Offered on sufficient demand. Comprehensive analysis of problems dealing with the control and use of land resources. Problems would include acquiring and transferring property rights, easements, zoning, leasing; problems of flood control, watershed development, irrigation, wind erosion; other problems which may arise. Two hours rec. a week. Pr.: Ag. Ec. 561 or consent of instructor.
- 565. Economics of Land Utilization.** (3) I. An economic analysis of alternative uses and practices for farmland, economics of soil conservation, land classification and its relationship to economic productivity. Three hours rec. and one or two field trips. Pr.: Ec. So. 110, Agron. 149; junior standing.
- Land Law.** See H. G. P. 735.
- 569. Agricultural Finance.** (3) II. Sources and use of credit for purchase of farm land and to finance farm operations. Three hours rec. a week. Pr.: Ec. So. 110.
- 573. Market Prices.** (3) II. Explanation of price analysis and forces determining prices. Three hours rec. a week. Pr.: Ec. So. 110.
- 577. Farmer Movements.** (3) II. Principles underlying successful organization for farmers. Policies of the principal general farm organizations. Three hours rec. a week. Pr.: Ec. So. 110.

- 581. Livestock Marketing.** (3) II. Livestock marketing services, functions, and prices. Three hours rec. a week. Pr.: Ec. So. 110.
- 585. Principles of Cooperation.** (3) I. Principles underlying successful cooperative activities. Three hours rec. a week. Pr.: Ec. So. 110.
- 589. Marketing of Dairy Products.** (3) II. Factors affecting prices; dairy marketing organizations. Three hours rec. a week. Pr.: Ec. So. 110.
- 593. Egg and Poultry Marketing.** (3) I. 1956-'57 and even years. Marketing organization, regulations, and efficiency; factors influencing prices. Three hours rec. a week. Pr.: Ec. So. 110.
- 597. Agricultural Economic Statistics.** (3) I. 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. Pr.: Ec. So. 110.
- 599. Advanced Analysis of Agricultural Resource Use.** (3) On sufficient demand. Analysis of advanced studies of agricultural resource use with emphasis on the methodology of problem formulation and solution. Pr.: Senior standing and consent of instructor.
- 601. Agricultural Economic Problems.** Credit arranged. I, II, S. Pr.: Consult instructor.

FOR GRADUATE CREDIT

- 835. Research in Agricultural Economics.** Credit arranged. I, II, S. Individual research problems which may be used for a master's degree. Pr.: Consult instructor.
- 840. Seminar in Economic Research.** (3) II. The scientific reasoning underlying the selection of research problems, the formulation and testing of hypotheses, and the evaluation and presentation of results. Three hours rec. a week. Pr.: Consent of instructor.

COURSES IN RURAL SOCIOLOGY

FOR UNDERGRADUATE CREDIT

- 290. Rural Sociology.** (3) I, II, S. 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) II. 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. Pr.: Ec. So. 290.

FOR GRADUATE CREDIT

- 925. Research in Rural Sociology.** Credit arranged. I, II, S. Pr.: Ec. So. 250, 700.

AGRONOMY

RAYMOND V. OLSON, *Head of Department*

The farms used by the Department of Agronomy comprise 580 acres of medium rolling upland soil, and 100 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) I, II. Distribution, importance, characteristics, and production of the common field crops. Study of species and types of principal field crops. Three hours rec. and three hours lab. a week. Pr.: Bot. 110 or Gn. St. 160.
- 107. Farm Crops Laboratory.** (1) I, II. 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 lab. a week. Pr.: Bot. 110 or Gn. St. 160.
- 108. Forage Crops.** (3) I. Adaptation, cultural methods, production, preservation, and utilization of grasses, legumes, and other forage species. Three hours rec. a week. Pr.: Agron. 106.
- 114. Grain Grading and Judging.** (2) II, S. Application of the Federal Standards for grading farm crops and judging of grains and other crop products. Six hours lab. a week. Pr.: Agron. 106.
- 121. Seed Testing.** (2) I. Offered in 1958-59 and alternate years thereafter. Laboratory testing of seeds, including identification, purity, and germination. Six hours lab. a week. Pr.: Bot. 110 or Gn. St. 160.
- 128. Advanced Grain Judging.** (2) I. Commercial grading and judging of field crops and identification of principal types and varieties. Six hours lab. a week. Pr.: Agron. 114.
- 135. Market Grading of Cereals.** (3) I. Market grades of cereals and factors that influence them. One hour rec. and six hours lab. a week. Pr.: Millg. 104.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 404. Crop Improvement.** (2) I. Methods of pure seed production and breeding of agricultural crops. Two hours rec. a week. Pr.: Agron. 106.
- 412. Pasture Management.** (3) II. Establishment, management, and utilization of tame and native pastures. Three hours rec. a week. Pr.: Agron. 106.
- 418. Principles of Agronomic Experimentation.** (3) I. Methods and principles of research and statistical analysis of experimental data. Two hours rec. and three hours lab. a week. Pr.: Agron. 106, 149.
- 425. Methods of Plant Breeding.** (3) II. The application of principles and methods of breeding field crops, including laboratory, greenhouse, and field procedures. Two hours rec. and three hours lab. a week. Pr.: Agron. 106, A. H. 405, Bot. 410.
- 432. Plant Genetics.** (3) I. An advanced course dealing with genetic principles as applied to plant species. Three hours rec. a week. Pr.: A. H. 405.
- 439. Crop Problems.** Credit arranged. I, II, S. Pr.: Dependent on problem. Studies may be chosen in the fields of:
Genetics, Crop Improvement, Pasture Improvement, Ecology, Weed Control, Plant Physiology, Production.
- 447. Crop Ecology.** (3) II. Study of climatic factors and their effect on production and geographic distribution of crops in regions and countries. Three hours rec. a week. Pr.: Agron. 106, 149, or consent of instructor.
- 455. Special Crops.** (2) I. Growth habits, production methods, and classification of fiber, sugar, root, tuber, oil, stimulant, and sedative crops. Two hours rec. and three hours lab. a week. Pr.: Agron. 106.
- 461. Weed Control.** (3) II. Identification, growth habits, and methods of control of weeds. Two hours rec. and three hours lab. a week. Pr.: Agron. 106.
- 467. Identification of Pasture Plants.** (1) II. Field and laboratory study of range and pasture plants with special emphasis on grasses and their

distinguishing characteristics. Three hours lab. a week. Pr.: Consult instructor.

474. Pasture and Range Surveys. (2) II. A study of the methods of range survey and the evaluation of pasture practices. One hour rec. and three hours lab. a week. Pr.: Agron. 411, 467.

476. Range Ecology. (3) II. The application of plant ecology to the management of natural grazing lands, and to the maintenance and conservation of native vegetation, with special emphasis on grassland ranges. Two hours rec. and three hours lab. a week. Pr.: Agron. 412, Bot. 670, and one of the following: Agron. 467 (may be taken conc.); Bot. 690 or 730.

605. Advanced Crop Ecology. (3) I. Principles of growth and development of crop plants in relation to environment. Three hours rec. a week. Pr.: Agron. 447.

610. Developmental Genetics. (3) II. Introduction to the relationships between genetic and biochemical systems, with emphasis on the "nature of the gene." Three hours lec. a week. Pr.: A. H. 405, and suitable courses in organic chemistry.

Genetics Seminar. (See A. H. 426.)

FOR GRADUATE CREDIT

838. Agronomy Seminar. (1) I, II. A discussion of agronomic developments. Pr.: Graduate standing.

901. Research in Crops. Credit arranged. I, II, S. Special problems which may extend through the year and furnish data for a master's or doctor's thesis. Pr.: Consult instructor.

913. Topic in Plant Breeding. (2) II. Discussion and lectures on important papers and contributions in this field. Pr.: Consent of instructor.

919. Topics in Plant Genetics. (2) I. Discussion and lectures on important papers and contributions in this field. Pr.: Consent of instructor.

925. Advanced Forage Crops. (3) I. Important forage crops species are studied throughout current literature with regard to growth characteristics, utilization, and breeding procedures. Three hours rec. a week. Pr.: Agron. 108.

931. Photo- and Thermoperiodism of Crops. Credit arranged. Offered on sufficient demand. Influence of light periodicity and temperatures on the character of growth of crops, whether vegetative or reproductive. One hour rec. a week and assigned reading. Pr.: Agron. 605 or consent of instructor.

937. Crop Hardiness. Credit arranged. Offered on sufficient demand. 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 rec. a week and assigned reading. Pr.: Agron. 605 or consent of instructor.

943. World Crop Production. Credit arranged. Offered on sufficient demand. Production of crops in different parts of the world in relation to natural conditions. Pr.: Agron. 447 or consent of instructor.

COURSES IN SOILS

FOR UNDERGRADUATE CREDIT

149. Soils. (4) I, II. Fundamental principles underlying the formation, fertility, and management of soils. Three hours rec. and three hours lab. a week. Pr.: Chem. 210, Gl. Gg. 110, or Gn. St. 120.

160. Soil Management. (3) I, II. Nitrogen maintenance, crop rotations, water erosion control, and use of lime, manure, and commercial fertilizers under high rainfall conditions in Kansas. Three hours rec. a week. Pr.: Agron. 106, 149.

- 170. Dryland Soil Management.** (2) I, II. Water conservation, wind erosion control, soil management and soil use under low rainfall conditions in Kansas. Two hours rec. a week. Pr.: Agron. 106, 149.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 502. Management of Irrigated Soils.** (2) II. 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 rec. a week. Pr.: Agron. 106, 149.
- 509. Development and Classification of Soils.** (3) II. Influence of soil-forming agencies on soil characteristics and methods of classifying and mapping soils. Field trips. Two hours rec. and three hours lab. a week. Pr.: Agron. 149.
- 516. Soil Problems.** Credit arranged. I, II, S. 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) I. 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 rec. a week. Pr.: Agron. 149.
- 523. Chemical Properties of Soils.** (3) I. A study of soils as a chemical and colloidal system, including their chemical and mineralogical composition and reactions occurring in them. Three hours rec. a week. Pr.: Agron. 149.
- 530. Soil Fertility.** (3) I, II. Fundamentals of soil fertility. Three hours rec. a week. Pr.: Agron. 149, Bot. 300.
- 537. Soil Physics.** (3) II. A study of the physical properties of soils, including methods of physical analysis and ways of improving soil tilth. Two hours rec. and three hours lab. a week. Pr.: Agron. 149, Math. 175, Phys. 110.
- 544. Soil Analysis Applications.** (3) I. Theories and procedures for the chemical analysis of soils. Applications of analysis in soil fertility evaluations and in research work are discussed. One hour rec. and six hours lab. a week. Pr.: Agron. 149, Chem. 435, 450, or 455.

FOR GRADUATE CREDIT

- 808. Research in Soils.** Credit arranged. I, II, S. Special problems which may extend throughout the year and furnish data for a master's or doctor's thesis. Pr.: Consult instructor.
- 815. Soil Physical Chemistry.** (3) II. Application of physical chemistry to soils. Cation and anion equilibria, cation activities, electrokinetics, sorption and other physico-chemical reactions in soils. Two hours rec. and three hours lab. a week. Pr.: Agron. 523, 537, Chem. 595.
- 822. Advanced Soil Physics.** (3) I. An advanced study of prominent theories concerning the physical behavior of soils. Two hours rec. and three hours lab. a week. Pr.: Agron. 537, Math. 245, Phys. 120.
- 829. Wind Erosion.** (3) I. A study of the physics and dynamics of erosion of soil by wind and its relation to soil properties. Two hours rec. and three hours lab. a week. Pr.: Agron. 537, Math. 245, Phys. 120.
- 838. Agronomy Seminar.** (1) I, II. A discussion of agronomic developments. Pr.: Graduate standing.
- 845. Soil Genesis.** (2) II. Theories of soil formation processes. Two hours rec. a week. Pr.: Agron. 509.
- 852. Soil Mineralogy.** (2) II. Mineralogical investigation of soils, with special emphasis on the microscopic examination and identification of the sand and silt fractions. Six hours lab. a week. Pr.: Gl. Gg. 575, Agron. 149.

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 meat animals.

The animal husbandry farm and pastures consist of 2,510 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) I, II and alt. S. A survey of the field of animal husbandry, with special emphasis on the importance of livestock as a major phase of agriculture. Two hours rec. a week.
- 113. Elements of Animal Husbandry Laboratory.** (1) I, II, and alt. S. A study of market types and classes of livestock. Three hours lab. a week.
- 120. Animal Husbandry A.** (2) II. Introduction and present status of livestock in the United States; livestock markets, breeds of livestock; purebred livestock production. Two hours lec. a week. Open only to students pursuing the Curriculum in Veterinary Medicine.
- 127. Livestock Judging A.** (1) I. Three hours lab. a week. Open only to students in Veterinary Medicine.
- 134. Principles of Livestock Selection.** (3) I. Origin, development, characteristics, and adaptation of different breeds of livestock, with special emphasis on the selection of breeding animals. One hour rec. and six hours lab. a week. Pr.: A. H. 113 and junior standing.
- 141. Judging Farm Animals.** (2) II. Advanced work in the judging of beef cattle, sheep, swine, and horses. Six hours lab. a week. Pr.: A. H. 134 or consent of instructor.
- 148. Form and Function in Livestock.** (2) I. 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 lab. a week. Pr.: A. H. 141.
- 155. Principles of Feeding.** (3) I, II, S. 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 rec. a week. Pr.: Chem. 310 or equiv.
- 162. Livestock Feeding.** (3) II. A résumé of digestion and nutrition dealing primarily with practical feeding. Open only to students in the Curriculum in Veterinary Medicine. Three hours rec. a week. Pr.: Chem. 330, Physi. 435.
- 169. Beef Cattle Production.** (3) II. Three hours rec. a week. Pr.: A. H. 155.
- 176. Swine Production.** (3) II. Three hours rec. a week. Pr.: A. H. 155.
- 183. Sheep Production.** (3) I. Three hours rec. a week. Pr.: A. H. 155.
- 190. Horse Production.** (2) I. Two hours rec. a week. Pr.: A. H. 155.
- 197. Livestock Production.** (3) I, S. 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 rec. a week. Pr.: A. H. 155.

- 204. Elements of Meat Processing.** (2) I, II, S. Meat consumption, principles of processing, curing, and freezing. Two hours lec. and rec. a week. Pr.: A. H. 106, 113.
- 211. Meat Processing.** (1) I, II. Killing, dressing, cutting, packaging, and freezing meat and meat products. Field trip. Three hours lab. a week. Pr.: A. H. 106, 113, 204 or conc. assignment.
- 219. Meat Selection and Utilization H. E.** (2) I, II. 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 lec. and three hours lab. a week.
- 225. Animal Husbandry Practicums.** (2) II. Open only to students majoring in animal husbandry and to students pursuing the Curriculum in Agricultural Education. Manual phases of livestock management. Six hours lab. a week.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 405. Genetics.** (3) I, II, S. Variation, Mendelian inheritance, and related subjects. Three hours lec. a week. Pr.: Zool. 110 or Bot. 110.
- 414. Population Genetics.** (3) II. Application of genetic principles to livestock improvement. Selection methods, mating systems, heritability estimates. Three hours rec. a week. Pr.: A. H. 405.
- 415. Population Genetics Laboratory.** (1) II. Compilation and analyzing of genetic data. Three hours lab. a week. Pr.: A. H. 414, or conc. assignment.
- 419. Animal Breeding.** (3) II. 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 rec. a week. Pr.: A. H. 405.
- 426. Genetics Seminar.** (1) I, II. Study and criticism of genetic experiments with animals and plants and of the biological and mathematical methods employed. One hour rec. a week. Pr.: A. H. 405 or Zool. 620.
- 447. Animal Nutrition.** (3) I. Study of the nutrients, their function and requirements for livestock, with special attention to recent discoveries in the field of animal nutrition. Pr.: A. H. 155.
- 454. Animal Husbandry Seminar.** (1) II. Open only to senior and graduate students majoring in animal husbandry. One hour rec. a week. Pr.: A. H. 155.
- 462. The American Livestock Industry.** (3) II. The origin, development, and economic significance of the livestock industry of the United States. Assigned readings, reports, conferences, and lectures. Pr.: A. H. 106, 155; senior or graduate standing.
- 468. Principles of Animal Husbandry Experimentation.** (2) II. Conducting and interpreting experiments involving the use of animals. Two hours rec. a week. Pr.: A. H. 155, 405.
- 475. Classification and Grading of Meats.** (1) I. Grading, nutritive values, factors influencing quality, dressing percentages, identification of meats from different animals. Three hours lab. a week. Pr.: A. H. 204, 211.
- 478. Institutional Meats.** (2) Spring semester, 1958-'59, and alternate years. Particular attention 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. One hour rec. and three hours lab. a week. Pr.: A. H. 219 and junior standing.
- 482. Meat Practicums.** (2) II. 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 lab. a week. Pr.: A. H. 204, 211.

- 485. Meat Packing Plant Operation.** (2 to 6) S. A minimum of four weeks of supervised study for each two hours credit, in a commercial meat-packing plant.
- 489. Wool Grading and Classification.** (1) I. 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. Three hours lab. a week. Pr.: Conc. with or subseq. to A. H. 183.
- 490. Advanced Wool Grading and Classification.** (1) I. 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. Three hours lab. a week. Pr.: A. H. 183, 489.
- 496. Animal Husbandry Problems.** Credit arranged. I, II, S. Pr.: A. H. 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) S. A seminar course in training agricultural judging teams. Ten hours rec. a week. Pr.: A. H. 113, Agron. 114, P. H. 104, 105, D. H. 104, and one year's teaching experience.
- 512. Animal Husbandry Literature.** Credit arranged. I, II, S. Preparation of abstracts and reports from scientific journals on current research in the field of Animal Husbandry. Pr.: Graduate standing or permission of instructor.

FOR GRADUATE CREDIT

- 800. Research in Genetics.** Credit arranged. I, II, S. Problems in which small mammals are used as the experimental animals. Pr.: A. H. 412.
- 804. Research in Animal Husbandry.** Credit arranged. I, II, S. Special problems in genetics and in the production of all kinds of livestock except dairy cattle. Pr.: Consult instructor.
- 811. Problems in Beef Cattle Production.** (3) S. Offered 1958 and every third year thereafter. Eighteen hours rec. a week. Pr.: Graduate standing and one year's experience in county agent work or in teaching vocational agriculture.
- 818. Problems in Sheep Production.** (3) S. Offered 1956 and every third year thereafter. Eighteen hours rec. a week. Pr.: Graduate standing and one year's experience in county agent work or in teaching vocational agriculture.
- 825. Problems in Swine Production.** (3) S. Offered 1957 and every third year thereafter. Eighteen hours rec. a week. Pr.: Graduate standing and one year's experience in county agent work or in teaching vocational agriculture.
- 832. The Wool Industry.** (3) II. Supply and demand, production, marketing, manufacturing. Two hours rec. and three hours lab. a week. Pr.: A. H. 183.

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) I, II. 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 rec. and three hours lab. a week.
- 111. Dairy Cattle Judging for Veterinary Students.** (1) II. Three hours lab. a week.
- 113. Techniques in Teaching Dairy Cattle Judging.** (1) I. 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 lab. a week.
- 118. Dairy Cattle Judging.** (2) II. Six hours lab. a week. Pr.: D. H. 104.
- 125. Fundamentals of Dairy Technology.** (2) I. A thorough study of the properties of major milk constituents, methods of analysis, quality tests, standardization, and manufacturing processes. One hour rec. and three hours lab. a week. Pr.: D. H. 104, Chem. 210; sophomore standing.
- 132. Milk Production.** (3) I. Handling the dairy herd, construction of dairy barns and buildings, other subjects concerning the dairy farmer. Three hours rec. a week. Pr.: D. H. 104, A. H. 155 or 162.
- 139. Market Milk and Dairy Inspection.** (4) II. A study of the problems of the milk-plant operator, including production, procurement, processing, selling and quality control. Inspection of farms and milk plants. Two hours rec. and six hours lab. a week. Pr.: D. H. 125, Bact. 110.
- 146. Butter Making.** (3) I. Offered 1957-'58 and alternate years thereafter. 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. Two hours rec. and three hours lab. a week. Pr.: D. H. 104, 125, Bact. 110.
- 153. Dairy Inspection for Veterinary Students.** (2) I. 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 rec. and three hours lab. a week.
- 160. Advanced Dairy Cattle Judging.** (1) I. Cont. of D. H. 118; visits to some of the best farms in the state. Three hours lab. a week. Pr.: D. H. 118.
- 167. Condensed and Powdered Milk.** (3) II. Offered 1956-'57 and alternate years. History, methods, condensing machinery, and powdered milk industry. Condensing milk in the College plant. Two hours rec. and three hours lab. a week. Pr.: D. H. 104, 125, Bact. 110.
- 174. Ice Cream Making.** (3) I. Offered 1956-'57 and alternate years. Theory and practice in the manufacture of frozen dairy foods. Two hours rec. and three hours lab. a week. Pr.: D. H. 125, Bact. 110.
- 181. Cheese Making.** (3) II. Offered 1957-'58 and alternate years. Theory and practice in the manufacture of various types of cheese. Two hours rec. and three hours lab. a week. Pr.: D. H. 125, Bact. 110.
- 188. Dairy Products Judging.** (1) II. Three hours lab. a week. Pr.: D. H. 104.

- 195. Advanced Dairy Products Judging.** (1) I. Three hours lab. a week. Cont. of D. H. 118.
- 203. Artificial Breeding.** (2) I. A study of techniques employed in the artificial breeding of cattle. One hour lec. and three hours lab. a week. Pr.: Junior standing.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 404. Dairy Seminar.** (1) II. Study of dairy periodicals, bulletins, books, other dairy literature. One hour rec. a week. Pr.: D. H. 104, 132.
- 411. Milk Secretion and Reproduction.** (3) II. Offered 1957-'58 and alternate years thereafter. 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 rec. and three hours lab. a week. Pr.: Senior standing in Dairy Husbandry.
- 419. Dairy Cattle Nutrition.** (3) I. Application of principles of nutrition to practical feeding of dairy cattle. Exercises in practical feeding problems, designing and balancing rations. Two hours lec. and three hours lab. a week. Pr.: D. H. 104, A. H. 155.
- 420. Dairy Cattle Management.** (2) II. Production practices, record keeping, labor-saving equipment, milking systems, fitting and showing, stabling methods, dairy farm planning and analysis, field study trip. One hour lec. and three hours lab. a week. Pr.: D. H. 132.
- 425. Dairy Cattle Breeding and Selection.** (3) I. 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 rec. and three hours lab. a week. Pr.: A. H. 405.
- 432. Dairy Production Problems.** Credit arranged. I, II, S. Pr.: D. H. 104, 118, 132, A. H. 155.
- 439. Dairy Manufacturing Problems.** Credit arranged. I, II, S. Pr.: D. H. 104, 146.
- 446. Dairy Plant Management.** (2) I. Offered in 1956-'57 and alternate years thereafter. Two hours rec. a week. Pr.: D. H. 125, 146.
- 454. Technical Control of Dairy Products.** (3) II. 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 hours rec. and three hours lab. a week. Required of all students pursuing the Curriculum in Dairy Manufacturing. Pr.: D. H. 125; senior standing in dairy manufacturing or graduate standing.

FOR GRADUATE CREDIT

- 804. Research in Dairy Husbandry.** Credit arranged. I, II, S. 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. Pr.: Consult instructor.

Dairy Mechanics. (See Ag. E. 455.)

Dairy Bacteriology. (See Bact. 510.)

Marketing of Dairy Products. (See Ag. Ec. 589.)

Genetics Seminar. (See A. H. 426.)

ENTOMOLOGY

HERBERT KNUTSON, *Head of Department*

Entomology is the study of insects and their near relatives. Applied 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 indicate to the head of the department before the middle of the previous semester the course that they desire.

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) I, II, S. A basic study of insects and related arthropods, their classification, behavior, and relations to plants and animals, including man.

110. General Entomology Laboratory. (1) I, II. Three hours lab. a week. Pr.: Entom. 105 or conc. registration.

165. Milling Entomology. (4) II. 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 rec. and three hours lab. a week.

210. General Economic Entomology. (3) I, II. Elementary anatomy, physiology, and classification of insects; the life histories, habits, and control recommendations for the more important insect pests. Two hours rec. and three hours lab. a week.

FOR UNDERGRADUATE AND GRADUATE CREDIT

410. Advanced General Entomology. (3) II. Offered next in 1956-'57 and in alternate years. Broad biological aspects of the subject; understanding of the relation of insects to the complex environmental factors; the various subdivisions of entomology. Pr.: Entom. 105, 110, or 210, Zool. 110.

425. Horticultural Entomology. (2) I. Injurious insects of the vegetable garden, shade trees, flowering and greenhouse plants, deciduous and citrus orchards; methods of control; insecticides. Pr.: Entom. 105 and 110 or 210.

440. Staple Crop Entomology. (3) II. Important economic insects of field crops and methods of dealing with them. Two hours rec. and three hours lab. a week. Pr.: Entom. 105, 110, or 210.

455. Medical Entomology. (3) I. Insects and other arthropods as parasites and disseminators of disease; life cycles, biology, and control of insect parasites of man and animals. Two hours rec. and three hours lab. a week. Pr.: Entom. 105, 110, or 210 and Zool. 110. Offered in 1956-'57 and alternate years.

470. Insect Ecology. (2) I. Influence of light, temperature, pressure, moisture, evaporation, air movements, food relations, biotic, and other conditions of soil atmosphere. Pr.: Entom. 105, 110, or 210 and Zool. 110.

480. Entomological Methods. (3) S. 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. Pr.: Entom. 105 and 110 or 210.

- 485. Insect Control by Host Plant Resistance.** (2) I. Offered in 1957-'58 and alternate years. 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. Pr.: Entom. 105, 110, or 210, and a course in either plant or animal genetics.
- 516. External Insect Morphology.** (4) I. External anatomy of representative insects belonging to a number of orders, structure of the exoskeleton, a basis for taxonomy and hexapod morphology. One hour rec. and six hours lab. a week. Pr.: Entom. 105, 110, or 210.
- 531. Internal Insect Morphology.** (4) II. Offered in 1957-'58 and alternate years. Internal anatomy of representative insects, plan and structure of the internal systems. One hour rec. and six hours lab. a week. Pr.: Entom. 516.
- 545. Insect Physiology.** (3) II. Offered second semester, 1956-'57, and alternate years. 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. Pr.: Entom. 531 or consent of instructor, Zool. 480.
- 546. Insect Physiology Laboratory.** (2) II. Offered second semester, 1956-'57, and alternate years. Experiments in enzyme systems, respiration, responses to stimuli, nutrition, excretion, properties of insect blood, and other studies. Pr.: Entom. 545 or conc. assignment.
- 575. Principles of Taxonomy.** (1) II. The methods and principles of systematic entomology and zoology; characterization of taxonomic categories; international rules of zoological nomenclature. Pr.: Entom. 105 and 110 or 210; Zool. 110, Entom. 590 or Zool. 555; or Zool. 570 or 665 should be taken conc.
- 590. Taxonomy of Insects I.** (2) II. Determination of major orders of insects, taxonomic literature, use of catalogues. Six hours lab. a week. Pr.: Entom. 515 and conc. registration in Entom. 575. The student will present at the beginning of the course a correctly prepared collection of insects at least equivalent to that submitted for Entom. 110 or 210.
- 605. Taxonomy of Insects II.** (3) II. Intensive study of a selected group of insects. Nine hours lab. a week. Pr.: Entom. 590, 575.
- 621. Taxonomy of Immature Insects.** (3) II. Offered in 1956-'57 and alternate years. Classification and bionomics of immature stages of insects; practice in their identification. Six hours lab. a week. Pr.: Entom. 575 and 590.
- 650. General Bee Culture.** (3) II. 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 rec. and three hours lab. a week. Pr.: Entom. 105 and 110 or 210.
- 665. Advanced Bee Culture I.** (3) I. Offered in 1956-'57 and in alternate years. Requeening, wintering, honey extraction and marketing. Two hours rec. and three hours lab. a week. Pr.: Entom. 650.
- 670. Advanced Bee Culture II.** (3) II. Offered in 1956-'57 and in alternate years. Honey plant and beekeeping regions; swarm control and colony division; queen rearing and introduction; honey production. Two hours rec. and three hours lab. a week. Pr.: Entom. 650.
- 710. Insect Toxicology.** (3) I. 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. Pr.: Entom. 105 and 110 or 210; and a course in organic chemistry.
- 750. Entomological and Zoological Literature.** (2) I. 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 and for thesis preparation. Pr.: Entom. 105 and 110 or 210 and Zool. 110.

765. Zoology and Entomology Seminar. (1) I, II. Pr.: Consult seminar committee.

799. Problems in Entomology. Credit arranged. I, II, S. For non-thesis studies. Work is offered in apiculture, applied entomology, and taxonomy and morphology. Pr.: Consent of instructor.

FOR GRADUATE CREDIT

900. Advanced Economic Entomology. (1 to 3) I, II, S. A specialized study of the biology and control of selected insects of economic importance. Pr.: Entom. 425 or 440, 455 or 470, 485 or 575 or 665, and consent of instructor.

905. Insects of Stored Products. (1 to 3) I, II, S. Taxonomy, ecology, and behavior of stored products insects and the current practices involved in their control. Pr.: Entom. 440, 470, 590, and consent of instructor.

909. Current Insect Control Practices. (2) I. An evaluation of the control practices currently employed, including methods of application, timing, selection of insecticides, and other control methods. Pr.: Entom. 425 or 440, 455 or 470 or 485, and consent of instructor.

910. Pesticidal Residues. (2) II, 1957-'58, and alternate years. Legal requirements for registration and labeling of pesticidal materials at the federal and state levels. Establishment of tolerances. The problems of quantitative residue data, analysis of formulated products, and sampling. Pr.: Entom. 911 or consent of instructor.

911. Insect Toxicology Laboratory. (2) I. Design of laboratory experiments and evaluation of pesticidal, mammalian, and plant toxicity. Effects of formulations on efficiency. Analytical methods of residues. Local field trips. Pr.: Entom. 710, equiv. or conc. registration; consent of instructor.

916. Advanced Insect Morphology. (1 to 3) I, II. Intensive study of a special phase of insect morphology. Pr.: Entom. 516, 531, or equiv.

999. Research in Entomology. Credit arranged. Thesis or dissertation credit. I, II, S. Work is offered in apiculture, applied entomology, insect physiology or toxicology, medical entomology, pest control technology, taxonomy, and morphology. Pr.: At least nine hours entomology and basic work in zoology, botany, bacteriology, chemistry, and mathematics.

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 Operation, Nutrition, and Administration. (See outline of curriculums on page 65.)

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.** (0) Required. I, II. Discussion of problems of interest to all students in flour and feed milling industries. One lec. each month.
- 104. Elements of Milling.** (2) I, II, S. Introduction to milling processes. One hour lec., two hours lab., and one hour unassembled lab. a week.
- 111. Survey of Milling.** (1) I. A general survey of the milling industry field. One hour lec. a week.
- 118. Flow Sheets.** (2) I, II, S. The construction and assembling of a flow sheet. Six hours lab. a week. Pr.: Millg. 104, M. D. 110.
- 125. Milling Practice I.** (3) I, II, S. A study of milling machinery and methods of operating the 170 hundredweight flour mill. One hour lec. and six hours lab. a week. Pr.: Millg. 118.
- 200. Elements of Feed Manufacture.** (3) I. An introduction to feed milling processes. Two hours lec. and three hours lab. a week.
- 210. Feed Formulation and Blending.** (3) II. Calculating formulas and operating batch and continuous feed-mixing systems. One hour lec. and six hours lab. a week. Pr.: Millg. 118.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 404. Milling Technology I.** (2) I. Technical study of special phases of wheat conditioning and flour milling. Six hours lab. a week. Pr.: Millg. 125.
- 411. Milling Technology II.** (2) II. A study of physical, chemical, and engineering principles used in control of flour mill operation. Six hours lab. a week. Pr.: Millg. 404.
- 418. Flour and Feed Mill Construction.** (3) II. The design and layout of flour and feed plants. Eight hours lab. and one hour unassembled lab. a week. Pr.: Millg. 453 or 210, M. D. 120, 130.
- 425. Flour and Feed Analysis.** (3) II. Methods of analysis and quantitative tests of flour and feed composition. Eight hours lab. and one hour unassembled lab. a week. Pr.: Chem. 435, 510, or 330.
- 432. Plant Enzymes.** (2) I. 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 lec. a week. Pr.: Chem. 330, 650.
- 439. Advanced Flow Sheets.** (2) I. The design of flows for various cereal processing methods. Six hours lab. a week. Pr.: Millg. 118.
- 446. Advanced Wheat and Flour Testing.** (3) I. Physical and chemical methods used in testing wheat and flour. One hour lec. and six hours lab. a week. Pr.: Millg. 425.
- 453. Milling Practice II.** (3) I. 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 lec. and six hours lab. a week. Pr.: Millg. 125.
- 460. The Qualities of Wheat and Flour.** (3) II. The qualities of wheat and flour as affected by growth, storage and physical, chemical and biological factors. Three hours lec. a week. Pr.: Chem. 310 or 330.
- 464. Fundamentals of Grain Storage.** (2) I. 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. Pr.: Millg. 460.

- 467. Cereal Products Sanitation.** (2) I. Sanitation problems and control methods in cereal technology. One hour lec. and three hours lab. a week. Pr.: Millg. 125, Entom. 165.
- 474. Milling Industry Problems.** Credit arranged. I, II, S. Pr.: Consent of staff.
- 481. Experimental Baking I.** (3) I. Practice in laboratory baking tests, comparison of methods, formulas and flours; interpretation of results. One hour lec. and six hours lab. a week. Pr.: Chem. 310.
- 488. Experimental Baking II.** (3) II. Practice in bakery methods of producing breads and pastries. One hour lec. and six hours lab. a week. Pr.: Millg. 481.
- 600. Feed Technology I.** (3) I. Study of technical phases of feed manufacture such as the operation of pellet machines, molasses mixers, hammer mills, and other equipment. One hour lec. and six hours lab. a week. Pr.: Millg. 210.
- 601. Feed Technology II.** (3) II. Advanced study of the engineering principles used in feed manufacture. One hour lec. and six hours lab. a week. Pr.: Millg. 600.

FOR GRADUATE CREDIT

- 804. Research in Milling Industry.** Credit arranged. I, II, S. Research may be used as basis for the graduate thesis. Pr.: Consult staff.
- 811. Graduate Seminar in Milling Industry.** (1) I, II. Discussion of technical problems in the cereal industry. One hour rec. a week. Attendance required of all graduate students in milling industry.

GENERAL AGRICULTURE

ARTHUR D. WEBER, *Dean*CLYDE W. MULLEN, *Assistant Dean*

- 003. Agricultural Seminar.** (0) Required. I, II. Four meetings each semester. Programs presented by students, members of faculty, and invited speakers.
- 004. Freshman Assembly.** (0) Required of freshmen. I. A survey of fields of opportunity in agriculture.
- 109. Agricultural Student Journalism.** (1) I, II. Maximum of four credits may be used toward a degree.

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.

COURSES IN GENERAL HORTICULTURE

FOR UNDERGRADUATE CREDIT

- 104. Plant Propagation.** (3) I. Principles and practices of propagating horticultural plants. Two hours rec. and three hours lab. a week. Pr.: Bot. 110.

- 110. Elements of Horticulture Recitation.** (2) I, II, S. Principles and practices in the several phases of horticulture. Two hours rec. a week. Pr.: Bot. 110 or Gn. St. 150.
- 111. Elements of Horticulture Laboratory.** (1) I, II. Study of horticultural plants, including identification, propagation, pruning, spraying, transplanting, cover crops, and fruit varieties. Three hours lab. a week. To be taken conc. with Hort. 110 if possible. Pr.: Bot. 110 or Gn. St. 150.
- 132. Nursery Practice.** (3) II. Tree seed; planting practice, regeneration. Two hours rec. and three hours lab. a week. Pr.: Bot. 110.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 404. Spraying.** (3) II. Spray machinery, chemical properties, insecticides, fungicides, spray dates, fumigation. Two hours rec. and three hours lab. a week. Pr.: Junior or senior classification.
- 411. Literature of Horticulture.** (2) II. 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 rec. a week.
- 418. Arboriculture.** (3) II. Principles and practices of caring for ornamental plantings; transplanting, pruning, tree surgery, fertilizing, diagnosis of pests. Two hours rec. and three hours lab. a week. Pr.: Consult instructor.
- 425. Horticulture Seminar.** (1) I, II. 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 rec. a week.
- 432. Horticultural Problems.** Credit arranged. I, II, S. Problems and reports in pomology, olericulture, floriculture, ornamental horticulture, or landscape design. Pr.: Consult instructor.

FOR GRADUATE CREDIT

- 801. Research in Horticulture.** Credit arranged. I, II, S. Investigations in pomology, olericulture, floriculture, ornamental horticulture, or landscape design. Data collected may form basis for a master's thesis. Pr.: Consult instructor.

COURSES IN LANDSCAPE DESIGN

FOR UNDERGRADUATE CREDIT

- 139. Plant Materials I.** (3) I. Perennials and annuals for general ornamental planting; planting plans. Two hours rec. and three hours lab. a week. Pr.: Bot. 110.
- 146. Plant Materials II.** (3) II. Trees, shrubs, vines for ornamental planting; planting plans and reports. Two hours rec. and three hours lab. a week. Pr.: Bot. 110.
- 153. Landscape Gardening.** (3) I, S. An introductory course in the fundamental principles of landscape design. Three hours rec. a week.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 439. Community Planning.** (3) II. Offered in 1957-'58 and alternate years thereafter. Growth and development of cities and towns, land subdivision. One hour rec. and six hours lab. a week. Pr.: Hort. 474.
- 446. Landscape Construction.** (3) I. Offered in 1956-'57 and alternate years. Topographic maps; grading plans, structures, sewerage, water supply, lighting, and drainage on the private estate. Two hours rec. and three hours lab. a week.
- 453. Planting Design.** (2) II. Offered in 1956-'57 and alternate years. The use of plants in landscape composition. Perspective and elevational sketches and plans. Six hours lab. a week. Pr.: Hort. 146.

- 460. Landscape Design I.** (4) I. Elementary designing of the home grounds, country estates, special gardens, sketch problems. Twelve hours lab. a week. Pr.: Hort. 146, 153.
- 467. Landscape Design II.** (4) II. Advanced course in designing of large parks, cemeteries, golf courses, educational groups and high-class land subdivisions. Sketch problems. Twelve hours lab. a week. Pr.: Hort. 460, 474.
- 474. Theory of Landscape Design.** (2) I. Offered in 1957-'58 and alternate years. The economic and esthetic theory of design; taste, character, historic style, and composition; natural elements in design. Two hours rec. a week. Pr.: Hort. 153.

COURSES IN POMOLOGY

FOR UNDERGRADUATE CREDIT

- 160. Small Fruits.** (2) II. Growing, harvesting, and marketing small fruits. Two hours rec. a week. Pr.: Bot. 110 or Gn. St. 150.
- 175. Preserving Foods by Freezing.** (3) I. 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 rec. and three hours lab. a week.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 481. Practical Pomology.** (3) II. Applied orcharding, manufacturing products, finances, marketing, grading and packing fruits, identification of fruit plant varieties, advanced pruning. Two hours rec. and three hours lab. a week. Offered in 1956-'57 and alternate years. Pr.: Hort. 110, 111.
- 484. Systematic Pomology.** (3) I. Offered in 1957-'58 and alternate years. Technical study of fruit varieties, varietal relationship, pomological nomenclature, variety description, artificial and natural systems of variety classification, judging. Two hours rec. and three hours lab. a week. Pr.: Hort. 110, 111.
- 488. Advanced Pomology.** (3) I. A course in fruit production. Two hours rec. and three hours lab. a week. Offered in 1956-'57 and alternate years. Pr.: Hort. 110, 111.

COURSES IN VEGETABLE GARDENING AND FLORICULTURE

FOR UNDERGRADUATE CREDIT

- 182. Greenhouse Construction and Management.** (3) II. Greenhouse construction, ventilation, soils, and water. Two hours rec. and three hours lab. a week.
- 189. Vegetable Gardening.** (3) II. Principles underlying vegetable production for the home or local market; special attention given to farm gardens, varieties, planting schedules, and crop rotations. Two hours rec. and three hours lab. a week.
- 196. Elements of Floriculture.** (3) I. Care of potted plants in the greenhouse and home. Two hours rec. and three hours lab. a week.
- 203. Floral Arrangement I.** (2) I. Floral arrangement in the home, care and uses of cut flowers and potted plants. Pr.: Consult instructor. One hour rec. and three hours lab. a week.
- 210. Floral Arrangement II.** (2) II. Floral merchandising, sources of supplies, floral design, the commercial flower shop. One hour rec. and three hours lab. a week. Pr.: Consult instructor.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 495. Market Gardening.** (3) I. Offered in 1956-'57 and alternate years. Competitive areas, market requirements, harvesting, grading, packing,

sources of market supplies, and prices. Two hours rec. and three hours lab. a week. Pr.: Agron. 149, Hort. 189.

502. Vegetable Cash Crops. (2) I. Vegetable crops grown in Kansas principally as cash crops; potatoes, sweet potatoes, watermelons, and cantaloupes. Two hours rec. a week.

508. Commercial Floriculture I. (3) I. Principles underlying the culture of greenhouse crops. Two hours rec. and three hours lab. a week.

512. Commercial Floriculture II. (3) II. Two hours rec. and three hours lab. a week. Pr.: Hort. 217.

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) I, II. An introductory course presenting numerous phases of poultry production, processing, management, marketing. Two hours rec. a week.

105. Farm Poultry Production Laboratory. (1) I, II. Practical work, identifying breeds and varieties, judging and selecting laying stock and breeding stock; study of poultry houses and equipment; market dressing. Three hours lab. a week.

112. Poultry Judging. (3) I. 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 rec. and six hours lab. a week. Pr.: P. H. 104, 105.

119. Market Poultry and Eggs. (4) I. Offered in 1957-'58 and alternate years. 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 rec. and six hours lab. a week. Pr.: P. H. 104, 105.

126. Hatchery Management. (3) II. 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 rec. and three hours lab. a week. Pr.: P. H. 104, 105.

133. Poultry Practicums. (2) II. Especially designed for students in the Curriculum in Agricultural Education. Poultry judging and practical poultry management as applied to vocational education. One hour rec. and three hours lab. a week. Pr.: P. H. 104, 105.

FOR UNDERGRADUATE AND GRADUATE CREDIT

404. Nutrition of the Fowl. (3) II. 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 rec. and three hours lab. a week. Pr.: P. H. 104, 105, A. H. 155.

411. Avian Metabolism. (3) I. Special emphasis on the physiological processes in reproduction, digestion, absorption, circulation, respiration, excretion and internal secretions. Three hours rec. a week. Offered in 1956-'57 and alternate years. Pr.: P. H. 104, 105, Zool. 110, Anat. 401.

418. Poultry Problems. (2) I, II. 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. Pr.: P. H. 104, 105; consult instructors.

425. Poultry Genetics. (2) II. A study of inherited characteristics in poultry. Two hours rec. a week. Offered in 1956-'57 and alternate years. Pr.: A. H. 405.

432. Poultry Genetics Laboratory. (1) II. Offered in 1956-'57 and alternate years. Exercises in practical poultry breeding problems. Included are analyses of records and selection of breeding stock. Three hours lab. a week. Pr.: P. H. 104, 105, A. H. 405.

439. Poultry Management. (3) II. A detailed study of all phases of farm and commercial flocks, including cost of production. Three hours rec. a week. Pr.: P. H. 104, 105; senior or graduate standing.

446. Poultry Seminar. (1) I. Required of all juniors majoring in poultry husbandry and continued into the senior year. Also required of graduate students. One hour rec. or conference a week. Pr.: P. H. 104, 105.

453. Poultry Industry Training. (3) S. 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. Pr.: P. H. 104, 105, 112, 119, 126.

FOR GRADUATE CREDIT

801. Research in Poultry Husbandry. Credit arranged. I, II. Investigations which may form the basis of a master's or doctor's thesis. Conferences by appointment. Pr.: P. H. 104, 105, 112, 119, 126; consult instructors.

Advanced (Poultry) Farm Organization. (See Ag. Ec. 533.)

Poultry Sanitation. (See Bact. 440.)

Special (Poultry) Anatomy. (See Anat. 401.)

Genetics Seminar. (See A. H. 426.)

The Kansas Agricultural Experiment Station

ARTHUR D. WEBER, *Dean*

GLENN H. BECK, *Director*

C. PEAIRS WILSON, *Assistant Director*

March 4, 1887, the Kansas legislature accepted conditions of the Hatch Act, passed two days earlier by the U. S. Congress. These legislative acts established the Kansas Agricultural Experiment Station and vested responsibility for carrying out provisions of the acts in the Board of Regents. It has been supported since then by both Federal and State funds. Later acts of Congress authorizing grants (always subject to state legislative assent) included the Adams Act of 1906; Purnell Act of 1925; Bankhead-Jones Act of 1935; an amendment to the Bankhead-Jones Act; Agricultural Marketing Act of 1946; and the 1955 act to consolidate previous acts pertaining to state agricultural experiment stations.

Each session of the Kansas legislature and each session of the U. S. Congress provides funds to operate the experiment station. Fees and commercial organizations also provide some support.

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 agriculture, including farm homes. Departments of the Agricultural Experiment Station are as follows: Agronomy, Animal Husbandry, Dairy Husbandry, Economics and Sociology, Entomology, Flour and Feed Milling Industries, Horticulture, Poultry Husbandry, Agricultural Engineering, Bacteriology, Botany and Plant Pathology, Chemical Engineering, Chemistry, Home Economics, Physics, Psychology, Veterinary Medicine, and Zoology.

More than 300 projects covering practically all phases of agriculture are being pursued by members of the station staff. Among the projects are 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 and machinery and equipment; 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, branch stations, well-equipped laboratories, and scientific equipment are available for the use of experiment station personnel.

Results of research are published in scientific journals, station bulletins, circulars, pamphlets, leaflets, popular journals, news releases to the agricultural press; and released through 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 Kansas Agricultural Experiment Station, Kansas State College, Manhattan.

BRANCH AGRICULTURAL EXPERIMENT STATIONS

FORT HAYS BRANCH STATION

Land occupied by this station is 3,560 acres of the former 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.

Investigations are confined primarily to 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 320 acres 4 ½ miles from Garden City for agricultural experimentation. The land has been leased for ninety-nine years to the Kansas Agricultural Experiment Station. In 1937 and 1939 the state purchased 235 additional acres adjoining the original tract. Investigations in irrigation, dryland farming, dairying, crop improvement, and lamb feeding are conducted at this station.

COLBY BRANCH STATION

The Kansas legislature of 1913 provided for 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 legislature.

At the Tribune 110-acre 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.

MOUND VALLEY BRANCH STATION

The Mound Valley Branch Station was established by the 1949 legislature. It consists of 282 acres. The station is devoted to the study of soil, crops, and dairy nutrition. A major objective of the station is to study the relationship of soil and soil treatments to the quality of the feed produced as measured by the performances of dairy cows. To facilitate this study, a herd of identical twin dairy cows and heifers has been assembled. It is one of the largest herds of identical twin dairy animals in the United States.

Soil fertility, forage crop improvement, and crop production studies are major enterprises on the station.

EXPERIMENT FIELDS AND IRRIGATION DEVELOPMENT FARMS

The Kansas Agricultural Experiment Station also includes experiment fields at Mankato, Belleville, Hiawatha, Wathena, Concordia, St. John, Hutchinson, Canton, Ottawa, Dodge City, Thayer, and Columbus.

The School of Arts and Sciences

JOHN C. WEAVER, *Dean*

PAUL M. YOUNG, *Associate Dean*

ORVAL EBBERTS, *Assistant Dean*

JOE EISENBACH, JR., *Academic Adviser*

Every student takes courses in the School of Arts and Sciences.

A college student should expect to gain a measure of general education no matter what he expects to make his specialty. To become an educated person one should make every effort to learn as much as he can about the world and society, about history and politics, about literature, the arts and music. He will surely gain an awareness that the scientifically established laws of the universe are important. These general courses in the School of Arts and Sciences aim to help the student to understand himself and to adjust himself to his surroundings. Such knowledge is the mark of an educated person and an indisputable aid to satisfying and successful living.

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 dentistry, law, medicine, medical technology, physical therapy, or veterinary medicine.

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, geography, geology, government, history, languages, mathematics, medical technology, music, philosophy, physical education, physics, physiology, psychology, 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, specialized training in the fields of knowledge contained within the School, and basic introduction to work in the professional schools.

Curriculums in the School of Arts and Sciences:

- Curriculum in Art and Painting (See page 93.)
- Curriculum in Biological Science (See page 94.)
 - Option for Medical Technicians or
 - Public Health Laboratory Scientists (See page 95.)
 - Option for Physical Therapy (See page 96.)
- Curriculum in Business Administration (See page 97.)
 - Accounting Option (See page 98.)
- Curriculum in Chemistry (See page 99.)
- Curriculum in Elementary Education (See page 100.)
- Curriculum in Secondary Education (See page 101.)
- Curriculum in Geology (See page 103.)
- Curriculum in Humanities (See page 104.)
- Curriculum in Applied Music (See page 105.)
- Curriculums in Music Education (See page 106.)
- Curriculums in Physical Education (See pages 107, 108.)
- Curriculum in Physical Science (See page 109.)
 - Geophysics Option (See page 110.)
- Curriculum in Physics (See page 111.)
- Curriculum in Pre-medicine (See page 112.)
 - Pre-dental Option (See page 112.)
- Curriculum in Social Science (See page 113.)
- Curriculum in Technical Journalism (See page 115.)
- Pre-veterinary Curriculum (See page 116.)

Curriculum in Art and Painting

Bachelor of Science

This curriculum offers opportunity for professional work in painting, sculpture, commercial art, and can be used as a basis for the teaching of art.

FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
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.	140	Written Comm. IIB	3
Gn. St.	110	Man's Phys. World I	4	Gn. St.	120	Man's Phys. World II	4
H. G. P.	115	Civilization I	3	H. G. P.	130	Civilization II	3
		Air or Military Science ..	1			Air or Military Science ..	1
		Physical Education	0			Physical Education	0
		Art Seminar (Freshman) ..	0			Art Seminar (Freshman) ..	0
Total			14 or 15	Total			14 or 15

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
Gn. St.	150	Biology I	4	Gn. St.	160	Biology II	4
Spch.	105	Oral Comm. I	2	Arch.	210	Comm. Illust. I	2
Psych.	310	General Psychology	3	Mod. L.	140	German II or	3
Mod. L.	130	German I or	3	Mod. L.	220	French II	3
Mod. L.	210	French I	3	Engl.	215	Engl. Lit. I or	3
		Air or Military Science ..	1	Engl.	245	Amer. Lit. I	3
		Physical Education	0			Air or Military Science ..	1
		Art Sem. (Upperclass) ..	0			Physical Education	0
						Art Sem. (Upperclass) ..	0
Total			16 or 17	Total			16 or 17

JUNIOR

Arch.	180	Oil Painting I	2	Arch.	184	Oil Painting II	2
Engl.	090	English Proficiency	0	Arch.	448	Sculpture I	2
Engl.	215	Engl. Literature II or ..	3	Arch.	285	Hist. Ptg. & Sculp.	3
Engl.	255	American Literature II ..	3			Elective	5
Mod. L.	156	German III or	3	Mod. L.	160	German IV or	3
Mod. L.	230	French III	3	Mod. L.	240	French IV	3
		Elective	5			Art Sem. (Upperclass) ..	0
Arch.	145	Clay Modeling	2				
		Art Sem. (Upperclass) ..	0				
Total			15	Total			15

SENIOR

Psych.	765	Psychology of Art	3	Arch.	200	App. Arch.	3
Arch.	420	Oil Painting III	2	Arch.	424	Oil Painting IV	2
Arch.	290	Contemporary Art	2	Music	250	App. Music	2
		Elective	8			Elective	8
		Art Sem. (Upperclass) ..	0			Art Sem. (Upperclass) ..	0
Total			15	Total			15

Number of hours required for graduation: 120 (women) or 124 (men).

The curriculum permits 26 hours of electives of which at least 8 hours must be selected from approved courses in economics, geography, history, philosophy, government, sociology and other social sciences and 7 hours in the field of art, to be chosen with the advice and approval of the Dean and major art instructor. Each student will be required to have 12 hours of college French or German for graduation.

Curriculum in Biological Science
Bachelor of 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.

FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
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	Gn. St.	260	Intro. to Human. II	4
Gn. St.	250	Intro. to Human. I	4	Spch.	105	Oral Comm. I	2
		Air or Military Science ..	1			Air or Military Science ..	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
Gn. St.	210	Introd. Soc. Sci. I	4	Entom.	105	General Entomology	3
Zool.	110	General Zoology	5	Entom.	110	Gen. Entomology Lab.	1
		Air or Military Science ..	1	Gn. St.	220	Introd. Soc. Sci. II	4
		Physical Education	0	Gl. Gg.	210	Principles of Geography ..	3
						Air or Military Science ..	1
						Physical Education	0
Total			14 or 15	Total			16 or 17

JUNIOR

A. H.	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
Total			15	Total			15

Number of hours required for graduation: 120 (women) or 124 (men).

Majors:

- Bacteriology*: Bact. 610, 670, 675, or 710, and 8 additional hours which may include Bact. 200, 270 and/or any selection from the 400-799 group; Chem. 230, 250, 435, 505, and 650; Math. 175, 190, Phys. 110, 210.
- 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**

The demand for medical technicians and public 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.

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
Gn. St.	250	Intro. to Human. I	4	Chem.	250	Chemistry II Lab.	2
Psych.	310	Gen. Psychology	3	Engl.	135	Written Comm. II	2
		Air or Military Science ..	1	Gn. St.	260	Intro. to Human. II	4
		Physical Education	0	Spch.	105	Oral Comm. I	2
						Air or Military Science ..	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	Gl. Gg.	210	Principles of Geograhay ..	3
		Air or Military Science ..	1	Zool.	635	Zoological Technic	2
		Physical Education	0			Air or Military Science ..	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		Gn. St.	220	Intro. 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
Gn. St.	210	Intro. 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

Physical Therapy Option

The demand for physical therapists has increased markedly. Training for such work is provided in this curriculum. A student will take his last year of this work in residence at an approved school of physical therapy. Thus he may qualify for both a Certificate in Physical Therapy and a Bachelor of Science degree in four years.

FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Engl.	125	Written Comm. I	3	Engl.	140	Written Comm. II	3
Spch.	105	Oral Comm. I	2	Zool.	110	General Zoology	5
Psych.	310	Gen. Psychology	3			Foreign Language	3
Chem.	110	Gen. Chemistry	5			Principles of Geography	
		Foreign Language	3			or Geology	3
		Air or Military Sci. Ia ..	1	F. & N.	130	Applied Nutrition	2
		Physical Education	0			Air or Military Sci. Ib ..	1
						Physical Education	0
Total			16 or 17	Total			16 or 17

SOPHOMORE

Gn. St.	210	Introd. Soc. Sci. I	4	Gn. St.	220	Introd. Soc. Sci. II	4
Phys.	210	Household Physics	4	Zool.	465	Hum. Physiology	4
		Foreign Language	3	Psych.	635	Social Psychology	3
Psych.	615	Psych. Child. & Adol.	3			Electives	3
		Air or Mil. Science IIa ..	1			Air or Mil. Science IIb ..	1
		Physical Education	0			Physical Education	0
Total			14 or 15	Total			14 or 15

JUNIOR

Gn. St.	250	Intro. to Humanities I ..	4	Gn. St.	260	Intro. to Humanities II ..	4
Bact.	110	Gen. Microbiology	3	Bact.	200	Public Health Bacter.	3
H. G. P.	115	Civilization I	3	H. G. P.	130	Civilization II	3
		Electives	5			Electives	5
Total			15	Total			15

SENIOR

School of Physical Therapy : 30 hours.

Application for admission to an approved school of physical therapy should be made during the sixth semester, with entrance to the school in September.

Curriculum in Business Administration

B. S. in Business Administration

The curriculum in Business Administration provides professional training for students who expect to go to work in industry or commerce following graduation. Based on a foundation of general education the business course work deals with the fundamental business activities of finance, production and marketing, and the complementing disciplines of accounting, business law and management. While leaving room for a limited specialization in an area of the student's choice, such as marketing, finance or personnel management, the primary objective is to provide training basic to the rapid managerial and administrative development of the graduate.

FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
B. A.	300	Accounting I	3	B. A.	310	Accounting II	3
B. A.	020	B. A. Orientation	0	B. A.	020	B. A. Orientation	0
Engl.	125	Written Comm. I	3	Engl.	140	Written Comm. IIB	3
Gn. St.	110	Man's Phys. World I	4	Gn. St.	120	Man's Phys. World II	4
H. G. P.	205	American Ind. History ..	3	Math.	145	General Algebra	5
Spch.	105	Oral Comm. I	2			Air or Military Science ..	1
		Air or Military Science ..	1			Physical Education	0
		Physical Education	0				
Total			15 or 16	Total			15 or 16

SOPHOMORE

B. A.	320	Int. Accounting or		B. A.	030	B. A. Lecture	0
B. A.	730	Cost Accounting	3	Ec. So.	120	Economics II	3
B. A.	030	B. A. Lecture	0	Gn. St.	160	Biology II	4
Ec. So.	110	Economics I	3	Psych.	310	General Psychology	3
Gn. St.	150	Biology I	4	Ec. So.	250	Introduction to Soc.	3
Gl. Gg.	215	Economic Geography	3			Air or Military Science ..	1
Math.	320	Elements of Statistics	3			Elective	2
		Air or Military Science ..	1			Physical Education	0
		Physical Education	0				
Total			16 or 17	Total			15 or 16

JUNIOR

B. A.	030	B. A. Lecture	0	B. A.	030	B. A. Lecture	0
B. A.	440	Marketing	3	B. A.	405	Bus. Org. & Finance	3
Ec. So.	430	Money and Banking	3	Engl.	155	Comm'l Correspondence ..	3
Engl.	090	English Proficiency	0	Gn. St.	260	Intro. to Human. II	4
Gn. St.	250	Intro. to Human. I	4	B. A.	280	Business Law II	3
B. A.	275	Business Law I	3			Elective	2
		Elective	2				
Total			15	Total			15

SENIOR

B. A.	030	B. A. Lecture	0	B. A.	511	Business Policy	3
Ec. So.	470	Public Finance	3	H. G. P.	255	American Government	3
		Elective	11			Special Business	
						Electives	9
Total			14	Total			15

Number of hours required for graduation: 120 (women) or 124 (men).

At least 10 semester hours of electives are to be chosen from B. A. 320, 410, 415, 420, 425, 430, 435, 445, 450, 730, 735, 740, 745, 750, 755, 760, 765, 770, 775, 780, 785; Ag. Ec. 557; Ec. So. 450, 455, 460, 465, 476, 480, 486, 490, 495, 505, 510; Engl. 165; H. G. P. 465, 720; Math. 160; Psych. 505, 515, 525, 530, 545; I. E. 410; Journ. 255. Majors in marketing will include B. A. 435, 445, 450; majors in finance will include B. A. 410, 435; majors in labor management will include Ec. So. 455, 460, 465.

Curriculum in Business Administration

B. S. in Business Administration

Accounting Option

The curriculum in accounting offers a professional course of training for employment in commercial and industrial accounting, public accounting and governmental accounting. Positions in these fields include such jobs as public accountant, tax accountant, auditor, cost accountant, internal auditor and controller. The basic business training in this curriculum, with its managerial orientation, qualifies graduates for employment in positions which provide opportunities for advancement to executive positions. The public accounting training is designed to prepare students to pass the C. P. A. examinations soon after graduation.

CERTIFICATE OF CERTIFIED PUBLIC ACCOUNTANT

The Board of Accountancy of the State of Kansas, created by an act of the Kansas legislature in 1951, administers the C. P. A. examinations and issuance of certificates. The C. P. A. examination is given twice a year. A candidate for admission to the examination must have graduated from a college or university approved by the Board, with thirty semester hours in the fields of accounting, business law, economics and finance, of which twenty semester hours must be in accounting. A candidate who passes the examination must, in addition, submit evidence of having had two years of experience in public accounting before the certificate is issued.

FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
B. A.	300	Accounting I	3	B. A.	310	Accounting II	3
B. A.	020	Bus. Adm. Orientation ..	0	B. A.	020	Bus. Adm. Orientation ..	0
Engl.	125	Written Comm. I	3	Engl.	140	Written Comm. IIB	3
Gn. St.	110	Man's Phys. World I ..	4	Gn. St.	120	Man's Phys. World II	4
H. G. P.	205	American Ind. History ..	3	Math.	145	General Algebra	5
Spch.	105	Oral Comm. I	2			Air or Military Science ..	1
		Air or Military Science ..	1			Physical Education	0
		Physical Education	0				
Total			15 or 16	Total			15 or 16

SOPHOMORE

B. A.	320	Int. Accounting	3	B. A.	735	Adv. Cost Acctg.	2
B. A.	730	Cost Accounting	3	B. A.	740	Valuation Accounting ...	3
B. A.	030	Bus. Adm. Lecture	0	B. A.	030	Bus. Adm. Lecture	0
Ec. So.	110	Economics I	3	Ec. So.	120	Economics II	3
Gn. St.	150	Biology I	4	Gn. St.	160	Biology II	4
Math.	160	Math. of Finance	3	Math.	320	Elements of Statistics ..	3
		Air or Military Science ..	1			Air or Military Science ..	1
		Physical Education	0			Physical Education	0
Total			16 or 17	Total			15 or 16

JUNIOR

B. A.	745	Adv. Accounting	3	B. A.	755	Tax Accounting	3
B. A.	750	Govt. Accounting	2	B. A.	030	Bus. Adm. Lecture	0
B. A.	030	Bus. Adm. Lecture	0	B. A.	405	Bus. Org. and Finance	3
Ec. So.	430	Money and Banking	3	Gn. St.	260	Intro. to Human. II	4
Engl.	090	English Proficiency	0	B. A.	275	Business Law I	3
Gn. St.	250	Intro. to Human. I	4			Elective	2
Psych.	310	General Psychology	3				
Total			15	Total			15

SENIOR

Ec. So.	470	Public Finance	3	B. A.	511	Business Policy	3
B. A.	280	Business Law II	3	Engl.	155	Comm'l Correspondence ..	3
		Elective	9	H. G. P.	255	American Government ...	3
						Elective	5
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

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.

FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Chem.	095	Chem. Seminar	0	Chem.	095	Chem. Seminar	0
Chem.	210	Chemistry I	5	Chem.	230	Chemistry II	3
Engl.	125	Written Comm. I	3	Chem.	270	Qual. Analysis	3
M. E.	210	Engg. Drawing	2	Engl.	135	Written Comm. II	2
Math.	175	College Algebra	3	Math.	215	Anal. Geom. and Calc. I ..	4
Math.	190	Plane Trigonometry	3	Spch.	105	Oral Comm. I	2
		Air or Military Science ..	1			Air or Military Science ..	1
		Physical Education	0			Elective	2
						Physical Education	0
Total				16 or 17	Total		
					16 or 17		

SOPHOMORE

Chem.	095	Chem. Seminar	0	Chem.	095	Chem. Seminar	0
Chem.	450	Quant. Analysis I	4	Chem.	455	Quant. Analysis II	4
Math.	230	Anal. Geom. and Calc. II ..	4	Math.	245	Anal. Geom. and Calc. III ..	4
Mod. L.	110	Tech. German I	3	Mod. L.	120	Tech. German II	3
Phys.	130	Engg. Physics I	5	Phys.	140	Engg. Physics II	5
		Air or Military Science ..	1			Air or Military Science ..	1
		Physical Education	0			Physical Education	0
Total				16 or 17	Total		
					16 or 17		

JUNIOR

Chem.	095	Chem. Seminar	0	Chem.	095	Chem. Seminar	0
Chem.	510	Organic Chemistry I	5	Chem.	515	Organic Chemistry II	5
Chem.	585	Phys. Chemistry I	3	Chem.	595	Phys. Chemistry II	3
Chem.	590	Phys. Chemistry I Lab. ..	2	Chem.	600	Phys. Chemistry II Lab. ..	2
Engl.	090	English Proficiency	0	Gn. St.	220	Introd. Soc. Sci. II	4
Gn. St.	210	Introd. Soc. Sci. I	4			Elective	3
Mod. L.	125	Tech. German III	3				
Total				17	Total		
					17		

SENIOR

Chem.	095	Chem. Seminar	0	Chem.	090	Inspection Trip	0
Chem.	480	Instrumental Analysis ..	3	Chem.	095	Chem. Seminar	0
Gn. St.	150	Biology I or		Chem.	405	Inorganic Chemistry	3
Gn. St.	250	Intro. to Human. I	4	Chem.	700	Senior Research	3
		Chemistry Elective	5	Gn. St.	160	Biology II or	
		Elective	5	Gn. St.	260	Intro. to Human. II	4
						Elective	7
Total				17	Total		
					17		

Number of hours required for graduation: 132 (women) or 136 (men).

Curriculum in Elementary Education

B. S. 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).

FRESHMAN

SECOND SEMESTER				FIRST SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Engl.	125	Written Comm. I	3	Art	190	Art for Elem. Schools ..	3
Gn. St.	110	Man's Phys. World I	4	Engl.	135	Written Comm. II	2
Psych.	310	General Psychology	3	Gn. St.	120	Man's Phys. World II	4
Spch.	105	Oral Comm. I	2	Ph. Ed.	136	Pers. and Comm. Health ..	3
		Air or Military Science ..	1			Air or Military Science ..	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
Gn. St.	150	Biology I	4	Gn. St.	160	Biology II	4
Music	110	Music for Elem. Teachers	3	Ph. Ed.	280	Playground Activities	3
		Air or Military Science ..	1			Air or Military Science ..	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
Gn. St.	210	Introd. Soc. Sci. I	4	Gn. St.	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
Gn. St.	250	Intro. to Human. I	4	Gn. St.	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: The selection of electives must be planned so that there will be at least 24 semester hours of elective and required courses 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 state department general education requirement may also be counted toward the requirement of 24 semester hours. The general studies courses 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

Bachelor of Science

This four-year curriculum is designed to meet the needs of the student preparing to teach in the secondary schools. (Special curriculums exist in agricultural education, page 68; home economics teaching, page 232; physical education, page 107; music, page 106; industrial arts, page 194.) 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).

FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Engl.	125	Written Comm. I	3	Engl.	140	Written Comm. IIB	3
		Air or Military Science ..	1	Psych.	310	General Psychology	3
		Elective and Major	8	Spch.	105	Oral Comm. I	2
		Physical Education	0			Air or Military Science ..	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 or Military Science ..	1			Air or Military Science ..	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 or		Educ.	165	Meth. and Tchg. Part.	
Educ.	420	Prin. Prac. Guid. or				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; Entom. 105, 110; Gn. St. 210, 220, 250, 260; Gl. Gg. 210; Zool. 110, 465, 650, or 665; 12 semester hours in bacteriology, botany, entomology, and zoology.

Business Administration: B. A. 300, 310, 320, 360, 370, 380, 390, 405, 440, 730; Ec. So. 110, 120, 430; Engl. 155; Gn. St. 110, 120, 150, 160, 250, 260; H. G. P. 205, 255, 295, 310; Math. 145; Ec. So. 250.

Chemistry: Bot. 110; Chem. 210, 230, 250, 450, 455, 505 or 511 and 512, 580 or 585; Gn. St. 210, 220, 250, 260; Gl. Gg. 110; Math. 175, 190, 215, 230, 245; Phys. 130, 140, 560; Zool. 110.

Economics: B. A. 330; Ec. So. 110, 120, 250, 430, 455, 470, 505; H. G. P. 115, 130, 255, Gn. St. 110, 120, 150, 160, 250, 260; Math. 145 or 175, 320; 6 semester hours in economics, 6 semester hours in American history, 3 semester hours in sociology.

English: Engl. 405, 410, or 476, 415 or 450, 505, 515, 555, 680, 690; Gn. St. 110, 120, 150, 160, 210, 220; H. G. P. 115, 130; two courses from Arch. 200, 285; Music 250; 3 semester hours of history or philosophy; Mod. L. elective, 12; 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; Ec. So. 110; Gn. St. 150, 160, 250, 260; Gl. Gg. 210, 220, 230, 705, 715, 725; Gl. Gg. 110, 410; H. G. P. 255; Math. 175, 190; Phys. 110, 120.

Geology: Bot. 110; Chem. 210, 230; Ec. So. 110; Gn. St. 250, 260; Gl. Gg. 110, 210, 405, 410, 415, 455, 495, 515; H. G. P. 255; Math. 175, 190, 215; Phys. 110, 120; Zool. 110.

History and Government: Ec. So. 110, 120, 250; Engl. 215, 245; Gn. St. 110, 120, 150, 160; H. G. P. 115, 130, 175, 190, 255, 260 or 270; Math. 125; 3 semester hours in economics, 3 semester hours in sociology; 18 semester hours in government or 12 semester hours in history.

Journalism: Engl. 245; Gn. St. 110, 120, 150, 160, 250, 260; Gl. Gg. 210; H. G. P. 220, 255; Phil. 365; Journ. 050, 105, 115, 215, 225, 265, 295, 625; 3 semester hours in English, 3 semester hours in American history, 9 semester hours in a modern language or 3 semester hours in English and 6 semester hours in social science; 5 semester hours in technical journalism.

Mathematics: Math. 175, 190, 215, 230, 245, 300, 320, 415, 525; 3 semester hours in mathematics; other courses to satisfy certification requirements in general education.

Modern Languages: Arch. 200; Engl. 215, 225, 245, 255; Gn. St. 110, 120, 150, 160, 210, 220; H. G. P. 115, 130; Music 250; 6 semester hours in English, 6 semester hours in history; 24 semester hours in one modern language.

Physical Science: Bot. 110; Chem. 210, 230, 250, 505; Gn. St. 210, 220, 250, 260; Gl. Gg. 110, 405; Math. 175, 190, 215, 230; Phys. 130, 140, 560; Zool. 110; 1 semester hour in mathematics, 2 semester hours in physics.

Physics: Bot. 110; Chem. 210, 230, 250, 505; Gn. St. 210, 220, 250, 260; Gl. Gg. 110; Math. 175, 190, 215, 230, 245; Phys. 130, 140, 410, 420, 432, 450, 460, 471, 480, 560; Zool. 110.

Psychology: Ec. So. 110, 120, 250; Engl. 215, 245; Gn. St. 110, 120; Gn. St. 150, 160 or Zool. 110, 465; H. G. P. 115, 130, 255; Math. 125 or 175; 3 semester hours in government, 6 semester hours in American history, 3 semester hours in sociology; 18 semester hours in psychology beyond curricular requirements.

Sociology: Ec. So. 110, 120, 250, 625, 665, 675, 680; Gn. St. 110, 120, 150, 160, 250, 260; H. G. P. 115, 130, 255; Math. 125; 3 semester hours in economics; 3 semester hours in government; 6 semester hours in American History; 10 semester hours in sociology.

Speech: Arch. 200; Engl. 215, 225, 245, 255; Gn. St. 110, 120, 150, 160, 210, 220; H. G. P. 115, 130; Music 250; Spch. 115, 135 or 155 or 285, 165, 176, 216, 255, 366 or 385, 436, 450, 465, 526, 535; 6 semester hours in a modern language.

Curriculum in Geology*Bachelor of Science***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 17 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. (See also page 109, Physical Science Curriculum; page 101, Curriculum in Secondary Education; and page 110, Geophysics Option 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	Engl.	135	Written Comm. II	2
Chem.	210	Chemistry I	5	Spch.	105	Oral Communications I ..	2
Gl. Gg.	110	General Geology	3	Chem.	230	Chemistry II	3
Math.	175	College Algebra	3	Chem.	250	Chemistry II Lab	2
		Air or Military Science ..	1	Math.	190	Plane Trigonometry	3
		Physical Education	0	Gl. Gg.	405	Historical Geology	4
						Air or Military Science ..	1
						Physical Education	0
Total			14 or 15	Total			16 or 17

SOPHOMORE

Gn. St.	150	Biology I*	4	Gn. St.	160	Biology II	4
Gl. Gg.	415	Crystallography & Mineralogy	4	Gl. Gg.	410	Geomorphology	4
Math.	230	Anal. Geom. and Calc. I ..	4	Math.	245	Anal. Geom. and Calc. II ..	4
Gl. Gg.	455	Invertebrate Paleon.	4	Gl. Gg.	545	Economic Geology	4
		Air or Military Science ..	1			Air or Military Science ..	1
		Physical Education	0			Physical Education	0
Total			16 or 17	Total			16 or 17

JUNIOR

Gn. St.	250	Intro. to Human. I	4	Gn. St.	260	Intro. to Human. II	4
Phys.	110	General Physics I	4	Phys.	120	General Physics II	4
Gl. Gg.	425	Field Meth. in Geol.	3	Ec. So.	110	Economics I	3
Gl. Gg.	575	Optical Mineralogy	4	Gl. Gg.	536	Petroleum Geology	3
		Elective	2			Elective	3
		English Proficiency	0				
Total			17	Total			17

SENIOR

Gl. Gg.	495	Stratigraphic Geol.	4	Gl. Gg.	445	Aerial Photogeology	3
Gl. Gg.	515	Structural Geol.	4	Gl. Gg.	585	Sedimentary Petrology	5
Psych.	310	General Psychology	3	H. G. P.	255	American Government	3
		Elective	6			Elective	6
Total			17	Total			17

Number of hours required for graduation: 130 (women) or 134 (men).

* General Zoology, 5 hours, and Paleobotany, 3 hours, or some other 3-hour biological science may be substituted for Biology I and II.

Field Geology is required of all majors in Geology. This requirement should be completed preferably between the junior and senior years. Credit in this course amounting to a minimum of 5 hours will be substituted for a corresponding number of elective hours.

For course descriptions see page 146.

Curriculum in Humanities
Bachelor of Science

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.

FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Engl.	125	Written Comm. I	3	Engl.	135	Written Comm. II	2
Gn. St.	110	Man's Phys. World I	4	Gn. St.	120	Man's Phys. World II	4
H. G. P.	115	Civilization I	3	H. G. P.	130	Civilization II	3
Spch.	105	Oral Comm. I	2	Psych.	310	General Psychology	3
		Air or Military Science ..	1			Air or Military Science ..	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
Gn. St.	150	Biology I	4	Gn. St.	160	Biology II	4
		Air or Military Science ..	1	Math.	125	Math. of Human Affairs	3
		Elective and Major	5			Air or Military Science ..	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	Gn. St.	220	Introd. Soc. Sci. II	4
Gn. St.	210	Introd. Soc. Sci. I	4	Music	250	App. of Music	2
		Elective and Major	8			Elective and Major	6
Total			15	Total			15

SENIOR

Arch.	200	App. of Architecture or		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. (See page 140.)
Speech (general speech, speech education, drama and theatre, radio and television, speech therapy): 30 hours subsequent to Spch. 105. (See page 174.)
Language: 30 hours in a single language. The language major ought to take at least 9 additional hours in history.
Art: 30 hours.
Music: 30 hours subsequent to Music 105, 150, 155. (See page 160.)

Curriculum in Applied Music

A four-year curriculum with options in Instrument and Voice is offered in Applied Music. The curriculum is designed to give the student an opportunity for personalized training in voice, piano, organ, string, woodwind and brass instruments. The student will also find that a minor may be taken in any one of the above applied fields. The student who completes a curriculum in Applied Music is awarded a Bachelor of Music Degree.

Voice or 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
Music	150	Theory of Music I	3	Music	155	Theory of Music II	3
Phys.	240	Physics for Musicians	2	Music	250	Appr. of Music	2
Spch.	105	Oral Comm. I	2	Psych.	310	General Psychology	3
		Air or Military Science ..	1			Air or Military Science ..	1
		Applied Music	5			Applied Music	5
		Physical Education	0			Physical Education	0
Total			15 or 16	Total			16 or 17

SOPHOMORE

Gn. St.	110	Man's Phys. World I <i>or</i>	Gn. St.	120	Man's Phys. World II <i>or</i>
Gn. St.	150	Biology I <i>or</i>	Gn. St.	160	Biology II <i>or</i>
Gn. St.	210	Introd. Soc. Sci. I 4	Gn. St.	220	Introd. Soc. Sci. II 4
		Modern language 3			Modern language 3
Music	160	Theory of Music III 3	Music	165	Theory of Music IV 3
		Applied Music 6			Applied Music 6
		Physical Education 0			Physical Education 0
		Air <i>or</i> Military Science .. 1			Air <i>or</i> Military Science .. 1
Total	..... 16 <i>or</i> 17		Total	..... 16 <i>or</i> 17	

JUNIOR

Engl.	090	English Proficiency	0	Music	176	Counterpoint II	2
		Modern language	3	Music	195	History of Music II	2
Music	170	Counterpoint I	2	Music	320	Junior Recital	1
Music	190	History of Music I	2			Applied Music	6
		Applied Music	6	Music	222	Theory of Conducting	2
		Elective	3			Elective	4
Total			16	Total			17

SENIOR

Music	180	Music Form and Anal. ..	2	Music	215	Composition II	2
Music	210	Composition I	2	Music	325	Senior Recital	2
Music	425	Meth., Matls. for Studio	1	Music	430	P. T. App. Music	1
		Applied Music	4			Applied Music	4
		Elective	7			Elective	7
Total			16	Total			16

Number of hours required for graduation: 128 (women) or 132 (men).

For a student with the voice option, the electives must be so chosen that the following requirements are fulfilled: 12 semester hours in one foreign language, 6 semester hours in a second foreign language, 6 semester hours of literature, 4 semester hours of music literature, and Spch. 245. The work in Applied Music includes 32 semester hours of voice, 4 of piano, 2 of Laboratory Choir, 4 of Vocal Ensemble, and 4 semesters of Piano Ensemble.

For a student with the instrument option, the electives must include Music 183, 186, and 4 semester hours of music literature. There must be 9 hours of one foreign language. The required work in Applied Music includes 32 semester hours on the major instrument, 8 on the minor instrument, 4 with the Laboratory Orchestra, 6 of Instrumental Ensemble, and 4 semesters of Piano Ensemble. If piano or organ is not the major instrument, it must be the minor instrument. Organ majors must register for Music 545, 555.

Recital attendance and participation in a music organization (selected on the advice of the department) are required each semester.

For requirements in Applied Music subjects for entrance to and graduation from the Department of Music, see page 160.

Curriculums in Music Education

B. S. in Music Education

Two curriculums in Music Education are offered with specialization in voice, piano, organ, string, woodwind and brass instruments. The student who completes one of these curriculums is awarded the degree Bachelor of Science in Music Education and is eligible to receive a degree certificate from the Kansas State Board of Public Instruction with permission to teach music from grades 1 through 12. In addition any subject on the secondary level in which 15 hours or more has been completed may be taught.

Voice or Instrument Option

FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Engl.	125	Written Comm. I	3	Engl.	140	Written Comm. IIB	3
Gn. St.	150	Biology I	4	Gn. St.	160	Biology II	4
Music	150	Theory of Music I	3	Music	155	Theory of Music II	3
Music	230	Orch. Instr. I (String) ..	1	Music	235	Orch. Inst. II (String) ..	1
Music	250	Appr. of Music	2	Spch.	105	Oral Comm. I	2
		Applied Music	2			Applied Music	2
		Air or Military Science ..	1			Air or Military Science ..	1
		Physical Education	0			Physical Education	0
Total			15 or 16	Total			15 or 16

SOPHOMORE

Gn. St.	210	Introd. Soc. Sci. I	4	Educ.	100	Educational Psych. I	3
Music	160	Theory of Music III	3	Gn. St.	220	Introd. Soc. Sci. II	4
Music	240	Orch. Inst. III (W. W.) ..	1	Music	116	School Music I	3
Phys.	240	Physics for Musicians	2	Music	165	Theory of Music IV	3
Psych.	310	General Psychology	3	Music	245	Orch. Inst. IV (Brass) ..	1
		Applied Music	2			Applied Music	2
		Air or Military Science ..	1			Air or Military Science ..	1
		Physical Education	0			Physical Education	0
Total			15 or 16	Total			16 or 17

JUNIOR

Engl.	090	English Proficiency	0	Educ.	246	Tch. Pt. in Music	2
Gn. St.	250	Intro. to Human. I	4	Gn. St.	260	Intro. to Human. II	4
Music	121	School Music II	3	Music	132	Instr. Methods	3
Music	170	Counterpoint I	2	Music	175	Counterpoint II	2
Music	190	History of Music I	2	Music	195	History of Music II	2
Music	247	Orch. Inst. V (Perc.)	1	Music	222	Theory of Conducting	2
Educ.	105	Educational Psych. II	3			Applied Music	2
		Applied Music	2				
Total			17	Total			17

SENIOR

Educ.	120	Prin. Sec. Educ.	3	Educ.	246	Tch. Pt. in Music	2
Educ.	246	Tch. Pt. in Music	2			Education elective	3
Music	180	Music Form and Anal.	2	Music	186	Instr. and Orch. II	2
Music	183	Instr. and Orch. I	2			Applied Music	4
		Applied Music	4			Elective	5
		Elective	4				
Total			17	Total			16

Number of hours required for graduation: 128 (women) or 132 (men).

All students must include Spch. 535 as part of their electives, and those with an instrument option must also include Music 435.

Each student must complete 8 semester hours of work with the major instrument or voice, 8 semester hours of other applied music courses, chosen in consultation with a departmental adviser, one year of work in the Laboratory Orchestra and the Laboratory Choir, and two years of work with the Piano Ensemble.

Recital attendance and participation in a music organization are required each semester.

For requirements in Applied Music subjects for entrance to and graduation from the Department of Music, see page 160.

Curriculums in Physical Education (Men)*B. S. in Physical Education*

The theoretical and practical instruction given in these curriculums prepares the student for teaching physical and health education, for recreation and for coaching individual sports and athletic team games. By selecting the proper electives, the student may qualify to teach one or more subjects outside the field of specialization. A minor in physical education may be granted for completing 20 hours in certain specified courses. By completing the work in one of these curriculums, the student is awarded a B. S. Degree in Physical Education. (Courses, page 166.)

FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Engl.	125	Written Comm. I	3	Engl.	135	Written Comm. II	2
Gn. St.	110	Man's Phys. World I	4	Gn. St.	120	Man's Phys. World II ...	4
Ph. Ed.	105	Intro. to Phys. Ed.	1	Ph. Ed.	110	History of Phys. Ed.	2
Ph. Ed.	115	Phys. Ed. Activities I ..	2	Ph. Ed.	121	Phys. Ed. Activities II ..	1
Psych.	310	General Psychology	3	Zool.	110	General Zoology	5
Spch.	105	Oral Comm. I	2			Air or Military Science ..	1
		Air or Military Science ..	1			Physical Education	0
		Physical Education	0				
Total			16	Total			15

SOPHOMORE

Gn. St.	210	Introd. Soc. Sci. I	4	Educ.	100	Educ. Psychology I	3
Ph. Ed.	126	Phys. Ed. Activities III ..	1	Gn. St.	220	Introd. Soc. Sci. II	4
Ph. Ed.	130	Nat. and Fund. of Play ..	2	Ph. Ed.	290	Kinesiology	2
Ph. Ed.	136	Pers. and Comm. Hygiene ..	3	Zool.	465	Human Physiology	4
Zool.	210	Human Anatomy	5	Ph. Ed.	275	Fund. of Rhythms	2
		Air or Military Science ..	1			Air or Military Science ..	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	Gn. St.	260	Intro. to Human. II	4
Gn. St.	250	Intro. to Human. I	4	Ph. Ed.	155	Athletic Injuries and	
Ph. Ed.	160	Health Exam.	3			First Aid	3
		Elective	2	Ph. Ed.	185	Swimming	1
		Sports Option*	4			Sports Option*	2
						Phys. Ed. Option†	2
Total			16	Total			15

SENIOR

Ph. Ed.	165	Public School Program		Educ.	135	Meth. Teach. in Sec.	
		in Phys. Ed.	2			School	3
Ph. Ed.	170	Prac. Teach. in Phys.		Educ.	150	Teach. Part. in Sec.	
		Ed.	2			School	4
		Elective	9	Ph. Ed.	150	Admin. of Health and	
		Educ. Elective	3			Physical Education ..	3
				Ph. Ed.	425	Community Recreation ...	2
						Elective	4
Total			16	Total			16

Number of hours required for graduation: 126.

* Sports option to be chosen from Ph. Ed. 190, 195, 200, 205.

† Physical Education option to be chosen from Ph. Ed. 175, 210, 215, and course not selected in sports option.

For a minor in Health and Physical Education, certain specified courses are required; Ph. Ed. 105, 115 or 126, 121, 130, 136, 155, 165, 175 and sports elective, 4 hours chosen from 190, 195, 200, 205. Courses, pages 166.

Curriculum in Physical Education (Women)

B. S. in Physical Education

The theoretical and practical instruction given in these curriculums prepares the student for teaching physical and health education, recreation, and for coaching individual sports and athletic team games. By selecting the proper electives, the student may qualify to teach one or more subjects outside the field of specialization. A minor in physical education may be granted for completing 20 hours in certain specified courses. By completing the work in one of these curriculums, the student is awarded a B. S. Degree in Physical Education. (Courses, page 167.)

FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Engl.	125	Written Comm. I	3	Engl.	135	Written Comm. II	2
F. & N.	130	Applied Nutrition	2	Gn. St.	120	Man's Phys. World II	4
Gn. St.	110	Man's Phys. World I	4	Ph. Ed.	055	Physical Education	0
Ph. Ed.	055	Physical Education	0	Ph. Ed.	065	Phys. Ed. Lectures	0
Ph. Ed.	065	Phys. Ed. Lectures	0	Ph. Ed.	250	Phys. Ed. Orient.	1
Ph. Ed.	270	Tumbling, Rec. Sports	2	Ph. Ed.	275	Fund. of Rhythms	2
Psych.	310	General Psychology	3	Zool.	110	General Zoology	5
Spch.	105	Oral Comm. I	2				
Total			16	Total			14

SOPHOMORE

Bot.	190	Nat. and Dev. Plants	3	Educ.	105	Educ. Psychology II	3
Educ.	100	Educ. Psychology I	3	Ph. Ed.	055	Physical Education	0
Ph. Ed.	055	Physical Education	0	Ph. Ed.	065	Phys. Ed. Lectures	0
Ph. Ed.	065	Phys. Ed. Lectures	0	Ph. Ed.	265	Rec. Leadership	2
Ph. Ed.	136	Pers. and Comm. Hyg.	3	Ph. Ed.	280	Playground Activ.	3
Ph. Ed.	295	Team Sports I	2	Ph. Ed.	285	Individual Activ.	2
Zool.	210	Human Anatomy	5	Ph. Ed.	290	Kinesiology	2
				Zool.	465	Human Physiology	4
Total			16	Total			16

JUNIOR

Educ.	120	Prin. of Sec. Educ.	3	Gn. St.	220	Intro. Soc. Sci. II	4
Engl.	090	English Proficiency	0	Ph. Ed.	055	Physical Education	0
Gn. St.	210	Intro. Soc. Sci. I	4	Ph. Ed.	065	Phys. Ed. Lectures	0
Ph. Ed.	055	Physical Education	0	Ph. Ed.	175	Teaching Health	2
Ph. Ed.	065	Phys. Ed. Lectures	0	Ph. Ed.	315	Therapeut. and Massage ..	3
Ph. Ed.	300	Team Sports II	2	Ph. Ed.	320	Folk, Tap, and Social	
Ph. Ed.	305	Health Exam. and				Dancing	2
		First Aid	3			Elective	5
Ph. Ed.	355	Prin. and Phil. Phys.					
		Educ.	3				
Total			15	Total			16

SENIOR

Gn. St.	250	Intro. to Human. I	4	Educ.	135	Methods of Teach. Sec.	
Ph. Ed.	065	Phys. Ed. Lectures	0			School	3
Ph. Ed.	325	Meth. and Materials of		Educ.	150	Teach. Part in Sec.	
		Modern Dance	2			School	3
Ph. Ed.	330	Teach. and Adapt. of		Gn. St.	260	Intro. to Human. II	4
		Phys. Ed.	3	Ph. Ed.	065	Phys. Ed. Lectures	0
		Education elective	3	Ph. Ed.	150	Admin. Health and	
		Elective	4			Phys. Ed	3
				Ph. Ed.	340	Swimming	2
Total			16	Total			15

Number of hours required for graduation, 124.

Curriculum in Physical Science

Bachelor of Science

This curriculum provides for the needs of the student who desires major work in mathematics, statistics, chemistry, physics or geology, but who also wishes to get some training in a secondary field, such as business, patent law, agriculture, biology or in one of the other physical sciences. Training in this second field may be obtained by a suitable choice of the elective hours which remain after meeting the requirements of the major field.

Having completed this program the graduate will find career opportunities in commercial or government laboratories, especially in the borderline two-discipline fields. He is also prepared for graduate work in this field.

The student wishing more specialized work in chemistry, geology, or physics should enroll in the specialized curriculum in the given field. (See pages 99, 103, 111.) The student who wishes to teach the physical sciences in high school should consider the Curriculum in Secondary Education. (See page 100.)

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
Math.	175	College Algebra	3	Math.	215	Anal. Geom. & Calc. I ..	4
Math.	190	Plane Trigonometry	3	Gl. Gg.	110	General Geology	3
		Air or Military Science ..	1	Spch.	105	Oral Comm. I	2
		Elective	1			Air or Military Science ..	1
		Physical Education	0			Elective	2
						Physical Education	0
Total			15 or 16	Total			16 or 17

SOPHOMORE

Gn. St.	150	Biology I	4	Gn. St.	160	Biology II	4
Math.	230	Anal. Geom. & Calc. II ..	4	Ec. So.	110	Economics I	3
Phys.	110	General Physics I	4	Phys.	120	General Physics II	4
Psych.*	310	General Psychology	3			Air or Military Science ..	1
		Air or Military Science ..	1			Elective	4
		Physical Education	0			Physical Education	0
Total			15 or 16	Total			15 or 16

JUNIOR

Engl.	090	English Proficiency	0	Gn. St.	260	Intro. to Human. II	4
Gn. St.	250	Intro. to Human. I	4	H. G. P.	225	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: 121 (women) or 125 (men).

Majors:

Chemistry: Chem. 250, 450, 455, 511, 512, 516, 517, 585, 590, 595.

Geology: Chem. 250, Gl. Gg. 405, 410, 415, 425, 515.

Mathematics: Math. 245, 600, and 9 hours normally selected from 415, 450, 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, 746, and 6 hours selected from 700-799 group in statistics.

A 9-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

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.

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
Gl. Gg.	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	Gl. Gg.	405	Historical Geology	4
		Air or Military Science ..	1	Math.	215	Anal. Geom. & Calc. I ..	4
		Elective	1			Air or Military Science ..	1
		Physical Education	0			Physical Education	0
Total			15 or 16	Total			16 or 17

SOPHOMORE

Engl.	135	Written Comm. II	2	Gl. Gg.	230	Cartography	3
Gl. Gg.	425	Field Meth. in Geol.	3	Gl. Gg.	415	Cryst. and Mineralogy	4
Math.	230	Anal. Geom. & Calc. II ..	4	Math.	245	Anal. Geom. & Calc. III ..	4
Phys.	130	Engg. Physics I	5	Phys.	140	Engg. Physics II	5
Spch.	105	Oral Comm. I	2			Air or Military Science ..	1
		Air or Military Science ..	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	Gn. St.	160	Biology II	4
Gn. St.	150	Biology I	4	Gn. St.	220	Introd. Soc. Sci. II	4
Gn. St.	210	Introd. Soc. Sci. I	4	Gl. Gg.	445	Aerial Photogeology	3
Gl. Gg.	515	Structural Geology	4	Phys.	471	Elec. and Magn.	4
H. G. P.	325	Law for Engineers	2	Phys.	480	Elec. and Magn. Lab.	1
Math.	600	Differential Equations	3	Total			16
Total			17	Total			16

SENIOR

Gn. St.	250	Intro. to Human. I	4	Gn. St.	260	Intro. to Human. II	4
Phys.	515	Electronic Physics I	4	Gl. Gg.	536	Petroleum Geology	3
Phys.	618	Geophysics I	3	Phys.	621	Geophysics II	3
		Elective	6			Elective	7
Total			17	Total			17

Number of hours required for graduation: 130 (women) or 134 (men).

Curriculum in Physics

Bachelor of Science

The fundamental importance of physics in our defense efforts and in modern technical developments has led to an ever-increasing demand for men and women with professional training in physics. This demand comes from industrial and governmental research and development laboratories and from educational institutions.

This curriculum offers professional training in physics for the student who wishes to enter a research or development position or who wishes to continue his study of physics at the graduate level.

Students who wish more extensive training in other subjects together with basic training in physics should enroll in the Curriculum in Physical Science (page 109). Students who plan to teach physics at the secondary level should enroll in the Curriculum in Secondary Education (page 101) with a major in physics or physical 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	Chem.	250	Chemistry II Lab.	2
Math.	175	College Algebra	3	Engl.	135	Written Comm. II	2
Math.	190	Plane Trigonometry	3	H. G. P.	205	American Ind. History ..	3
Phys.	740	Physics Colloquium	0	Math.	215	Anal. Geom. & Calc. I ..	4
		Air or Military Science ..	1	Phys.	740	Physics Colloquium	0
		Physical Education	0	Spch.	105	Oral Comm. I	2
						Air or Military Science ..	1
						Physical Education	0
Total				14 or 15	Total		
					16 or 17		

SOPHOMORE

Ec. So.	110	Economics I	3	Gn. St.	160	Biology II	4
Gn. St.	150	Biology I	4	H. G. P.	255	American Govt. or	
Math.	230	Anal. Geom. & Calc. II ..	4	Psych.	310	General Psychology	3
Phys.	130	Engg. Physics I	5	Math.	245	Anal. Geom. & Calc. III ..	4
Phys.	740	Physics Colloquium	0	Phys.	140	Engg. Physics II	5
		Air or Military Science ..	1	Phys.	740	Physics Colloquium	0
		Physical Education	0			Air or Military Science ..	1
						Physical Education	0
Total				16 or 17	Total		
					16 or 17		

JUNIOR

Engl.	090	English Proficiency	0	Gn. St.	260	Intro. to Human. II	4
Gn. St.	250	Intro. to Human. I	4	Math.	620	Adv. Calculus II	3
Math.	600	Differential Equations ..	3	Phys.	434	Mechanics II	2
Phys.	560	Atomic Physics	3	Phys.	471	Elec. and Magnetism	4
Phys.	591	Modern Phys. Lab. I	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.	410	Light	3	Phys.	593	Modern Phys. Lab. II	1
Phys.	420	Light Laboratory	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 Pre-medicine

Bachelor of Science

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.

FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Engl.	125	Written Comm. I	3	Engl.	140	Written Comm. IIB	3
Math.	175	College Algebra	3	Math.	190	Plane Trig.	3
Gl. Gg.	210	Principles of Geog.	3	Chem.	210	Chemistry	5
Spch.	105	Oral Comm. I	2			Soc. Sci. electives	4-5
		Soc. Sci. Electives	3-5			Air or Military Science ..	1
		Air or Military Science ..	1			Physical Education	0
		Physical Education	0				
Total			15 to 17	Total			16 or 17

SOPHOMORE

Phys.	110	General Physics I	4	Phys.	120	General Physics II	4
Chem.	230	Chemistry II	3	Chem.	505	Foreign language	3
Chem.	250	Chemistry II Lab.	2			Organic Chemistry	5
		Literature	2-3			Literature	3
		Foreign language	3			Air or Military Science ..	1
		Air or Military Science ..	1			Physical Education	0
		Physical Education	0				
Total			14 to 16	Total			15 or 16

JUNIOR

Chem.	435	Quant. Analysis	4	Zool.	405	Comp. Anatomy	4
Zool.	110	General Zoology	5			Humanities elective	3-5
		Foreign language	3			Elective	7-8
		Humanities elective	3-5				
Engl.	090	English Proficiency	0				
Total			15 to 17	Total			15 to 17

SENIOR

Zool.	620	Heredity and Eugenics	2			Elective	15
		Elective	13				
Total			15	Total			15

Number of hours required for graduation: 120 (women) or 124 (men).

Pre-dental Option. This curriculum may be adapted for pre-dental students with the following modifications:

Courses not required: Foreign language, 9 hours

Quant. Analysis, 4 hours

All required courses should be completed before the senior year if the student wishes to transfer to a dental school at the end of three years, and receive a degree from Kansas State College.

Social Science Electives: The student must select at least 8 hours of approved courses in economics, geography, history, philosophy, government, sociology, and other social sciences.

Humanities Electives: Each student must select at least 8 hours from the following: General studies (Introduction to Humanities), literature, music (Appreciation of Music or Music in History), history (studies of cultures), philosophy, language (at least 6 hours in one language), art and architecture (Appreciation of Architecture, History of Painting and Sculpturing).

Curriculum in Social Science

Bachelor of 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 pre-law 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.

FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Engl.	125	Written Comm. I	3	Engl.	135	Written Comm. II	2
Gn. St.	110	Man's Phys. World I	4	Gn. St.	120	Man's Phys. World II	4
H. G. P.	115	Civilization I	3	H. G. P.	130	Civilization II	3
Spch.	105	Oral Comm. I	2	Psych.	310	General Psychology	3
		Air or Military Science ..	1			Air or Military Science ..	1
		Option	3			Option	3
		Physical Education	0			Physical Education	0
Total			15 or 16	Total			15 or 16

SOPHOMORE

Ec. So.	110	Economics I	3	Ec. So.	120	Economics II	3
Engl.	215	Engl. Literature I	3	Gn. St.	160	Biology II	4
Gn. St.	150	Biology I	4	Ec. So.	250	Sociology	3
		Air or Military Science ..	1			Air or Military Science ..	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
H. G. P.	255	American Government	3			Elective and major	9
Math.	125	Math. or Human Affairs ..	3			Sociology elective	3
		Economics elective	3				
		Elective and major	6				
Total			15	Total			15

SENIOR

Elective and major 15

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, H. G. P. 205, 365, B. A. 300 and 310, Spch. 115, Ec. So. 430, 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, H. G. P. 365 will be a part of the 8-10 hour requirement. For course sequence, consult an economic adviser. (See page 130.)

Geography: Gl. Gg. 210, 215, and 18 additional hours in geography. (See page 146.)

Government: H. G. P. 270 and 18 hours of government in addition to curricular requirements. (See pages 149, 152.)

History: 3 hours of government and 12 hours of history in addition to curricular requirements. (See page 149.)

Law: Curriculum adapted in consultation with Department of History, Government, and Philosophy. (See page 149.)

Philosophy: H. G. P. 365, 755, 760, and 12 hours of philosophy in addition to curricular requirements. (See pages 149, 151.)

Psychology: Psych. 330, 600, 610, 611, 612, 720, 775, and 9 hours of psychology in addition to Psych. 310. In addition, replace Gn. St. 150, 160; Ec. So. 120; and History elective by Zool. 110, 465, and H. G. P. 380. Math. 145 or Math. 175 is recommended in place of Math. 125. No option is required. (See page 172.)

Sociology: 18 hours including 625, 665, 675, 680 in addition to curricular requirements. (See pages 130-132.)

Curriculum in Technical Journalism

B. S. in Technical Journalism

Journalism graduates edit magazines, serve in extension and other government information agencies, direct public relations for business and public institutions, edit employee magazines, edit trade and industrial publications, cover news at home and abroad for wire services, publish weekly newspapers, work in every department of daily newspapers, and gather and process news for radio and T. V. stations. 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.

FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Engl.	125	Written Comm. I	3	Engl.	140	Written Comm. IIB	3
Gn. St.	110	Man's Phys. World I	4	Gn. St.	120	Man's Phys. World II	4
Spch.	105	Oral Comm. I	2	Psych.	310	General Psychology	3
Journ.	050	Tech. Journ. Lecture	0	Journ.	050	Tech. Journ. Lecture	0
Journ.	425	History of Journalism	3			Elective	2
		Mod. Lang. <i>or</i>				Mod. Lang. <i>or</i>	
		Soc. Science	3			Soc. Science	3
		Air <i>or</i> Military Science ..	1			Air <i>or</i> Military Science ..	1
		Physical Education	0			Physical Education	0
Total			15 or 16	Total			15 or 16

SOPHOMORE

Gn. St.	150	Biology I	4	Gn. St.	160	Biology II	4
Journ.	050	Tech. Journ. Lecture	0	Journ.	050	Tech. Journ. Lecture	0
Journ.	105	Graphic Arts Survey	2	Journ.	225	Reporting II	3
Journ.	115	Typography Lab.	1			Elective	8
Journ.	220	Reporting I	2			Air <i>or</i> Military Science ..	1
Journ.	221	Reporting Lab.	1			Physical Education	0
		Mod. Lang. <i>or</i> English ..	3				
		Elective	2				
		Air <i>or</i> Military Science ..	1				
		Physical Education	0				
Total			15 or 16	Total			15 or 16

JUNIOR

Engl.	090	English Proficiency	0	Engl.	245	American Literature I	3
Gn. St.	250	Intro. to Human. I	4	Gn. St.	260	Intro. to Human. I	4
Journ.	050	Tech. Journ. Lecture	0	Journ.	050	Tech. Journ. Lecture	0
Journ.	315	Radio and T. V. News <i>or</i> ..		Journ.	265	Editing	2
Journ.	450	Rural Press <i>or</i>		Journ.	405	Reporting III <i>or</i>	
Journ.	510	Public Information Meth. ..	2	Journ.	445	The Home Page	3
Journ.	255	Prin. of Advertising	3			Elective	8
		Elective	6				
Total			15	Total			15

SENIOR

Journ.	050	Tech. Journ. Lecture	0	Journ.	050	Tech. Journ. Lecture	0
Journ.	465	Mag. Article Writing	2	Journ.	485	Interp. of Cont. Affairs ..	3
Journ.	650	The Journalist in a				Elective	12
		Free Society	3				
		English elective	3				
		Elective	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 Electives: The student must select 15 hours of approved courses in economics, geography, government, history, philosophy, psychology, sociology, and other social sciences.

Technical Electives: The student must select 12 hours of approved courses in a field such as agriculture, applied science, architecture, art, business administration, clothing design, engineering, flood control, food preparation, home economics, industrial management, industrial psychology, milling, music, public health, public relations techniques, secondary education, soil conservation, wildlife conservation, or others.

Pre-veterinary Curriculum

All the course requirements for admittance to the four-year professional Curriculum in Veterinary Medicine are provided in this curriculum. This two-year pre-veterinary curriculum and the Curriculum in Veterinary Medicine lead to the two degrees, Bachelor of Science and Doctor of Veterinary Medicine.

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
Spch.	105 Oral Comm. I	2	Engl.	135 Written Comm. II	2
	Air or Military Science	1	Zool.	110 General Zoology	5
	Elective	2		Air or Military Science	1
	Physical Education	0		Physical Education	0
	Social science elective	4		Social science elective	4
Total			Total		
16 or 17			16 or 17		

SOPHOMORE

Chem.	505 Organic Chem.	5	A. H.	120 An. Husb. A	2
Phys.	220 Descr. Phys. or		A. H.	127 Livestock Judging A	1
A. H.	405 Genetics	3	A. H.	405 Genetics or	
Zool.	420 Embryology	4	Phys.	220 Descr. Physics	3
	Air or Military Science ..	1	D. H.	140 Elem. of Dairying	3
	Humanities elective	4	P. H.	104 Fm. Poul. Prod. Rec.	2
	Physical Education	0	P. H.	105 Fm. Poul. Prod. Lab.	1
				Air or Military Science	1
				Humanities elective	4
				Physical Education	0
Total			Total		
16 or 17			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 Ec. So. 110; Gn. St. 210, 220; Gl. Gg. 210; H. G. P. 145, 160, 175, 190, 255; Psych. 310.

Humanities electives to be chosen from Arch. 200, 285; Engl. 310, 320; Gn. St. 250, 260; H. G. P. 115, 130, 365; Music 190, 195, 250.

AIR SCIENCE

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. Non-veteran 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 the 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 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 three 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

- 113. National Defense and the Air Force 1A.** (1) I. Introduction to the AF ROTC program, followed by a history of aviation, and a study of the air power concept emphasizing the fundamentals of global geography. Two hours rec. and one hour leadership lab. a week.
- 118. International Tensions 1B.** (1) II. A study of those geographic factors which form the basis of world political and military power, the factors underlying current world tensions, the nature of the world security problems, and the international alignments associated with these tensions. A study of the evolution of U. S. defense structure, and the roles, capabilities, and potentialities of the Armed Forces within this structure. Two hours rec. and one hour leadership lab. a week. Pr.: Air S. 113.
- 121. Aerial Warfare 2A.** (1) I. The purpose, process, and primary elements of aerial warfare: targets, weapons, and the air ocean; purpose and provisions of the USAF officer career program; survey of occupational fields open to USAF officers. Two hours rec. and one hour leadership lab. a week. Pr.: Air S. 118.
- 126. Air Operations 2B.** (1) II. The characteristics of military aircraft, aircraft design, and production processes; the evolution of and significance of bases; background of United States air policies and a study of the missions of the major Air Force commands. Two hours rec. and one hour leadership lab. a week. Pr.: Air S. 121.

ADVANCED COURSES

- 207. Problem Solving 3A.** (3) I. Scientific problem-solving techniques, based on command and staff concepts, communicative skills, the principles of learning, and techniques of instructional procedures. Four hours rec. and one hour leadership lab. a week. Pr.: Air S. 126.
- 213. Weather Navigation 3B.** (3) II. Basic understanding of fundamental principles of weather relating to air navigation as it applies to air operations. Four hours rec. and one hour leadership lab. a week. Pr.: Air S. 207.
- 223. Leadership and Management 4A.** (3) I. A study based on the primary professional responsibility of Air Force officers—handling people within a framework of management principles. A study of the sense of mission based on the biological and psychological nature of man. Four hours rec. and one hour leadership lab. a week. Pr.: Air S. 213.
- 228. Military Aspects of World Political Geography 4B.** (3) II. A study of the principles of war and the relationship of geographic factors to national strength and international power patterns. The United States as a world power, and the relationship of military strength and foreign policy. Present and potential significance of military aviation as an instrument of warfare. Four hours rec. and one hour leadership lab. a week. Pr.: Air S. 223.
- 399. Problems in Air Science.** Credit arranged. I, II. Work offered in any of the Air Force ROTC basic or advanced courses for students out of phase for graduation; material covered in a basic or advanced course. Pr.: Consent of Department Head.

ATHLETICS

H. B. LEE, *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 the University of Colorado, Iowa State College, the University of Kansas, the University of Missouri, the University of Nebraska, and the University of Oklahoma.

Kansas State College, as a member of the Conference, participates with member schools in football, basketball, baseball, track, tennis, golf, swim-

ming, and wrestling. Intercollegiate competition is open to all men students and is coached by a staff who are specialists in their respective sports.

BACTERIOLOGY

VERNON D. FOLTZ, *Head of Department*

Students majoring in Bacteriology should enroll in the curriculum in Biological Science. (See page 94.)

For a major, the following courses should be completed: Bact. 250 or equivalent, 610, 670, 675 or 710, and eight additional hours which may include Bact. 200, 270 and/or any selection from the 400-799 group; Chem. 230, 250, 435, 505, and 650; Math. 175, 190; Phys. 110, 210.

For a minor, the following courses should be completed: Bact. 110 or equivalent, and ten semester hours in the 400-799 group.

FOR UNDERGRADUATE CREDIT

- 105. Practical Microbiology.** (2) S. 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 home demonstrations illustrating (a) recent developments in microbiology and (b) simple exercises that may be carried out in high school laboratories.
- 110. General Microbiology.** (3) I, II. S. Morphology, physiology, and biology; classification, culture, and distribution of microorganisms; principles of applied microbiology. One hour rec. and six hours lab. a week. A general survey course for students not majoring in biological science. Pr.: Chem. 110 or 230.
- 140. Agricultural Microbiology.** (3) I, II. 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 rec. and three hours lab. a week. Pr.: Chem. 230.
- 190. Water and Sewage Bacteriology.** (3) I, II. Water purification, analyses of water supplies, role of microorganisms in sewage disposal. One hour rec. and six hours lab. a week. For students in engineering curriculums. Pr.: Chem. 170.
- 200. Public Health Bacteriology.** (3) II. 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) I, II. General characteristics and methods of cultivation and identification of bacteria and closely related organisms. Three hours rec. and six hours lab. a week. Required of students majoring in biological science. Pr.: Chem. 110 or 230.
- 270. Hematology.** (3) I. Characteristics and analyses of blood samples. For students in Medical Technology. One hour rec. and six hours lab. a week. Pr.: Bact. 110 or 250.
- 310. Veterinary Microbiology.** (3) I. Morphology, physiology, biology, and classification of microorganisms; cultural and staining technic; microbiology in dairy sanitation and inspection. One hour rec. and six hours lab. a week. For students in School of Veterinary Medicine. Pr.: Chem. 655.
- 340. Pathogenic Bacteriology and Virology.** (4) II. Continuation of Bact. 310. Microorganisms and viruses which cause infectious diseases of domesticated animals. Two hours rec. and six hours lab. a week. Pr.: Bact. 310.
- 370. Veterinary Immunology.** (3) I. Principles of immunology; preparation of antisera, antigens, and vaccines; serodiagnosis of infectious diseases. One hour rec. and six hours lab. a week. Pr.: Bact. 340.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 410. Bacteriological Technic.** (3) II. Technic of laboratory manipulations; fundamental experiments and special experiments selected according to the interest of the student. Nine hours lab. a week. Pr.: Consent of instructor.
- 440. Poultry Sanitation.** (3) I. Methods of control of poultry diseases. Two hours rec. and three hours lab. a week. Pr.: Bact. 110 or equivalent.
- 480. Soil Microbiology.** (3) II. Microbial population of the soil and its role in soil fertility. Pr.: Bact. 110 or equiv.; Chem. 330.
- 485. Soil Microbiology Laboratory.** (2) II. Laboratory experiments illustrative of theories developed in Bact. 480. Six hours lab. a week. Pr.: Bact. 480 or conc. enrollment.
- 510. Dairy Bacteriology.** (3) II. Bacteriology of milk and milk products. Pr.: Bact. 110 or equiv.
- 515. Dairy Bacteriology Laboratory.** (2) II. Laboratory experiments illustrative of theories developed in Bact. 510. Six hours lab. a week. Pr.: Bact. 510 or conc. enrollment.
- 545. Microbiology of Foods.** (5) I. 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 rec. and six hours lab. a week. Pr.: Bact. 110 or equiv.
- 565. Sanitary Bacteriology Laboratory.** (2) II. 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 lab. a week. Pr.: Bact. 110 or equiv.
- 610. Bacteriology of Human Diseases.** (5) I. Pathogenic bacteria and their role in human diseases. Three hours rec. and six hours lab. a week. Pr.: Bact. 250 or equiv.
- 670. Immunology.** (5) II. Principles of immunology; preparation, purification and standardization of biological products employed in human and veterinary medicine. Three hours rec. and six hours lab. a week. Pr.: Bact. 610 or equiv.
- 675. Physiology of Microorganisms I.** (3) I in odd years. Chemistry and physics of microbial processes. Pr.: Eight hours in bacteriology; Chem. 650.
- 680. Physiology of Microorganisms II.** (3) II in even years. Continuation of Bact. 675, with special emphasis on microbial metabolism and uses of microorganisms in industrial fermentations. Pr.: Bact. 675.
- 710. Determinative Bacteriology.** (3) II. Isolation and identification of unknown bacteria. One hour rec. and six hours lab. a week. Pr.: Eight hours in bacteriology.
- 745. Antibiotics.** (2) I. 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. Pr.: Bact. 340 or 610.
- 750. Microbiological Assay Methods.** (3) II in odd years. Theory and practice of the utilization of microorganisms for qualitative and quantitative determination of vitamins, amino acids, and antibiotics. One hour rec. and six hours lab. a week. Pr.: Bact. 110 or equiv.; Chem. 435.
- 790. Bacteriology Seminar.** (1) I, II. Pr.: Consent of instructor.
- 799. Problems in Bacteriology.** Credit arranged. I, II, S. Work is offered in dairy, foods, poultry diseases, soils, physiology, and sanitation. Pr.: Background of courses needed for the problem undertaken.

FOR GRADUATE CREDIT

- 810. Virology.** (4) II. Present-day knowledge relative to the role of ultra-microscopic infectious agents, including bacteriophage, in disease. Laboratory diagnosis of virus diseases, isolation, identification, and characterization of specific viruses. Two hours rec. and six hours lab. a week. Pr.: Bact. 610 or equiv.
- 820. Genetics of Microorganisms.** (2) I. Reproduction, heredity, mutation, variation, adaptation, and natural selection in one-celled organisms; relationship of these processes to inheritance and growth in higher organisms. Pr.: Bact. 110 or equiv.; A. H. 405.
- 830. Physiology of Microorganisms III.** (3) I in even years. Selected laboratory exercises demonstrating the fundamental principles and practices of bacterial physiology. One hour rec. and six hours lab. a week. Pr.: Bact. 680 and consent of instructor.
- 999. Research in Bacteriology.** Credit arranged. I, II, S. Work is offered in the following fields: Dairy, foods, poultry diseases, soils, determinative, immunology, sanitary, and physiology. Pr.: Sufficient training to carry on the line of research undertaken.

BOTANY AND PLANT PATHOLOGYSTUART M. PADY, *Head of Department*

Students majoring in Botany should enroll in the curriculum in Biological Science. (See page 94.)

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) I, II, S. Plant groups and their evolutionary development. Physiology, anatomy, ecology, and identification of seed plants. Economic applications. Three hours rec. and six hours lab. a week.
- 150. Medical Botany.** (2) I. Stock-poisoning plants of the range; habitat, poisonous properties, and methods of control and elimination of native plants. One hour rec. and three hours lab. a week. Pr.: High school botany or equiv.
- 190. Nature and Development of Plants.** (3) I, II, S. 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) I. A brief survey of the physiological processes of higher plants. Pr.: Bot. 110.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 410. Plant Pathology I.** (3) I, II, S. Important diseases of crops and the organisms which cause them. Two hours rec. and three hours lab. a week. Pr.: Bot. 110.
- 420. Horticultural Crop Diseases.** (3) II. Major diseases of fruit and vegetable crops and ornamental plants; their causes, symptoms, and control. One hour rec. and six hours lab. a week. Pr.: Bot. 410.
- 440. Field Crop Diseases.** (3) II in even years. Diseases of cereal and forage crops; their causes, life histories, symptoms, and control. One hour rec. and six hours lab. a week. Pr.: Bot. 410.
- 460. Disease Resistance in Plants.** (3) II in odd years. 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. Pr.: Bot. 410.

- 480. Virus Diseases of Plants.** (2) I. Economic importance, nature, transmission, effect on host, and control of virus plant diseases. Pr.: Bot. 410.
- 490. Morphology of the Fungi.** (3) I. Structure of slime molds, moldlike bacteria, and fungi studied to determine taxonomic relationships. One hour rec. and six hours lab. a week. Pr.: Bot. 110.
- 500. Mycology.** (3) II in odd years. Study of fungi with emphasis on structure identification, classification, phylogeny, and economic importance. One hour rec. and six hours lab. a week. Pr.: Bot. 490.
- 580. Anatomy of Higher Plants.** (3) II. Structure and development of the various tissues and organs of seed plants. One hour rec. and six hours lab. a week. Pr.: Bot. 110.
- 600. Plant Physiology.** (4) I. Detailed consideration of the physiological processes of higher plants. Two hours rec. and six hours lab. a week. Pr.: Bot. 110 and a course in organic chemistry.
- 610. Plant Cytology.** (3) I. Structure, development, and functions of the plant cell, with special reference to chromosome behavior and its bearing on genetic results. One hour rec. and six hours lab. a week. Pr.: Bot. 110 or Zool. 110.
- 651. Paleobotany.** (3) II. Fossil plants, their taxonomy and use in the recognition of geological strata. Two hours rec. and two hours lab. a week. Pr.: Gl. Gg. 405.
- 670. Plant Ecology.** (3) II. Structure and dynamics of vegetation. Field trips. Pr.: Bot. 110. Junior standing or consent of instructor.
- 690. Taxonomic Botany of the Flowering Plants.** (3) I. Systems of classification, identification of plants in the field and in the laboratory, orders and families of plants. Two hours rec. and three hours lab. a week. Pr.: Bot. 110.
- 700. Plant Growth and Development.** (2) II. Current concepts of growth-regulating substances and their effects on growth, differentiation, and reproduction in higher plants. Pr.: Bot. 600 or consent of instructor.
- 715. Light and Temperature Relations of Plants.** (2) II. Current concepts of light-energy relations involved in photosynthesis, respiration, growth form, and photoperiodism, and of temperature relations including thermoperiodism. Pr.: Bot. 600 or consent of instructor.
- 720. Botanical Microtechnic.** (3) II. Preparation of plant materials for histological or cytological study. One hour rec. and six hours lab. a week. Pr.: Bot. 110.
- 730. Field Botany.** (3) S. Identification and classification of seed plants. One hour rec. and six hours lab. a week. Pr.: Bot. 110.
- 799. Problems in Botany.** Credit arranged. I, II, S. Work is offered in anatomy, cytogenetics, cytology, ecology, microtechnic, morphology, mycology, pathology, physiology, and taxonomy. Pr.: Background of courses needed for the problem undertaken.

FOR GRADUATE CREDIT

- 800. Mineral Nutrition of Plants.** (2) I. Current interpretations of mineral nutrition of plants, with emphasis on the absorption and transport of the macro and minor elements. Pr.: Bot. 600 or consent of instructor.
- 820. Plant Physiological Technic.** (2) II. Research methods and technic used in physiological research by botanists, agronomists, and horticulturists; analytical methods for fats, proteins, and carbohydrates. Six hours lab. a week. Pr.: Bot. 600.
- 830. Recent Advances in Cytogenetics.** (3) II. Chromosome structure, mechanics, and behavior; their significance for problems of genetics, evolution, and the origin of species. Two hours rec. and three hours lab. a week. Pr.: Agron. 432 or Bot. 610 or Zool. 450.
- 850. Plant Pathological Technic.** (3) II in even years. Technic in methods of isolation, culture and inoculation used in studying the causal or-

ganisms of plant diseases. One hour rec. and six hours lab. a week. Pr.: Bot. 110.

980. Botany Graduate Seminar. (1) I, II. Reports of investigational work or other matters of interest in the various branches of botany. Pr.: Consent of instructor.

999. Research in Botany. Credit arranged. I, II, S. Work is offered in anatomy, cytogenetics, cytology, ecology, microtechnic, morphology, mycology, pathology, physiology, and taxonomy. Pr.: Sufficient training to carry on the line of research undertaken.

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. (See page 97.)

Courses in Economics are offered by the Department of Economics and Sociology.

COURSES IN BUSINESS ADMINISTRATION

FOR UNDERGRADUATE CREDIT

020. Business Administration Orientation. (0) I, II. Orientation of freshmen in the curriculum in business administration; opportunities in business professions.

030. Business Administration Lecture. (0) I, II. Discussion by staff and business men on general economic conditions and employment possibilities.

140. Personal Finance. (2) I, II, and S in odd 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 Business Administration.

150. Business Management. (3) I. Analysis of management factors such as personnel, finance, accounting, production, and marketing. Not open to students in Business Administration.

275. Business Law I. (3) I, II, S. Contracts, agency, and sales. Not open to those who have credit in Law 325.

280. Business Law II. (3) I, II, S. Negotiable instruments, partnerships, and corporations.

300. Accounting I. (3) I, II, S. 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 rec. and lab. a week.

310. Accounting II. (3) I, II, S. Partnership and corporation accounting and problems, with special emphasis on payroll records and accounting. Six hours rec. and lab. a week. Pr.: B. A. 300.

320. Intermediate Accounting. (3) I, II, S. Application of accounting principles to corporations. Working papers, statement analysis, and basic accounting theory. Pr.: B. A. 310.

330. Principles of Accounting. (3) I, II, S. Principles of accounting; use of accounting records and statements for individual and corporate business organizations. Not open to students in Business Administration.

355. Personal Typing I. (2) I, II. Fundamental technique of typewriting, basic styles of business letters, introduction to tabulation, and preparation of general office forms. Speed thirty to forty words per minute.

360. Typewriting I. (3) I, II, S. The technique of touch typewriting, care of the machine, and skill in operation.

- 370. Typewriting II.** (3) I, II, S. Continuation of Typewriting I. Pr.: B. A. 360.
- 380. Shorthand I.** (3) I, II, S. Introduction to Gregg shorthand, with additional practice.
- 390. Shorthand II.** (3) I, II, S. Continuation of Shorthand I. Pr.: B. A. 380 or equiv.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 405. Business Organization and Finance.** (3) I, II, S. Common forms of business organization with emphasis on the corporation; corporate securities; capital structure; security markets; marketing securities; dividend policy; working capital; failure and reorganization. Pr.: Ec. So. 110, 430; B. A. 310 or 330.
- 410. Advanced Business Finance.** (2) I. Principles and practices of finance applied to the solution of representative problems in business finance. The case method of instruction is used. Pr.: B. A. 405.
- 415. Small Business Operation.** (3) II. Opportunities in business ownership; principles governing the starting of a small enterprise; importance, status, problems, and management of small business. Pr.: Ec. So. 110.
- 420. Investments.** (3) I, II. 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. Pr.: B. A. 310 or 330 and 405.
- 425. Property Insurance.** (2) I and S in odd years. Fire, marine, automobile, title, credit insurance and corporate bonding; also other forms of property insurance. Pr.: Ec. So. 110.
- 430. Life Insurance.** (2) II and S in even years. Nature and uses of life insurance, kinds of policies, determination of premiums, reserves, surrender values, and dividends. Pr.: Ec. So. 110.
- 435. Credits and Collections.** (2) II and S in even years. A study of the fundamental principles involved in extending credit and an analysis of present collection practices. Pr.: Ec. So. 110.
- 440. Marketing.** (3) I, II, S. 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. Pr.: Ec. So. 110.
- 445. Retailing.** (3) I and S in odd 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. Pr.: B. A. 440.
- 450. Sales Management.** (3) II and S in even 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. Pr.: B. A. 440.
- 490. Land Law.** (2) II. 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.
- 511. Business Policy.** (3) I, II, S. Integration of the subject matter of required courses in Business Administration and Economics, through the study of the problems of top management organization, administrative techniques, and policy formulation. The case method supplements extensive reading. Written reports are required. Pr.: Open only to graduating seniors in Business Administration.
- 725. Institutional Accounting.** (2) II. Accounting principles and their application to cafeteria, lunch and tea rooms, restaurants, dormitories, clubs, and other institutions. Two two-hour rec. and lab. periods a

- week. Not open to students in Business Administration. Pr.: Ins. M. 212.
- 730. Cost Accounting.** (3) I, II, S. Allocation of production costs to determine financial results and guide the management of business enterprises. Pr.: B. A. 310 or 330.
- 735. Advanced Cost Accounting.** (2) II. Standard costs, estimated costs, budgets and distribution costs. Pr.: B. A. 730.
- 740. Valuation Accounting.** (3) I, II, and S in even years. Valuation of balance sheet accounts. Pr.: B. A. 320.
- 745. Advanced Accounting.** (3) I, II, and S in odd years. Home office and branch accounting, consolidated statements, receiverships, and other special topics. Pr.: B. A. 740 or conc. enrollment.
- 750. Governmental Accounting.** (2) I. State and municipal accounts and accounts for public institutions. Pr.: B. A. 730 or 740.
- 755. Tax Accounting.** (3) II and S in odd years. Accounting problems in federal and state income taxes, estate, gift, and other taxes. Pr.: B. A. 730 or 740 or conc. enrollment.
- 760. Specialized Accounting.** (3) II. Statement of application of funds, partnership accounting, installment sales, consignment sales, insurance, mergers, estates and trusts. Pr.: B. A. 740.
- 765. Auditing I.** (3) I and S in even years. Theory and procedure used in simple balance sheet audits. A short audit case will be used. Pr.: B. A. 740 and consent of instructor.
- 770. Auditing II.** (3) II. Theory and procedure used in more complex balance sheet and detailed audits. A study of auditing questions as given in C. P. A. examinations, and review of current literature. Pr.: B. A. 765 and consent of instructor.
- 775. Accounting Systems.** (3) I. Function, design, and installation of systems for various types of business. Pr.: B. A. 745 and consent of instructor.
- 780. C. P. A. Problems.** (3) I. A study of problems given in various C. P. A. examinations. Pr.: B. A. 745 and consent of instructor.
- 785. C. P. A. Review.** (3) II. Study of theory of accounts and commercial law as given in C. P. A. examinations and review of current literature. Pr.: B. A. 745 and consent of instructor.
- 798. Problems in Business Administration.** Credit arranged. I, II, S. Pr.: Background of courses needed for the problem undertaken.
- 799. Problems in Accounting.** Credit arranged. I, II, S. Pr.: Background of courses needed for the problem undertaken.

FOR GRADUATE CREDIT

- 998. Research in Business Administration.** Credit arranged. I, II, S. Pr.: Sufficient training to carry on the line of research undertaken.
- 999. Research in Accounting.** Credit arranged. I, II, S. Pr.: Sufficient training to carry on the line of research undertaken.

CHEMISTRY

THOMAS D. O'BRIEN, *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. (See page 99.) 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. (See page 101.)

The courses marked * cannot be used for credit toward M. S. or Ph. D. degrees in chemistry.

COURSES IN GENERAL CHEMISTRY

FOR UNDERGRADUATE CREDIT

- ✓ 995. **Chemistry Seminar.** (0) Required. I, II. Special topics for undergraduates in the Curriculum in Chemistry.
- 110. **General Chemistry.** (5) I, II, S. Principal laws and theories of chemistry; important metallic and non-metallic substances. Three hours rec. and six hours lab. a week. Not open to students having credit in any college courses in inorganic chemistry.
- 140. **Chemistry E-I.** (4) I, II, S. Contents similar to Chem. 210 except special emphasis is given to applications in engineering. Three hours rec. and three hours lab. a week. Not open to students who have credit in Chem. 210.
- 170. **Chemistry E-II.** (4) I, II, S. Continuation of Chem. 140. Three hours rec. and three hours lab. a week. Pr.: Chem. 140 or 210. Not open to students who have credit in Chem. 230 or 250.
- ✓ 210. **Chemistry I.** (5) I, II, S. Beginning of the study of general chemistry. Three hours rec. and six hours lab. a week. Not open to students who have credit in Chem. 110 or 140.
- ✓ 230. **Chemistry II.** (3) I, II, S. Completion of the study of general chemistry. Not open to students who have credit in Chem. 170. Pr.: Chem. 210.
- 250. **Chemistry II Laboratory.** (2) I, II, S. General principles of qualitative analysis. Six hours lab. a week. Not open to students who have credit in Chem. 170. Pr.: Chem. 230 or conc. registration.
- ✓ 270. **Qualitative Analysis.** (3) II. One hour rec. and six hours lab. a week. Pr.: Chem. 230 or conc. registration.
- 320. **Introductory Organic and Biological Chemistry.** (5) II. For students in Home Economics and Nursing. Three hours lec., rec. and six hours lab. a week. Pr.: Chem. 110.
- 399. **Senior Research.** Credit arranged. I, II, S. Research may be done in one to three credit units in analytical, inorganic, organic, physical, or biochemistry. Required of seniors in Chemistry. Pr.: Senior standing in Chemistry.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 785. **Chemical Literature.** (1 or 2) I, II. One hour rec. and problem work in the library. Pr.: Chem. 516, 517, 600.
- 799. **Problems in Chemistry.** Credit arranged. I, II, S. 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. Pr.: Background of courses needed for the problem undertaken.

FOR GRADUATE CREDIT

- 800. **Graduate Chemistry Seminar.** (0 to 1) I, II. Seminar is offered in analytical, inorganic, organic, physical, and biochemistry.
- 999. **Research in Chemistry.** Credit arranged. I, II, S. Work is offered in analytical chemistry, inorganic chemistry, organic chemistry, physical chemistry, agricultural chemistry, biochemistry, and animal nutrition. Pr.: Sufficient training to carry on the line of research undertaken.

INORGANIC CHEMISTRY

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 405. **Inorganic Chemistry.** (3) II and alt. S. Facts of chemistry and their present theoretical interpretations; properties of the elements as a basis for methods of classification. Pr.: Chem. 250.

FOR GRADUATE CREDIT

- 820. Systematic Inorganic Chemistry.** (3) I, S. 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. Pr.: Chem. 595, 600.
- 822. Chemistry of Metals I.** (3) I and alt. S. Descriptive and theoretical chemistry of the common metals; periodic relationships, the metallic state, alloys, metallurgy and representative compounds. Pr.: Chem. 595, 600.
- 824. Chemistry of Metals II.** (2) II and alt. S. Descriptive and theoretical chemistry of the inner transition and less familiar transition elements; preparation, classification and characterization of the elements. Pr.: Chem. 595, 600.
- 826. Chemistry of Non-metals.** (3) II and alt. S. Theory and properties of the non-metallic elements, with emphasis on their individual and group characteristics. Pr.: Chem. 595, 600.

COURSES IN ANALYTICAL CHEMISTRY

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 435.* General Quantitative Analysis.** (4) I, II, S. General procedures of volumetric, gravimetric, and colorimetric analyses. Two hours rec. and six hours lab. a week. Pr.: Chem. 250 or 270.
- 442.* Chemical Microscopy.** (2) On sufficient demand. Use of the microscope in qualitative and quantitative analyses as applied to inorganic substances and to vegetable and animal products. One hour rec. and three hours lab. a week. Pr.: Chem. 330, 435.
- 450.* Quantitative Analysis I.** (4) I, S. General procedures of volumetric analysis. Two hours rec. and six hours lab. a week. Pr.: Chem. 250 or 270.
- 455.* Quantitative Analysis I.** (4) II, S. General procedures of gravimetric and colorimetric analyses. Two hours rec. and six hours lab. a week. Pr.: Chem. 250 or 270.
- 464. Qualitative Microanalysis.** (3) II. Basic theories and techniques of qualitative microanalysis. One hour of rec. and six hours lab. a week. Pr.: Chem. 450, 455, 516, 517.
- 474. Quantitative Microanalysis.** (2) S. Theories and techniques of quantitative microanalysis. Six hours lab. a week. Pr.: Chem. 450, 455, 516, 517.
- 480. Instrumental Analysis.** (3) I, II, S. Theory and application of modern instruments in the field of chemistry. Laboratory practice in the use of optical and electrical instruments. Two hours rec. and three hours lab. a week. Pr.: Chem. 585, 590.
- 635. Radioactive Tracer Techniques.** (3) On sufficient demand. (See Phys. 635.) Chemistry and physics of radioactive substances in field of biological and physical science. Two hours rec. and three hours lab. a week. Taught in cooperation with the Department of Physics. Pr.: Consent of instructors.

FOR GRADUATE CREDIT

- 840. Systematic Analytical Chemistry.** (3) II, S. Theoretical aspects of modern analytical methods, with emphasis on the chemical reactions involved. Pr.: Chem. 595, 600.
- 842. Advanced Analytical Chemistry.** (3) I and alt. S. Theory and properties of the non-metallic elements, with emphasis on their individual and group characteristics. Pr.: Chem. 595.

COURSES IN ORGANIC CHEMISTRY

FOR UNDERGRADUATE CREDIT

- 310. Organic Chemistry (Agr.).** (3) I, S. Fundamentals of organic chemistry, with emphasis on fats, proteins, and carbohydrates. Pr.: Chem. 110 or 230.

315. Organic Chemistry Laboratory (Agr.). (2) I, II, S. Pr.: Chem. 310 or conc. enrollment.

330. General Organic Chemistry. (5) I, II, S. General study of some of the more important classes of organic compounds. Three hours lec., rec. and six hours lab. a week. Pr.: Chem. 110.

FOR UNDERGRADUATE AND GRADUATE CREDIT

505.* Organic Chemistry (Pre-med., Pre-vet., and Med. Tech.) (5) I, II, S. Topics in aliphatic and aromatic chemistry of fundamental and physiological interest. Three hours lec., rec. and six hours lab. a week. Pr.: Chem. 250 or 270.

511.* Organic Chemistry I. (3) I. Fundamental principles of organic chemistry; aliphatic compounds. For chemical and chemical engineering majors; recommended for pre-medical students. Pr.: Chem. 435 or 450 or 453. Chem. 512 should be taken conc.

512.* Organic Chemistry I Laboratory. (2) I. Pr.: Chem. 511 or conc. enrollment.

516.* Organic Chemistry II. (3) II. Continuation of Chem. 511; aromatic and polyfunctional compounds. Pr.: Chem. 511 and 512; Chem. 517 or conc. enrollment.

517.* Organic Chemistry II Laboratory. (2) II. Pr.: Chem. 516 or conc. enrollment.

525. Qualitative Organic Analysis. (3) I, S. Characterization of organic compounds; separation and identification of components of mixtures. Pr.: Chem. 516 and 517.

FOR GRADUATE CREDIT

860. Systematic Organic Chemistry. (3) I and alt. S. Advanced study of organic compounds and fundamental types of reactions. Pr.: Chem. 516 and 517.

862. Advanced Organic Chemistry. (3) II. Cont. of Chem. 860. Pr.: Chem. 860.

864. Heterocyclic Compounds. (2) II and alt. S. Pr.: Chem. 860.

866. Theoretical Organic Chemistry. (3) II. Mechanisms of organic reactions, methods of investigation, fundamental concepts. Pr.: Chem. 525, 860.

868. Natural Products. (3) I. Structure proofs and synthetic approaches to important natural products, such as terpenes, alkaloids, and plant pigments. Pr.: Chem. 525, 860.

870. Stereochemistry. (2) I of alt. years. Pr.: Chem. 860.

872. Steroids and Polycyclic Compounds. (2) I of alt. years. Pr.: Chem. 860.

COURSES IN PHYSICAL CHEMISTRY

FOR UNDERGRADUATE AND GRADUATE CREDIT

580.* Descriptive Physical Chemistry. (3) On sufficient demand. Elementary principles of physical chemistry without higher mathematical applications. Not open to students majoring in chemistry. Pr.: Chem. 110 and 310 or 330.

585.* Physical Chemistry I. (3) I. Properties of matter in the gaseous, liquid, and solid state, elementary thermodynamics, solutions, atomic and molecular structure. Pr.: Math. 245 or 290, Phys. 120 or 140. Chem. 590 should be taken conc.

590.* Physical Chemistry I Laboratory. (2) I. Six hours lab. a week. Pr.: Chem. 435 or 450 and 455, and 585 or conc. registration.

595.* Physical Chemistry II. (3) II. Thermodynamics and chemical equilibrium, reaction kinetics, electrochemistry, etc. Pr.: Chem. 590; Chem. 600 or conc. enrollment.

- 600.* Physical Chemistry II Laboratory.** (2) II. Six hours lab. a week. Pr.: Chem. 595 or conc. registration.
- 610. Chemical Thermodynamics.** (3) I, S. Pr.: Chem. 595.
- 615. Chemical Statistical Thermodynamics.** (3) II. Pr.: Chem. 610, Math. 600 or 615.
- 620. Electrochemistry.** (3) II. Fundamental theories of electrochemistry and their application. Two hours rec. and three hours lab. a week. Pr.: Chem. 600.
- 625. Colloid Chemistry.** (3) I. Pr.: Chem. 595.

FOR GRADUATE CREDIT

- 880. Systematic Physical Chemistry.** (3) II and alt S. Pr.: Chem. 600.
- 882. Chemical Kinetics.** (3) II. Pr.: Chem. 595.
- 884. Molecular Structure.** (3) I. Pr.: Chem. 880 or equiv.; Math. 600 or 615 or Phys. 430.
- 886. Orbital and Bond Theory.** (3) II. Pr.: Chem. 884.
- 910. Advanced Radiochemistry.** (2) When scheduled. Pr.: Chem. 600, 635.
- 915. Electronic Spectra of Molecules.** (3) Pr.: Chem. 886, Phys. 905, or consent of instructor.

COURSES IN AGRICULTURAL AND BIOLOGICAL CHEMISTRY

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 488.* Milk Chemistry.** (2) When scheduled. Two hours lec. a week. Students who desire lab. work in milk chemistry should enroll in Chem. 799. Pr.: Chem. 250 or 270, 310.
- 495. Advanced Soil Chemistry.** (3) I, II. Ionic exchange, electrodialysis, solutions, and colloid phenomena of soils. One hour rec. and six hours lab. a week. Pr.: Chem. 585, 590, and an acceptable course in soils.
- 650.* General Biochemistry.** (5) I, II, S. Basic course not intended for students in the School of Veterinary Medicine or chemistry majors. Three hours lec. and six hours lab. a week. Pr.: Chem. 310 or 330.
- 655.* Physiological Chemistry.** (5) I. Basic course primarily for students in the School of Veterinary Medicine. Three hours lec. and six hours lab. a week. Pr.: Chem. 505.
- 660. Biochemistry.** (3) I, S. Basic course for senior and graduate students in chemistry. Three hours lec. a week. Pr.: Chem. 516, 517.
- 665. Biochemistry Laboratory.** (2) I, S. Six hours lab. a week. Pr.: Chem. 660 or conc. enrollment.
- 668.* General Plant Biochemistry.** (3) I. Occurrence and functions of organic compounds, such as enzymes, plant pigments, vitamins, and plant acids in plants. Two hours lec. and three hours lab. a week. Pr.: Chem. 310 or 330.
- 671. Plant Biochemistry.** (3) I. More advanced treatment of the material covered in Chem. 668. Two hours lec. and three hours lab. a week. Pr.: Chem. 516, 517.
- 675.* Biochemical Analysis.** (2) S. Six hours lab. a week. Pr.: Chem. 435, 650.
- 680. Intermediary Metabolism.** (3) II, S. Intermediary metabolism of carbohydrates, fats, and proteins. Pr.: Chem. 650.
- 685. Hormones.** (2) S. Pr.: Chem. 650.
- 690. Lipids.** (3) II of even years. Pr.: Chem. 330.
- 705. Vitamins.** (2) II, S. Pr.: Chem. 650.
- 715. Enzyme Chemistry.** (2) II. Chemical nature of enzymes and their reactions. Pr.: Chem. 516, 517, 590, 650.

- 720. Enzyme Laboratory.** (2) II. Six hours lab. a week. Pr.: Chem. 715 or conc. registration or consent of instructor.
- 730. Principles of Animal Nutrition.** (3) I, II. Metabolism of nutrients, nutrient requirements of animals, discussion of feeding and metabolism experiments with animals, measuring feeding values. Pr.: Chem. 310 and a course in biochemistry or physiology.
- 735. Advanced Animal Nutrition.** (3) I in even years or on sufficient demand. Energy metabolism, protein quality, interrelationships of nutrients. Pr.: Chem. 650, 730.
- 740. Animal Nutrition Techniques.** (2) II. Preparation of diet and care of animals used in the study of various nutritional problems. Six hours lab. a week. Pr.: An acceptable course in nutrition or Chem. 650.

FOR GRADUATE CREDIT

- 812. Proteins.** (2) I in odd years. Pr.: Chem. 600, 650, or equivalent.
- 890. Theoretical Biochemistry.** (2) II in even years and summers. Pr.: Chem. 600, 650, or consent of instructor.

ECONOMICS AND SOCIOLOGY

GEORGE MONTGOMERY, *Head of Department*

Economics:

Courses in Economics are designed to help students understand the principles that govern the production and distribution of wealth, especially the wealth of the United States. Two main topics are studied: first, the level of economic activity at any given time; second, the allocation of resources among different uses and the distribution of resulting output among the people.

By learning how the economic system operates the student may prepare himself for a career in business and industry, in government, or in education. Beyond this, he will acquire the economic understanding needed for responsible citizenship in an industrial society, and also an appreciation of the non-economic values of society.

Those preparing for positions in business, labor, government, research organizations, college teaching, and others with a special interest in economics should enroll in the curriculum in Social Science with a major in Economics. (See page 113.)

Concentrations in Economic Theory, Money and Banking, Finance, Labor Relations, and International Trade should be planned in cooperation with a senior member of the economics staff.

Sociology:

Sociology is the study of the development and the interaction of the individual in society. Some of the principal areas considered are: the origin and development of cultural patterns; the growth, distribution and characteristics of populations; the major social institutions and their trends; the problems of modern societies; community and organization planning for the orderly development of our society.

The trained sociologist is prepared for professional work with community planning and service agencies, social work, teaching in the social sciences, and social research. The student who desires to major in Sociology with any of the objectives above should refer to the Social Science Curriculum and the special Sociology Major requirements there listed. (See page 113.)

Secondary Teacher Training with Majors in Economics or in Sociology:

Those students interested in economics or in sociology who also desire to prepare for teaching in secondary schools should enroll in the curriculum in Secondary Education with a major in Economics or in Sociology. (See page 101.)

(Courses in Agricultural Economics 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) I, II, S. Introductory study of the principles of economics.
- 120. Economics II.** (3) I, II, S. Continuation of Economics I. Pr.: Ec. So. 110.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 430. Money and Banking.** (3) I, II, S. 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. Pr.: Ec. So. 110.
- 450. The United States in the World Economy.** (3) II, S in alt. even 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. Pr.: Ec. So. 110.
- 455. Labor Economics I.** (3) I, II, S. History and philosophy underlying trade union organization and collective bargaining; analysis of selected major issues in the field of industrial relations, including wages, unemployment and inflation, and the concentration of economic and political power in unions and management. Pr.: Ec. So. 110.
- 460. Labor Economics II.** (3) I, II, S in odd years. History and philosophy underlying labor legislation. Appraisal and evaluation of the economic, political, and social implications of federal and state labor law. Emphasis is placed on such federal statutes as the Taft-Hartley Act, the Fair Labor Standards Act, and the Social Security Act. Pr.: Ec. So. 455 or junior standing and consent of instructor.
- 465. Labor Management.** (2) I, II, S in even years. Development and use of fundamental principles of management as applied to the administration of personnel. Planning, organizing, and controlling as basic management functions, and the application of principles to such problems as employee selection, training, compensation, and supervision. The effect of collective bargaining on personnel administration. Pr.: Junior standing.
- 470. Public Finance.** (3) I, II, S. 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. Pr.: Ec. So. 110.
- 476. Monetary, Credit, and Fiscal Policies.** (2) II. 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. Pr.: Ec. So. 430.
- 480. Business Cycles.** (2) I, S in odd 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. Pr.: Ec. So. 110.
- 486. International Trade.** (3) I, S in alt. even years. Economic principles underlying international trade and finance; governmental policies toward international trade; procedures in exporting and importing. Pr.: Ec. So. 110.
- 490. Principles of Transportation.** (3) II, S in odd years. The historical development and economic importance of rail, motor, air, water, and pipe line transportation in the United States—routes, services, rates, public regulation. Pr.: Ec. So. 110.
- 500. Economic Systems.** (2) I, II, S in even years. 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. Pr.: Ec. So. 110 and junior standing.

505. Intermediate Economic Theory. (3) I, S in odd years. Review of economic principles; advanced study of value and distribution theory. Pr.: Ec. So. 120.

510. Income and Employment Theory. (3) II, S in even 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. Pr.: Ec. So. 120.

515. Introduction to Econometrics. (3) II. Analytical and quantitative methods used in economics. Applications to specific problems. Pr.: 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 arranged. I, II, S. Advanced study on an individual basis is offered in money and banking, public finance, general economics, international trade, labor relations, transportation. Pr.: Background of courses needed for problem undertaken.

FOR GRADUATE CREDIT

810. History of Economic Thought. (3) I. Development of economic ideas and doctrines and the relation of these to conditions existing when they were formulated. Pr.: Ec. So. 110.

830. Seminar in Economics. (3) I, II. Special topics in economic theory. Pr.: Graduate standing.

995. Research in Economics. Credit arranged. I, II, S. Research is offered in money and banking, public finance, general economics, international trade, labor relations, transportation. Pr.: Sufficient training to carry on the line of research undertaken.

COURSES IN SOCIOLOGY

250. Introduction to Sociology. (3) I, II, S. Development, structure, and functioning of human groups; social and cultural patterns; and the principal social processes. Pr.: Sophomore standing.

260. Courtship and Marriage. (2) I, II. Basic principles and problems which pertain to ideal family life.

270. Introduction to Social Work. (3) II. A survey of the fields of social work, the relationship of social work to other social developments and vocational opportunities. Pr.: Ec. So. 250.

Rural Sociology. (See Ag. Ec. 290.)

FOR UNDERGRADUATE AND GRADUATE CREDIT

625. Social Problems. (3) I, II. Problems of personal and social disorganization, such as adolescence, juvenile delinquency, crime, mental illness, unemployment, and family instability; methods of prevention and treatment. Pr.: Ec. So. 250.

627. Criminology. (3) I. Nature, extent, and causes of crime; programs for prevention and treatment. Pr.: Ec. So. 250.

630. Sociology of the Family. (3) I. Origin and development of marriage customs and systems of family organizations; the preparation for family life under present conditions. Pr.: Ec. So. 250.

635. Community Organization and Leadership. (3) II. American community organization; special emphasis on community problems and planning. Pr.: Ec. So. 250.

640. Population and Human Ecology. (2) I. Early theories, policies, growth, composition, spatial aspects, movements, and population trends. Pr.: Six hours sociology, economics, or history.

645. Urban Sociology. (3) I. 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. Pr.: Ec. So. 250.

Advanced Rural Sociology. (See Ag. Ec. 700.)

647. Industrial Sociology. (3) II. Human relations in industry, interrelationships of industry and the social order. Pr.: Ec. So. 250.

650. Cultural Anthropology. (3) I, II, S. Human and social origins; origin, nature, and diffusion of culture; cultural backgrounds of social institutions. Pr.: Ec. So. 250.

655. Social Systems. (3) I. Comparison of social systems in the Orient, Middle East, Europe and the Americas. Pr.: Ec. So. 250.

657. Racial and Cultural Minorities. (3) II. Racial and cultural groups; attitudes, prejudices, and conflicts; approaches to understanding and control of race and minority group relations. Pr.: Ec. So. 250.

660. Social Organization of the Great Plains. (3) I in odd years. The Great Plains as a cultural region; cultural adaptation, problems of the region, and forms of social organization. Pr.: Ec. So. 250 and three additional hours in sociology.

665. Methods in Social Research. (3) I in even years. Development, use, and interpretation of findings of the case method, social survey, and other techniques of social investigation. Pr.: At least two courses in sociology.

670. Social Institutions. (3) II in even years. The development and character of the major social institutions in contemporary American society; functions, interrelationships, and trends. Pr.: Ec. So. 250.

675. Development of Social Thought. (3) I in odd years. Development of social thought from ancient civilization to the middle of the nineteenth century. Approaches to the study of society; ideas on human origins and human nature, character and results of associative life, social trends, and social betterment. Pr.: Ec. So. 250.

677. Recent and Contemporary Social Thought. (3) I in even years. A survey and appraisal of Western social thought in the late nineteenth and twentieth centuries; Explanations of human origins and potentialities, socialization and control of behavior, character and results of associative life, social trends, and methods for social analysis. Pr.: Ec. So. 250.

680. Seminar in Sociology. (2) II. Summarization and integration of courses in sociology. Pr.: Senior standing and nine hours of sociology.

797. Problems in Sociology. Credit arranged. I, II, S. Pr.: Background of courses needed for the problem undertaken.

FOR GRADUATE CREDIT

997. Research in Sociology. Credit arranged. I, II, S. Pr.: Sufficient training to carry on the line of research undertaken.

Research in Rural Sociology. (See Ag. Ec. 925.)

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 cooperate in 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: 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 subject-matter fields.

The application for a teaching certificate must be accompanied by the recommendation of the head of the Department of Education. The recommendation is based on the following factors: the certification requirements of the State Department of Public Instruction as they have been provided for in the applicant's curriculum in teacher education; speech habits; and health, both physical and mental.

COURSES IN EDUCATION

FOR UNDERGRADUATE CREDIT

- 090. Teacher Education Orientation.** (0) I, II, S. Required each semester of every student who expects to qualify for a teacher's certificate.
- 100. Educational Psychology I.** (3) I, II, S. 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. Pr.: Psych. 310.
- 105. Educational Psychology II.** (3) I, II, S. The learning process with special emphasis on the school environment, the teacher, and the evaluation of school learning. Pr.: Educ. 100; sophomore standing.
- 110. Educational Psychology for Nurses.** (3) I. 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. Pr.: Psych. 310 and sophomore standing.
- 116. School Music I.** (3) I, II, S. (See Music 116.)
- 120. Principles of Secondary Education.** (3) I, II, S. Junior and senior high school organization and objectives, their genesis and curriculum trends, characteristics of student population, and Kansas legal status and practice. Pr.: Educ. 105, junior standing, and a point average of 1.0 or better in all course work.
- 121. School Music II.** (3) I, II, S. (See Music 121.)
- 132. Instrumental Methods.** (3) I, II, S. (See Music 132.)
- 135. Methods of Teaching in the Secondary School.** (3) II. General principles of teaching applied to high school instruction; selection and or-

- ganization of teaching materials, individual adaptation, organization, and management of classroom. Pr.: Educ. 120 and senior standing.
- 150. Teaching Participation in the Secondary School.** Credit arranged. I, II, S. 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 the semester. Pr.: Educ. 120, Engl. 090, senior standing, a minimum point average of 1.0 in all course work and a minimum point average of 1.5 in all course work in teaching field, and consent of instructor.
- 165. Methods and Teaching Participation in the Secondary School.** (6) I, II. A combination of Educ. 135, 150. Pr.: Educ. 120, Engl. 090, senior standing, a minimum point average of 1.0 in all course work in the teaching field, and consent of instructor.
- 195. General Methods for Elementary Teachers.** (3) Fundamentals of teaching and classroom management in elementary schools to meet requirements for emergency and regular elementary certificates. Pr.: Psych. 310.
- 225. Teaching Participation in Elementary Schools.** Credit arranged. This course meets the needs of students in the Curriculum in Elementary Education whose professional plans require additional credit in observation and teaching participation. Pr.: Educ. 300.
- 240. Methods of Teaching Industrial Arts.** (3) I. Methods of teaching, lesson planning, organization of subject matter, and class projects applied to general shop work, woodworking, sheet metal, arc and oxy-acetylene welding, machine shop practice, motor mechanics, and other industrial arts subjects. Pr.: Educ. 120 and consent of instructor.
- 246. Teaching Participation in Music.** Credit arranged. I, II, S. 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. Pr.: Educ. 105, Music 121.
- 300. Principles of Elementary Education.** (3) I, II, S. An over-all view of the elementary school; organization, management, purposes, curriculum trends, and pupil characteristics. Pr.: Sophomore standing.
- 350. Science for Elementary Schools.** (3) I, II, S. The relationships among nature, environment, and elementary science in their role in childhood education; resources and activities suitable to the elementary school. Pr.: Educ. 300 or consent of instructor.
- 355. Language Arts for Elementary Schools.** (3) I, II, S. Modern trends in the teaching of reading, oral language, composition, and spelling. Pr.: Educ. 300 or consent of instructor.
- 360. Social Studies for Elementary Schools.** (3) I, II, S. Course of study content as a basis for consideration of modern classroom procedures; the objectives and problems in the teaching of social studies. Pr.: Educ. 300 or consent of instructor.
- 365. Arithmetic for Elementary Schools.** (3) I, II, S. 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. Pr.: Educ. 300 or consent of instructor.
- 390. Methods and Teaching Participation in Elementary Schools.** (6) I, II, S. 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. Pr.: Educ. 300, 355, 360, 365; Engl. 090; 90 hours of completed course work; an over-all grade average of 1.0.
- FOR UNDERGRADUATE AND GRADUATE CREDIT
- 405. Statistical Methods in Education and Psychology.** (3) On sufficient demand. Nature and measurement in education and psychology, organi-

zation of data, computation and interpretation of basic statistics, and sampling methods and theory. Pr.: Sophomore standing and six hours of education or psychology. Not open to students who have credit in Math. 320, 725.

- 411. Educational Measurement and Evaluation.** (3) On sufficient demand. The role of measurement and evaluation in the educational process, the selection and use of standardized tests, and the development of classroom tests and other evaluative procedures. Parts of the course are differentiated to meet the particular needs of either elementary or secondary teachers. Pr.: Nine hours of education and senior standing.
- 415. Educational Sociology.** (3) I, II, S. 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. Pr.: Educ. 120 or 300.
- 420. Principles and Practices of Guidance.** (3) I, II, S. Need and nature of guidance; functions; personnel, their duties and relations; programs and evaluation of results. Pr.: Senior standing and Educ. 120 or twelve semester hours of psychology.
- 425. Elementary School Curriculum.** (3) S, I alt. years. A survey and appraisal of the various types of curriculum organization found in elementary schools designed for classroom teachers and administrators. Pr.: Graduate standing or consent of instructor.
- 430. Elementary School Administration.** (3) S. 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. Pr.: Educ. 300 and teaching experience.
- 440. Audio-visual Aids in Instruction.** (2 or 3) S. Principles and technics in the use of visual and audio-visual materials, operation and maintenance of equipment, and sources of supply. Pr.: Educ. 150 or conc. enrollment.
- 445. Curriculum Development.** (3) II, S in odd years. 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. Pr.: Twelve hours of education and senior standing.
- 450. Junior High School.** (2 or 3) S. Origin, objectives, program, and administration of the junior high school, and relations with lower and higher education units. Pr.: Teaching experience.
- 455. Extra-class Activities.** (3) II, S. Organization, sponsorship, and objectives of clubs, publications, athletics, dramatics, musical organizations, assemblies, home room, and student council in junior and senior high school. Pr.: Educ. 120, senior standing, and consent of instructor.
- 460. Extension Organization and Policies.** (3) II. Development and objectives of extension work; organization and administration of extension service, with special emphasis on extension service in Kansas. Pr.: Senior standing; juniors by consent of instructor.
- 470. Music Supervision.** (2) (See Music 415.)
- 485. Philosophy of Education.** (3) S. 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. Pr.: Twelve hours of education and senior standing.
- 600. Research Methods and Treatment of Data.** (3) I, S. Principles of research in education and psychology; nature, organization, and presentation of research data; basic statistical computations and interpretations; selection of research problems. Pr.: Six hours of education or psychology.

625. Psychology of Exceptional Children. (3) (See Psych. 425.)

655. Mental Hygiene. (3) (See Psych. 406.)

730. Occupational Information. (2) (See Psych. 530.)

756. Guidance Services Practicum. (2 or 3) I, II, S. 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. Pr.: Educ. 420; Psych. 545, 600; teaching experience; and consent of instructor.

795. Problems in Education. Credit arranged. I, II, S. 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. Pr.: Background of courses needed for the problem undertaken.

FOR GRADUATE CREDIT

805. General School Administration. (3) I, S. 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. Pr.: At least one year of teaching experience.

815. Secondary School Administration. (3) S. 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. Pr.: At least one year of teaching experience.

820. School Business and Finance. (3) II, S. 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. Pr.: At least one year of teaching experience.

830. The School Plant. (3) S of 1956, 1959, and every third year thereafter. Determination and provision of building and other plant needs by the local public school district, including planning, financing, construction, and utilization. Pr.: At least one year of teaching experience.

835. Supervision and Improvement of Instruction. (3) S. A course designed for administrators, supervisors, and classroom teachers who wish to help themselves and others isolate and analyze teaching problems. Pr.: At least one year of teaching experience.

840. Problems and Procedures in Educational Research. (2 or 3) II, S. 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. Pr.: Nine semester hours of graduate work.

845. School-Public Relations. (2 or 3) S of 1958, 1961, and every third year thereafter. 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. Pr.: At least one year of teaching experience.

850. Adult Education. (2 or 3). Offered on sufficient demand. Objectives, program, facilities, procedures, and problems of adult education in a community, emphasizing the relation of school administrators and extension staff to this work. Pr.: Psych. 310 or one year of field experience; approval of the instructor.

856. Organization and Administration of the Guidance Services Program. (2 or 3) S of even years. 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. Pr.: Educ. 420 and at least one year of teaching experience.

860. Practicum in School Administration. (3 to 6) I, II, S. Supervised on-the-job experience in school administration. Pr.: Kansas School Administrator's Certificate.

900. Seminars in Education. Credit arranged. On sufficient demand. These seminars will consider research problems in the several fields of education represented in terms of the special interests of the students. (1) Agricultural Education, (2) Curriculum and Improvement of Instruction, (3) Educational Administration, (4) Elementary Education, (5) Guidance Services, (6) Secondary Education, (7) Social Foundations, (8) Special Education. Pr.: Consent of adviser.

995. Research in Education. Credit arranged. I, II, S. 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. Pr.: Sufficient training to carry on the line of research undertaken.

COURSES IN AGRICULTURAL EDUCATION

A. P. DAVIDSON, *Special Adviser*

FOR UNDERGRADUATE CREDIT

255. Methods of Teaching Agriculture. (3) I, II. 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. Pr.: Educ. 105.

265. Teaching Participation in Agriculture. (3) I, II. 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. Pr.: Educ. 255.

FOR UNDERGRADUATE AND GRADUATE CREDIT

505. Vocational Education. (3) I, II, S. 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. Pr.: Educ. 105.

511. Teaching Part-time and Adult Classes in Agriculture. (2 or 3) Offered on sufficient demand. 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. Pr.: Educ. 505.

515. Technics in Agricultural Education. (3) Offered on sufficient demand. 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 rec. and six hours lab. a week. Pr.: Educ. 505.

525. Administration and Supervision of Vocational Education. (2) Offered on sufficient demand. 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. Pr.: Educ. 120 or 805.

530. Project Method in Agricultural Education. (2) Offered on sufficient demand. Intensive treatment of values, analysis, accounting, supervi-

sion, types, results, records, and reports of projects. Conducted on the problem basis. Pr.: Educ. 265.

535. Problems in Evening School Classes. (2) Offered on sufficient demand. Problems in organization, curriculum, and methods of teaching evening schools and classes sponsored by the national Vocational Education Act. Designed for teachers in service. Pr.: Graduate standing and one year of experience teaching vocational agriculture.

540. Organization and Conduct of Group Activities. (2) Offered on sufficient demand. Fundamentals and principles on which productive class projects should be organized; research and field work in class project study. Pr.: Educ. 505.

555. Community Problems in Vocational Agriculture. (2) Offered on sufficient demand. 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. Pr.: Consult instructor.

560. Organization Problems in Teaching Farm Mechanics. (2) 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. Pr.: Educ. 265.

FOR GRADUATE CREDIT

910. Problems in Part-time Classes. (2) Offered on sufficient demand. Organization, curriculum, and methods of teaching part-time classes sponsored by the national Vocational Education Act. Designed for teachers in service. Pr.: One year of experience teaching vocational agriculture.

915. Workshop in the Teaching of Vocational Agriculture. (1 to 3) S. Securing and organizing information and planning teaching activities which will help the beginning vocational agriculture teacher. Pr.: Graduation from the curriculum in Agricultural Education.

920. Workshop in the Vocational Agriculture Curriculum I. (2 or 3) S. Curriculum problems; planning local programs of vocational agriculture; developing facilities and plans for meeting current and advanced problems in the teaching of vocational agriculture. Pr.: One year of teaching in vocational agriculture.

925. Workshop in the Vocational Agriculture Curriculum II. (2 or 3) S. A cont. of Educ. 920. Pr.: Educ. 920 or consent of instructor.

COURSES IN HOME ECONOMICS EDUCATION

LUCILE RUST, *Special Adviser*

FOR UNDERGRADUATE CREDIT

276. Methods of Teaching Home Economics. (2) I, II, S. The selection, organization, and presentation of courses and lessons in home economics for high school pupils. Pr.: C. & T. 450; F. & N. 110, 240; Educ. 105 or conc. enrollment.

285. Methods of Teaching for Dietetic Students. (3) I. Principles of teaching applied to selection, organization, and development of subject matter for individual and courses taught by dietitians. Pr.: Ins. M. 220 or F. & N. 516, or conc. enrollment.

295. Teaching Participation in Home Economics. (4 or 5) I, II, S. Supervised observation and teaching carried on in the Home Economics classes of the Manhattan High School and other selected state high schools. Pr.: Completion of one home project and Educ. 275.

FOR UNDERGRADUATE AND GRADUATE CREDIT

575. Vocational Home Economics Curriculum. (3) I, II, S. 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; sponsoring the F. H. A. chapter; and developing teaching guides for the various courses. Pr.: Educ. 275 or conc. enrollment.

585. Methods in Adult Homemaking Classes. (1 to 3) S. Principles of teaching applied to adult classes; a demonstration class in one or more phases of homemaking. Pr.: Educ. 275 or equiv.

595. Extension Methods for Home Economics. (3) II. Recommended methods for extension work; application of these methods to subjects in Home Economics. Pr.: Senior standing; juniors by consent of instructor.

FOR GRADUATE CREDIT

930. Organization and Presentation of Home Economics. Credit arranged. I, II, S.

935. Research in Organization and Presentation of Home Economics. Credit arranged. I, II, S. Individual research problems in phases of organization and administration of 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) II, S. 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. Pr.: Educ. 295 and experience in teaching home economics.

945. Seminar in Home Economics Education. (2 or 3) S. Recent trends in home economics education. Pr.: Educ. 295 and experience in teaching home economics.

ENGLISH

EARLE R. DAVIS, *Head of Department*

A major program in the Humanities Curriculum 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. (See page 104.) Specific requirements for English Literature emphasis include one course from each of the following groups: (1) Engl. 405, 465; (2) Engl. 495, 521; (3) Engl. 526, 555, 565; (4) Engl. 525, 531, 576; (5) Engl. 536, 540, 626, 636, 586, 596; (6) Engl. 580; (7) Engl. 590, 623, 680, 690. Specific requirements for American Literature emphasis include four courses from the seven groups listed above, and at least eighteen hours of courses listed under American. This last selection must include Engl. 590, 623, 680, and 690.

Students preparing to teach English in high school should consult the Secondary Education Curriculum and note the specific requirements there listed for English majors (page 101). 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, 215, 225, 245, 255, 310, 320. Many curriculums require basic English or American Literature (Engl. 215, 225, 245, 255). In general it is proper to substitute an advanced course in either field, if the student so elects and his adviser concurs, to satisfy his requirement. A minor program should include fifteen hours beyond the freshman level. Nine of these hours must be selected from courses numbering 400 or more.

COURSES IN ENGLISH

FOR UNDERGRADUATE CREDIT

020. English Assembly. (0) I, II.

030. Writing Laboratory. (0) I, II. Laboratory practice in writing for all students who need not review in fundamentals of composition. Espe-

cially designed to meet the needs of students who have difficulty in meeting standards in Written Communications or English Proficiency.

075. English for Foreign Students. (0) I, II. Review of English usage for students where English is not the first language, designed to improve understanding and usage in practice so that the foreign student may carry on all classes more successfully. Pr.: Recommendation of student's adviser.

090. English Proficiency. I, II, S. 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. Pr.: Junior standing.

115. Written Communications IA. (3) I, II, S. For students whose reading comprehension falls materially below linguistic capacity. Five hours rec. a week.

✓ **125. Written Communications I.** (3) I, II, S. Students whose entrance tests show exceptional preparation may enter sections for honors. Other students in regular sections may be assigned to two additional hours a week of Writing Laboratory upon recommendation of instructor. Pr.: Satisfactory entrance test.

✓ **135. Written Communications II.** (2) I, II, S. Pr.: Engl. 115 or 125.

140. Written Communications IIB. (3) I, II, S. Students showing exceptional abilities may enroll in honors sections. Not open to students who have credit in Engl. 135. Pr.: Engl. 115 or 125.

145. Introduction to Fiction. (2) I, II. Selected novels from world literature, with emphasis on the present. Pr.: Satisfactory entrance test in English.

150. Introduction to Drama. (2) I, II. Appreciation of great plays. Pr.: Satisfactory entrance test in English.

155. Commercial Correspondence. (3) I, II, S. Writing of adjustment, credit, collection, and sales letters; principles of effective commercial writing. Pr.: Engl. 135 or 140.

210. Introduction to Grammar. (2) I, II. Designed to provide review in fundamentals of functional grammar for students in any curriculum. May not be substituted for any required course in any curriculum. Pr.: Engl. 115 or 125.

215. English Literature I. (3) I, II, S. Pr.: Engl. 135 or 140.

225. English Literature II. (3) I, II, S. Pr.: Engl. 135 or 140.

310. Books and Men I. (3) I. Introduction to great world classics from present to past: Hemingway and Homer; Lewis, Dickens, and Chaucer; Warren and Shakespeare. Pr.: Engl. 135 or 140.

320. Books and Men II. (3) II. Cont. of Engl. 310: Faulkner, Conrad, and Maugham; Huxley, Swift, and Voltaire; Shaw, the Bible, and Dante. Pr.: Engl. 135 or 140.

FOR UNDERGRADUATE AND GRADUATE CREDIT

405. Modern English Grammar. (3) I, II, S. English etymology, parts of speech, inflection, syntax, and modern usage. For graduate credit, reports on problems in modern grammar and usage. Pr.: Engl. 135 or 140.

415. Advanced Composition I. (3) I. Subjects selected from the student's particular field of work; exposition of mechanisms, processes, and general expository writing. Pr.: Engl. 135 or 140.

425. Advanced Composition II. (3) II. 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. Pr.: Engl. 135 or 140.

- 435. Technical Reports.** (1) I, II. Organization and writing of technical reports to accompany certain courses in engineering specified by heads of engineering departments. Pr.: Engl. 135 or 140.
- 444. Scientific Report Writing.** (2) I, II. Preparation of scientific reports in engineering, chemistry, physics, geology, agronomy, and other technical fields. Letters of authorization and submittal. Adaptation of written reports for oral presentation or for publication in technical journals. Pr.: Engl. 135 or 140.
- 450. Creative Writing.** (3) I, II. Writing and manuscript market study. Pr.: Engl. 425 or permission of instructor.
- 465. History of the English Language.** (3) I. Nature of language and its development; English language and its use in the United States. Pr.: Senior standing or consent of instructor.
- 470. Literature for Children.** (3) I, II, S. 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. Pr.: Engl. 135 or 140.
- 476. Literature for Adolescents.** (3) II, S. 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. Pr.: Junior standing.
- 495. Chaucer.** (3) I. Pr.: Engl. 135 or 140.
- 505. English Survey I.** (2) I. History of English literature from Anglo-Saxon times down to the close of the Elizabethan period. Pr.: Junior standing.
- 515. English Survey II.** (2) II. Rise of Puritanism and its influence on English literature; classical movement; Romanticism and its development. Pr.: Junior standing.
- 521. Medieval Narrative.** (3) II. Offered in alt. years with Tudor and Stuart Drama. A survey of non-Chaucerian medieval literature, with emphasis on the Arthurian romance cycle. Pr.: Engl. 135 or 140.
- 525. Seventeenth Century Poetry and Prose.** (3) I. Alt. years. A survey of the principal non-dramatic writers, apart from Milton, 1600-1660, with emphasis on Donne and the Metaphysicals. Pr.: Engl. 135 or 140.
- 526. Tudor and Stuart Drama.** (3) II. Offered in alt. years with Medieval Narrative. A survey of the dramatic literature of Elizabethan and Jacobean times, exclusive of Shakespeare. Pr.: Engl. 135 or 140.
- 531. Elizabethan Non-dramatic Literature.** (3) I. Alt. years. An introduction to the literature of the English Renaissance, with some emphasis on its Continental affiliations. Pr.: Engl. 135 or 140.
- 536. Eighteenth Century I. The Enlightenment.** (3) I. The age of Dryden, Pope, and Swift, including masterpieces of poetry, drama, fiction, and satire. Pr.: Engl. 135 or 140.
- 540. Eighteenth Century II. The Enlightenment.** (3) II. The age of Johnson and rise of Romanticism, including masterpieces of poetry, drama, fiction, and biography. Pr.: Engl. 135 or 140.
- 545. English Bible.** (3) II. Alt. years. Pr.: Engl. 135 or 140.
- 555. Shakespearean Drama I.** (3) I. Life and times of Shakespeare; five of Shakespeare's tragedies: Macbeth or Othello, Hamlet, King Lear, Romeo and Juliet, and Coriolanus. Pr.: Engl. 135 or 140.
- 565. Shakespearean Drama II.** (3) II. 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. Pr.: Engl. 135 or 140.

- 576. Milton and the Restoration.** (3) II. Pr.: Engl. 135 or 140.
- 580. Literary Criticism.** (3) I. Major points of view in modern literary theory, with background in earlier criticism; practice in the critical analysis and judgment of literary examples. Pr.: Senior standing.
- 586. The Romantic Movement.** (3) I. Pr.: Engl. 135 or 140.
- 596. The Victorian Era.** (3) II. Pr.: Engl. 135 or 140.
- 626. English Novel I.** (3) I. Survey of British fiction from Defoe and Fielding to the Brontes. Pr.: Engl. 135 or 140.
- 636. English Novel II.** (3) II. Survey of British fiction from Dickens and Thackeray to Galsworthy and Bennett. Pr.: Engl. 135 or 140.
- 640. Biography.** (3) I. Biographical writing from antiquity to the present time, including Plato, Plutarch, Boswell, Trevelyan, Lockhart, Forster, and Freeman. Pr.: Engl. 135 or 140.
- 646. 20th Century English Novel.** (3) II. Alt. years. British fiction from Conrad and Joyce to Greene and Waugh. Pr.: Engl. 135 or 140.
- 667. 20th Century English Poetry.** (3) I. Development of English poetry from Hardy and Yeats to the present time. Pr.: Engl. 135 or 140.
- 668. 20th Century European Fiction.** (3) II. Offered in alt. years with 20th Century English Novel. A study of the works, in translation, of such modern European masters as Silone, Mann, Gide, Kafka, and others. Pr.: Engl. 135 or 140.
- 685. Twentieth Century English Drama.** (3) I. Special emphasis on Shaw. Pr.: Engl. 135 or 140.
- 799. Problems in English.** Credit arranged. I, II, S. Work offered in: Chaucer and Shakespeare, classical epics, modern drama and fiction, novel and short story, Old and Middle English, romantic revival, sketch and column writing, and scientific report writing. Pr.: Background of courses needed for problem undertaken.

FOR GRADUATE CREDIT

- 805. Bibliography and Methods of Research.** (1) II. Pr.: Graduate standing.
- 999. Research in English.** Credit arranged. I, II, S. Work offered in: Chaucer and Shakespeare, classical epics, modern drama and fiction, novel and short story, Old and Middle English, sketch and column writing, and scientific report writing. Pr.: At least two courses in this department.

COURSES IN AMERICAN

FOR UNDERGRADUATE CREDIT

- 245. American Literature I.** (3) I, II, S. Pr.: Engl. 135 or 140.
- 255. American Literature II.** (3) I, II, S. Pr.: Engl. 135 or 140.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 410. Modern American Usage.** (3) S. American grammar and usage as reflected in modern speech and writing. Supplementary to Engl. 405 for teachers and candidates for teaching. Pr.: Junior standing.
- 440. American Books and Themes.** (3) II. Examination of American ideals and their illustration in great American books and writers. Pr.: Engl. 135 or 140.
- 480. American Short Story.** (3) II, S. The sketches and stories of Irving, Hawthorne, Poe, and their successors, to Hemingway and Faulkner. The short story as literature. Pr.: Engl. 135 or 140.
- 590. Romanticism in America.** (3) I, S. Prose and poetry of Emerson and Thoreau, Transcendentalism, the Romanticism of Hawthorne, Poe, and Melville. Pr.: Engl. 135 or 140.
- 610. Hawthorne and Melville.** (2) II. Pr.: Junior standing.

- 615. American Folklore and Folk Literature.** (3) I, II, S. Folk tales, heroes, ballads, with the literature developed from folk beginnings; Mark Twain, Bret Harte, Carl Sandburg, Stephen Vincent Benet, Mark Connally. Pr.: Engl. 135 or 140.
- 621. Mark Twain and Walt Whitman.** (2) I. Pr.: Junior standing.
- 623. American Realism.** (3) II. Origins, conscious definition, and development of Realism through DeForest, Howells, Twain, James, and their successors. Pr.: Engl. 135 or 140.
- 624. Henry James and William Faulkner.** (2) II. Pr.: Junior standing.
- 650. American Theater Triumphant.** (3) II, S. Ascendancy of American drama from O'Neill and Anderson to Miller and Williams. Pr.: Engl. 135 or 140.
- 666. Twentieth Century American Poetry.** (3) I, S. Development of American poetry from Robinson and Frost to Eliot and the present time. Pr.: Engl. 135 or 140.
- 670. Twentieth Century American Novel.** (3) I, S. Modern American novel from Dreiser to Hemingway. Pr.: Engl. 135 or 140.
- 680. American Survey I.** (2) I. History of American literature from the colonials to the Civil War. Pr.: Junior standing.
- 690. American Survey II.** (2) II. History of American literature from Whitman to the present. Pr.: Junior standing.

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 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) I, S. Pr.: High school mathematics as required for admission to the curriculum in which the student is enrolled.
- 120. Man's Physical World II.** (4) II, S. A cont. of Man's Physical World I. In these courses topics are selected from the physical sciences (astronomy, chemistry, geology, physics, etc.), so as to help the student develop: a mental picture of the universe, including its structure and the nature of the objects which comprise it; a mental picture of the earth, and an acquaintance with earth history; an understanding of some of the more important physical elements of our environment; concepts of the nature of matter and energy and of the relationships between them; and an understanding of some of the ways man has modified his environment, including production and distribution of power as well as technological devices and methods. These topics are presented in such a manner as to help the student acquire: an integrated picture of the physical world; an understanding of the nature of science and of some of its methods; an acquaintance with some relationships between science and other fields of thought; and an appreciation for some ways in which the student might further develop his interest in science during later life. Pr.: Gn. St. 110.

150. Biology I. (4) I, S.

160. Biology II. (4) II, S. 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. Pr.: Gn. St. 150.

210. Introductory Social Science I. (4) I, II.

220. Introductory Social Science II. (4) I, II. 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. Pr.: Gn. St. 210.

250. Introduction to Humanities I. (4) I, S.

260. Introduction to Humanities II. (4) II. These courses seek to develop a greater understanding, appreciation, and enjoyment of the humanistic resources available in our culture. The first-semester course includes a consideration of the general nature and purposes of the humanities, as distinguished from the natural and social sciences; the basic principles of literature and the visual arts; the nature of some of the major world religions; and selected works in the areas of literature, philosophy, and the visual arts, typical of Greco-Roman, Medieval, and Renaissance cultures. The second semester is devoted to the humanities, including music, of the modern and contemporary world. The materials in both semesters of the course are selected and presented to help the student develop the ability to understand and enjoy the arts, literature, and music; to acquaint him with some of the major philosophical and religious accounts of the nature of man, his relation to his society and the universe, and the bases of morals and civilization; and to provide an understanding of the dominant characteristics of the major cultural epochs of Western civilization as expressed in and as influencing the form and purposes of the humanities produced in each age. Pr.: Gn. St. 250.

FOR UNDERGRADUATE AND GRADUATE CREDIT

400. Workshop in Biological Sciences. (3) S. 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. Pr.: Five hours each of botany and zoology, or equiv.

FOR GRADUATE CREDIT

800. Principles of College Teaching. (2) I. History, organization, and functions of higher education in the United States; general principles of instruction, including composition of college population, ob-

jectives, conditions of learning, philosophies of education, and evaluation; counseling; and professional and socio-civic responsibilities of the college teacher. Open to all graduate students, particularly those expecting to teach at the college level.

- 810. Problems of College Teaching.** (2) II. Investigation of methods of college teaching appropriate to distinctive subject matter areas. Observation of teaching practices as well as study of the literature on teaching methodology in the student's field of specialization. Open to all graduate students, particularly those expecting to teach at the college level.

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. (See page 103.)

COURSES IN GEOLOGY

FOR UNDERGRADUATE CREDIT

- 110. General Geology.** (3) I, II, S. 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) I, II. General principles of geology and their application to engineering problems. Three hours rec. and three hours lab. a week. Pr.: Chem. 110 or equiv.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 405. Historical Geology.** (4) I, II. Physical and biological events through which the earth has gone. Three hours rec. and three hours lab. a week. Pr.: Gl. Gg. 110.
- 410. Geomorphology.** (4) I, II. Various land-forms and their evolution; geologic interpretation of landscapes, especially of features in the United States; interpretation of topographic maps. Three hours rec. and three hours lab. a week. Pr.: Gl. Gg. 110.
- 415. Crystallography and Mineralogy.** (4) I, II. The fundamentals of crystallography and its use in mineral identification; physical and chemical mineralogy. Two hours rec. and six hours lab. a week. Pr.: Chem. 110.
- 420. Lithology.** (2) I, II. Hand specimen identification of 100-150 common igneous, sedimentary, and metamorphic rocks. Classification of each rock group especially adapted for use in field identification. Pr.: Gl. Gg. 110 or 415.
- 425. Field Methods in Geology.** (3) I. Construction of geologic maps, including a complete map of the Manhattan area; application of field methods to the problems of geology. One hour rec. and six hours lab. a week. Pr.: Gl. Gg. 410.
- 435. Field Geology.** Credit arranged. S. 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) II. 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 rec. and six hours lab. a week. Pr.: Gl. Gg. 425, 515.
- 455. Invertebrate Paleontology.** (4) I. Evolution and geologic history of the invertebrate animals. Three hours rec. and three hours lab. a week. Pr.: Gl. Gg. 405.

- 465. Vertebrate Paleontology.** (3) II. Evolution, geologic history, and classification of the vertebrates. Pr.: Gl. Gg. 405 or ten hours zoology.
- 475. Micropaleontology.** (3) I. Preparation, identification, and use of microscopic fossils. One hour rec. and six hours lab. a week. Pr.: Gl. Gg. 455 and junior standing.
- 485. Index Fossils.** (2) II. Identification of those fossil plants and animals of value in the age correlation of the sedimentary rocks of North America. Six hours lab a week. Pr.: Gl. Gg. 455.
- 495. Stratigraphic Geology.** (4) I. Description, classification, and correlation of stratigraphic units, with emphasis on those of Kansas. Three hours rec. and three hours lab. a week. Pr.: Gl. Gg. 405.
- 497. Pleistocene Geology.** (2) I. Pleistocene stratigraphy and its development in North America; correlation of European and North American Pleistocene rocks. Two hours rec. a week and one field trip a semester. Pr.: Gl. Gg. 410, 495.
- 515. Structural Geology.** (4) I. Mechanics of the earth's crust, interrelation of structures found in the earth. Three hours rec. and three hours lab. a week. Pr.: Gl. Gg. 405, 415.
- 517. Regional Geology.** (4) II. Structure and the stratigraphy of the major tectonic units of North America. Three hours rec. and three hours lab. a week. Pr.: Gl. Gg. 495, 515.
- 536. Petroleum Geology.** (3) II. Origin, migration, and accumulation of petroleum, stratigraphy, and structure of important fields. Three hours rec. a week. Pr.: Gl. Gg. 405.
- 545. Economic Geology.** (4) II. Origin and mode of occurrence of non-metallic minerals, including coal and petroleum, and of metallic mineral deposits. Three hours rec. and three hours lab. a week. Pr.: Gl. Gg. 405, 415.
- 556. Geology of Subsurface Water.** (3) II. Three hours rec. a week. Pr.: Gl. Gg. 405.
- 565. Applied Geology.** (3) I. Geology applied to the science of engineering, particularly highway engineering. Pr.: Gl. Gg. 425.
- 575. Optical Mineralogy.** (4) I. Polarizing microscope used to identify crystal fragments, powders, sediments, and thin sections; optical theory and methods of microscopic research. Two hours rec. and six hours lab. a week. Pr.: Gl. Gg. 415.
- 580. Goniometry and Crystal Drawing.** (2) II. Measurements, calculations, projections, and drawings of crystals. Measurements will be made with contact and optical goniometers and the universal stage microscope. Six hours lab. a week. Pr.: Gl. Gg. 575 and senior standing.
- 585. Sedimentary Petrology.** (5) II. Petrography, classification, and origin of soils, sediments, and sedimentary rocks. Three hours rec. and six hours lab. a week. Pr.: Gl. Gg. 575.
- 595. Petrology.** (5) I. Petrographic description, classification, and origin of igneous and metamorphic rocks. Three hours rec. and six hours lab. a week. Pr.: Gl. Gg. 575.
- 605. Mineragraphy.** (4) II. Methods of studying opaque minerals and applications to problems in ore genesis and history. Two hours rec. and six hours lab. a week. Pr.: Gl. Gg. 545, 575.
- 615. Binocular Examination of Well Cuttings.** (2) I. Description and identification of fragments of rocks and minerals using the binocular microscope; logging sample data; subsurface correlation by sample examination. Six hours lab. a week. Pr.: Gl. Gg. 415, 535.
- 625. Electric Well Logs.** (2) II. Review of electrically recorded well logging methods: interpretation, stratigraphic correlation, graphic representation, and construction of subsurface geologic maps from log data. Six hours lab. a week. Pr.: Gl. Gg. 535.

- 635. Conservation of Mineral and Water Resources.** (3) II. Pr.: Gl. Gg. 110, 415.
- 645. Geologic Literature.** (3) I. Current geologic literature and history of geology. Pr.: Gl. Gg. 405, 415.
- 655. Geologic Reports and Illustrations.** (2) II. Collection, evaluation, and organization of materials to be presented in a geologic report and the techniques of preparing the illustrations therefor. Six hours lab. a week. Pr.: Geology majors with senior or graduate standing.
- 799. Problems in Geology.** Credit arranged. I, II, S. Work is offered in mineralogy, paleontology, stratigraphy, structural geology, sedimentary petrology. Pr.: Background of courses needed for problem undertaken.

FOR GRADUATE CREDIT

- 810. Clay Mineralogy.** (3) 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 rec. and three hours lab. a week. Pr.: Gl. Gg. 585.
- 999. Research in Geology.** Credit arranged. I, II, S. Work is offered in mineralogy, paleontology, stratigraphy, structural geology, igneous, metamorphic and sedimentary petrology. Pr.: Registration in the Graduate School, with sufficient training to carry on the line of research undertaken.

COURSES IN GEOGRAPHY

FOR UNDERGRADUATE CREDIT

- 210. Principles of Geography.** (3) I, II, S. Introductory course in college geography; relationships between human activities and environment.
- 215. Economic Geography.** (3) I, II. The production, transportation, and manufacturing of world commodities, especially power, minerals, and agricultural resources. Emphasized are the changes in producing regions, as affected by geographic, economic, and political factors.
- 220. Geography of Kansas.** (2) I, II, S. The agricultural, manufacturing, and population distribution in Kansas, as based on the physical resources of climate, soils, land-form, water, and minerals.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 705. Political Geography.** (3) I, S. Formation of political units as affected by their geography: the influence of topography, location, rivers and seas, resources, and people in the development of nations and their boundaries. Colonial systems and strategic problems are considered.
- 730. Cartography.** (3) II. 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 rec. and six hours lab. a week. Pr.: Gl. Gg. 110 or 210.
- 735. Geography of Anglo-America.** (3) II. Modern Canada, Alaska, and United States: agricultural and manufacturing regions, stressing interdependence of all. Pr.: Gl. Gg. 210 or 215, or junior standing.
- 740. Geography of Latin America.** (3) I. The present-day economy and peoples of South America and the Caribbean shores; agricultural and mineral production, developing manufacturing centers, rapid urban changes. Pr.: Gl. Gg. 210 or 215, or junior standing.
- 745. Geography of Western Europe.** (3) I. The nations and regions of Europe west of the U. S. S. R., with present economies as a result of cultural and physical differences in the environment. Trends of development as affected by new political and economic factors. Pr.: Gl. Gg. 210 or 215, or junior standing.
- 750. Geography of the Soviet Union.** (3) II. Geographic regions of the U. S. S. R.: the agriculture, minerals, manufacturing, and settlement in

each, particularly as affected by climatic and locational factors. Pr.: Gl. Gg. 210 or 215, or junior standing.

798. Problems in Geography. Credit arranged. I, II, S. Pr.: Nine hours in geography, and consent of instructor.

HISTORY, GOVERNMENT, AND PHILOSOPHY

FRED L. PARRISH, *Head of Department*

Students who plan a major in history, or government, or philosophy, or pre-law enroll in the Curriculum in Social Science. (See page 113.) Students who plan to teach history and government in the secondary school enroll in the Curriculum in Secondary Education. (See page 101.) In both curriculums students should select their elective courses in their major, their options in economics and sociology, and their courses in modern language, with the advice of this department. The total credit hour requirement for each particular major is the same in both curriculums. Pre-law students, in consultation with this department, plan their major by adapting the curriculum to their particular needs. (See page 113.)

COURSES IN HISTORY

For a minor, the following courses should be completed: 115, 130, 175, 190, and at least six hours of government including course 255. Those not planning to teach may substitute certain approved courses for the fulfillment of the minor.

For a major, in addition to the minor, twelve hours of advanced courses are to be completed. (See page 113.)

FOR UNDERGRADUATE CREDIT

115. Civilization I. (3) I, II, S. Civilization of the world to 1650, with emphasis on Western civilization.

130. Civilization II. (3) I, II, S. Civilization of the world since 1650, with emphasis on Western civilization.

145. Contemporary World History. (2) I, II, S. World developments since 1930.

160. Current History. (1) I, II. May not be taken more than two semesters for credit.

175. United States Before 1865. (3) I, II, S. The significant forces, movements, and personalities in the development of American life before 1865.

190. United States Since 1865. (3) I, II, S. The significant forces, movements, and personalities in the development of American life since 1865.

205. American Industrial History. (3) I, II, S. 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 H. G. P. 190.

220. History of Kansas. (2) Land, people, problems, and growth of culture in the development of Kansas.

FOR UNDERGRADUATE AND GRADUATE CREDIT

405. Early Americas. (3) I and alt. S. 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. Pr.: Three hours of American history or junior standing.

415. American Thought and Institutions. (3) II. Cultural traditions, traits, and patterns in the life of Americans of the colonial and republican periods. Pr.: Six hours of American history or junior standing.

425. Sectionalism, War, and Reconstruction. (2) Development of sectionalism in the United States from 1830 to 1890. Pr.: Three hours of American history or junior standing.

- 435. Trans-Mississippi West.** (3) I, II, S. Environmental factors, peoples, settlements, and institutions of the United States west of the Mississippi River. Pr.: H. G. P. 175 or 190 or junior standing.
- 445. New American Nation.** (3) I, II, S. Recent and contemporary history. Problems of the new nation from the Spanish-American War to the present. Pr.: Three hours of American history or junior standing.
- 455. Representative Americans.** (2) Lives of outstanding Americans. Pr.: H. G. P. 175 or 190 or junior standing.
- 465. Advanced Economic History of the United States.** (2) II and alt. years. Analysis of the agricultural and industrial developments in the United States. Pr.: H. G. P. 205 or 190 or junior standing.
- 475. American Diplomatic History.** (3) II and alt. S. Development of the foreign policy of the United States from 1763 to the present. Pr.: Three hours of American history or junior standing.
- 485. Latin-American Nations.** (3) II and alt. S. 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. Pr.: Three hours of American history or junior standing.
- 495. History and Culture of Greece.** (3) I and alt. 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. Pr.: H. G. P. 115.
- 505. History and Culture of Rome.** (3) II and alt. 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. Pr.: H. G. P. 115 or Gn. St. 250.
- 515. Medieval Europe.** (3) I, S and alt. years. Cultural and historical developments in Europe and the Near East from the decline of the Roman Empire to the Renaissance in Western Europe. Pr.: H. G. P. 115 or Gn. St. 250 or junior standing.
- 525. Medieval and Tudor England.** (3) I and alt. years. Celtic, Roman, and Teutonic Britain; early monarchies, feudal age; rise of the modern state. Pr.: H. G. P. 115 or junior standing.
- 535. Renaissance and Enlightenment.** (3) II, S. Rise of human, religious revolt, the Enlightenment, growth of nationalism and European empires from 1600 to 1800. Pr.: H. G. P. 130 or junior standing.
- 546. French Revolution and Napoleonic Period.** (3) I. An intimate glimpse into the historical cycle of one of the world's greatest revolutions. Pr.: H. G. P. 130 or junior standing.
- 550. Europe 1815-1914.** (3) II. Social, economic, and political developments during the century of optimism, progress, and peace. Pr.: H. G. P. 130 or junior standing.
- 556. Europe Since 1914.** (3) I. The two World Wars, the rise and challenge of extremist ideologies, major economic, social, and political trends, and their influence upon the contemporary scene. Pr.: H. G. P. 130 or junior standing.
- 565. Modern England.** (3) I. Political, economic, and cultural history of modern and contemporary Britain. Pr.: Three hours of European history or junior standing.
- 575. British Empire and Commonwealth.** (2) Political, economic, and cultural history of modern and contemporary Britain. Pr.: Three hours of European history or junior standing.
- 585. Russia and the Soviet Union.** (3) I, II, S. Imperial Russia and the new regime since the Revolution of 1917. Pr.: Three hours of European history or junior standing.
- 595. Far East.** (3) I and alt. S. 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. Pr.: H. G. P. 115, or Gn. St. 250, or junior standing.

- 605. History of Religions.** (3) II and alt. S. 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. Pr.: H. G. P. 115 or Gn. St. 250 or junior standing.
- 615. History of Marriage and the Family.** (3) I. 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. Pr.: Three hours of history or junior standing.
- 625. Historical Method and Bibliography.** (2) I, II, S. Survey of historical articles or theses. Required of graduate majors in history. Pr.: Consent of instructor and H. G. P. 115, 130, 175, 190.
- 790. Readings in History.** (1 to 3) I, II, S. 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) Pr.: Consent of instructor and five hours of credit basic to the field involved.
- 797. Problems in History.** Credit arranged. I, II, S. For students who desire to pursue subject matter beyond the field of a specific course. Pr.: Background of courses needed for problem undertaken.

FOR GRADUATE CREDIT

- 995. Research in History.** Credit arranged. I, II, S. Work offered in: United States, Latin American, European, and Asiatic history. Pr.: Registration in the Graduate School, with sufficient training to carry on the line of research undertaken.

COURSES IN PHILOSOPHY

For the minor, courses 365, 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. (See page 113.)

FOR UNDERGRADUATE CREDIT

- 365. Elementary Logic.** (3) I, S. 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) II. 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) Study of representative Chinese and Indian thinkers. Emphasis will be placed on basic assumptions, methods of reasoning, and ways of life associated with each. Pr.: Junior standing.
- 755. Early Western Philosophy.** (3) I. History of and readings in western philosophy from Thales to Thomas Aquinas. Pr.: Junior standing.
- 760. Modern Western Philosophy.** (3) II. History of and readings in western philosophy from Francis Bacon to Hegel. Pr.: Junior standing.
- 762. American Philosophy.** (3) American philosophical theory from Transcendentalism and Evolutionism to present-day Realism, Idealism, and Pragmatism. Pr.: One course in American literature, or American history, or philosophy.

- 765. Philosophical Ideas in Literature.** (3) An introduction to philosophical thought through selections from the masterpieces of world literature. Pr.: Engl. 215 or consent of instructor.
- 770. Contemporary World-Views.** (3) I and alt. years. Study of representative idealist and naturalist philosophies and examination of their corresponding conflicts in practical affairs. Pr.: Junior standing.
- 775. Ethics.** (2) II, S. Theories of conduct; ideas of right and wrong; what makes an act good or bad; the good life. Pr.: Junior standing.
- 780. Contemporary Social Philosophies.** (3) II and S alt. years. A comparative study of the principles and practices associated with contemporary economic and social systems. Pr.: Junior standing.
- 785. Recent Political Philosophies.** (2) II and alt. years. 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. Pr.: Junior standing.
- 792. Readings in Philosophy.** (1 to 3) I, II, S. Students will read primary and secondary materials on subjects 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 arranged. I, II, S. For students who desire to pursue subject matter beyond the field of a specific course. Pr.: Background of courses needed for problem undertaken.

COURSES IN GOVERNMENT

For the minor, courses 255, 270, and six additional hours of government are to be completed.

For the major, in addition to the minor, twelve hours of advanced courses are to be completed. (See page 113.)

FOR UNDERGRADUATE CREDIT

- 255. American Government.** (3) I, II, S. National and state government, with emphasis on constitutional principles and basic structure.
- 260. Federal Government in Action.** (3) I, II, S. Functions and services of American government in modern society. Pr.: H. G. P. 255 or equiv.
- 265. State and Local Government.** (3) I, II, S. Government of American states and subdivisions.
- 270. Contemporary Government.** (3) I, II, S. Comparative treatment, emphasizing the democracies of the United States, Great Britain, and Canada.
- 275. Constitutional Democracy in America I.** (3) I. 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) II. Cont. of H. G. P. 275.
- 285. Effective Citizenship.** (2) Observation of, and participation in processes of government.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 655. International Relations.** (2) I, S, alt. years. Recent and contemporary international problems; work of international organizations. Pr.: H. G. P. 255 or Gn. St. 210, 220, or equiv.
- 660. International Law.** (2) I, alt. years. Nature and scope of international law; factors which contribute to its growth; tendencies in the development of the law today. Pr.: H. G. P. 255 or Gn. St. 210, 220, or equiv.
- 665. International Organization.** (2) II, alt. years. 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. Pr.: H. G. P. 255 or Gn. St. 210, 220, or equiv.

- 670. Comparative Government.** (2) II, S. Analysis of major governments of continental Europe. Pr.: H. G. P. 270.
- 675. State and Local Politics and Administration.** (2) II. 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. Pr.: Junior standing or consent of instructor.
- 690. City Government.** (3) I, S. Government and administration of American cities. Pr.: H. G. P. 255 or junior standing.
- 705. Federal Politics and Administration.** (2) I, S. 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. Pr.: Junior standing or consent of instructor.
- 708. Political Economy and the Democratic State.** (3) I, II, S. 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. Pr.: Junior standing or consent of instructor.
- 711. American Political Ideas.** (3) Major political ideas underlying the American Union, the doctrine of rights, the nature of union, liberty and property, democracy, and recent trends. Pr.: H. G. P. 255 or Gn. St. 220.
- 718. Political Parties and Pressure Groups.** (2) I, alt. years. Growth and tendencies of interest groups in the United States; development of the American party system. Pr.: H. G. P. 255 or Gn. St. 210, 220, or equiv.
- 720. Government and Business.** (2) I, alt. years. Relationships between governmental and business organizations. Pr.: H. G. P. 255 or Gn. St. 210, 220, or equiv.
- 730. Constitutional Law.** (3) II. Development of the government of the United States through judicial interpretation of the Constitution. Case method used. Pr.: H. G. P. 255 or Gn. St. 210, 220, or equiv.
- 791. Readings in Government.** (1 to 3) I, II, S. 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 government.
- 793. Seminar.** (See History section.)
- 798. Problems in Government.** Credit arranged. I, II, S. For students who desire to pursue subject matter beyond the field of a specific course. Pr.: Background of courses needed for problem undertaken.

FOR GRADUATE CREDIT

- 997. Research in Government.** Credit arranged. I, II, S. Pr.: Sufficient training to carry on the line of research undertaken.

LIBRARY ECONOMICS

WILLIAM E. BAEHR, *Head of Department*

FOR UNDERGRADUATE CREDIT

- 110. Introduction to Bibliography.** (1) I. Principles and content of general and special bibliography. Pr.: Junior standing.
- 402. Book Selection and Reference.** (3) S. 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) S. Fundamentals of the Dewey Decimal Classification and the basic cataloguing techniques necessary for organizing a school library collection.

442. School Library Administration. (2) S. 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, 746, and six semester hours from among the 700 courses in statistics. (See page 109.)

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. I, II. Four hours rec. a week.

030. Plane Geometry. 1 entrance unit. I, II. Four hours rec. a week.

050. Intermediate Algebra. (0) I, II, S. Review of elementary algebra; topics preparatory to Math. 175. Three hours rec. a week. Pr.: One unit of high school algebra.

110. Solid Geometry. (2) I. Pr.: Plane geometry and one unit of high school algebra.

125. Mathematics in Human Affairs. (3) I, II. 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) I, II. 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) I, II. Pr.: One unit of high school algebra. Not open to students with credit in Math. 175. For students in Business Administration.

160. Mathematics of Finance. (3) I. Pr.: Math. 145.

✓ **175. College Algebra.** (3) I, II, S. Pr.: 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) I, II, S. Pr.: Plane geometry and one and one-half units of high school algebra.

✓ **215. Analytic Geometry and Calculus I.** (4) I, II, S. Analytic geometry, differential and integral calculus of polynomials. Pr.: Math. 175, 190.

230. Analytic Geometry and Calculus II. (4) I, II, S. Cont. of Math. 215 to include transcendental functions. Pr.: Math. 215.

- 245. Analytic Geometry and Calculus III.** (4) I, II, S. Cont. of Math. 230 to include functions of more than one variable; series. Pr.: Math. 230.
- 260. Plane Analytic Geometry.** (4) Pr.: Math. 175, 190.
- 275. Calculus I.** (4) I, II. Pr.: Math. 260.
- 290. Calculus II.** (4) I, II. Pr.: Math. 275.
- 300. Mathematics for Teachers.** (2) II, and S in even 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. Pr.: One unit of high school mathematics.
- 320. Elements of Statistics.** (3) I, II, S. A basic course in probability and statistics for students of economics, biology, and science. Not open to students who have credit in Educ. 405. Pr.: Math. 145.
- 340. Applied Elementary Statistics.** (2) II. Cont. of Math. 320, with introduction to sampling techniques and theory; introductory multiple and curvilinear correlation, and applications in biology, psychology, economics, and engineering. Pr.: Math. 320.
- 360. Differential Equations for Engineers.** (2) I, II. Pr.: Math. 245 or 290.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 415. Theory of Equations.** (3) I. Pr.: Math. 245 or 290.
- 430. Theory of Numbers.** (3) On sufficient demand. Pr.: Math. 230 or 275.
- 445. Foundations of Mathematics.** (3) On sufficient demand. Postulates used in development of geometry and algebra. Pr.: Math. 245 or 290.
- 450. Introduction to Modern Algebra.** (3) On sufficient demand. Simpler concepts in the theory of numbers, groups, rings, integral domains, fields, polynomials over a field, determinants, and matrices. Pr.: Math. 245 or 290.
- 455. Abstract Algebra I.** (3) I alt. years. Pr.: Math. 415, 600.
- 465. Abstract Algebra II.** (3) II alt. years. Cont. of Math. 455. Pr.: Math. 455.
- 475. Structure of Abstract Algebras.** (3) II alt. years. An introduction to linear algebras over various fields. The algebra of classes. Pr.: Math. 455 or 485.
- 485. Introduction to Theory of Matrices.** (3) I alt. years. Pr.: Math. 415, 600.
- 510. History of Mathematics.** (3) On sufficient demand. Pr.: Math. 215 or 260.
- 525. College Geometry.** (3) II. Properties of a triangle and its circles, harmonic ranges and pencils, inversion, poles and polars. Pr.: Math. 215 or 260.
- 560. Higher Geometry I.** (3) I alt. years. An introduction to the projective geometry of one and two dimensions. Pr.: Math. 415.
- 575. Higher Geometry II.** (3) II alt. years. An introduction to the differential geometry of curves and surfaces. Pr.: Math. 600.
- 580. Elementary Topology I.** (3) I alt. years. Cardinal and ordinal numbers, general topological spaces, homeomorphic invariants of point sets, metrization, structure of Peano continua. Pr.: Math. 600, 615, 620.
- 585. Elementary Topology II.** (3) II alt. years. Cont. of Math. 580. Pr.: Math. 580.
- 600. Differential Equations.** (3) I, II, S. Pr.: Math. 245 or 290.
- 605. Elementary Partial Differential Equations.** (3) I alt. years. Solution of partial differential equations; applications to problems of physics and engineering. Pr.: Math. 360 or 600.

- 610. Differential Equations of Mathematical Physics.** (3) II alt. years. Solution of Legendre's, Bessel's, and other differential equations including the properties and uses of the solutions. Pr.: Math. 360 or 600.
- 615. Advanced Calculus I.** (3) I. Partial differentiation, with applications to the geometry of three dimensions, envelopes, maxima and minima of functions of several variables, series. Pr.: Math. 245 or 290.
- 620. Advanced Calculus II.** (3) II. Line integrals, improper integrals, beta and gamma functions; integrals dependent on a parameter, elliptic integrals, uniform convergence of series and integrals. Pr.: Math. 245 or 290 and preferably Math. 360 or 600.
- 625. Vector Analysis.** (3) II alt. years. Methods of vector algebra and geometry, with applications, and the elements of tensors. Pr.: Math. 360 or 600.
- 630. Fourier Series.** (3) II alt. years. Pr.: Math. 360 or 600.
- 635. Operational Methods.** (3) I alt. years. Selected topics from Heaviside's operational calculus, Laplace transforms. Pr.: Math. 360 or 600.
- 642. Numerical Methods I.** (3) I alt. 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. Pr.: Math. 360 or 600; and one of 605, 610, 615, 620, 630, 635.
- 644. Numerical Methods II.** (3) II alt. years. Numerical methods for solving ordinary and partial differential equations. Matrix inversion, with applications. Method of least squares. Use of orthogonal polynomials. Pr.: Math. 642.
- 650. Advanced Differential Equations I.** (3) I alt. years. Special topics such as the equations of Legendre, Bessel, and Riccati, with applications. Pr.: Math. 360 or 600 and 615 or 620.
- 655. Advanced Differential Equations II.** (3) II alt. years. Boundary value problems associated with differential equations; their relations to integral equations. Pr.: Math. 650.
- 660. Theory of Functions of a Complex Variable I.** (3) I alt. years. Pr.: Math. 360 or 600 and 615 or 620.
- 665. Theory of Functions of a Complex Variable II.** (3) II alt. years. Pr.: Math. 660.
- 675. Calculus of Variations.** (3) On sufficient demand. Necessary and sufficient conditions for an extreme value; applications to geometry and mechanics. Pr.: Math. 600, 620.
- 685. Tensor Analysis.** (3) On sufficient demand. Introduction to theory of tensors with applications to geometry, relativity, and applied mathematics. Pr.: Math. 615, 625.
- 690. Theory of Functions of a Real Variable I.** (3) I alt. years. Real number systems, theory of measure, theories of integration. Pr.: Math. 600, 615, 620.
- 695. Theory of Functions of a Real Variable II.** (3) II alt. years. Cont. of Math. 690. Pr.: Math. 690.
- 705. Probability.** (3) On sufficient demand. Basic laws and concepts; mathematical expectation; distribution functions for normal, binomial, and Poisson populations; and applications. Pr.: Math. 245 or 290.
- 725. Statistical Methods I.** (3) I. Development of proficiency in statistical technics appropriate to sampling studies; the chi-square test, confidence intervals, t-test linear regression, and analysis of variance. Pr.: Junior standing.
- 730. Statistical Methods II.** (3) II. Further study of analysis of variance; technic and applications of covariance, multiple and curvilinear regression and introduction to designing of experiments. Pr.: Math. 725 or consent of instructor.

- 746. Probability and Statistics I.** (3) I. Basic concepts of probability, probability and frequency distribution functions; applications; introduction to sampling problems. Pr.: Math. 245 or 290.
- 751. Probability and Statistics II.** (3) II. Sampling distributions; estimation of population parameters; tests of hypotheses; bivariate distributions; applications to experimental research. Pr.: Math. 746.
- 756. Probability and Statistics III.** (3) On sufficient demand. Analysis of experimental models by least squares method; multivariate analysis; curvilinear regression; mathematics of experimental design. Pr.: Math. 751.
- 765. Sample Survey Methods.** (3) II alt. years. Design, mechanics, and analysis of sample survey investigations in the social sciences. Pr.: Math. 725 or consent of instructor.
- 775. Designing Experiments.** (3) II. 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. Pr.: Math. 725.
- 785. Statistical Quality Control.** (3) On sufficient demand. Elementary treatment of practical methods of analysis of data to estimate uniformity or non-uniformity of the quality of a manufactured product. Discussion of control charts and sampling acceptance plans. Pr.: Math. 175 or equiv.
- 799. Topics in Mathematics.** Credit arranged. I, II, S. Pr.: Background of courses needed for topic undertaken and consent of instructor.

FOR GRADUATE CREDIT

- 999. Research in Mathematics.** Credit arranged. I, II, S. Pr.: Sufficient training to carry on the line of research undertaken and consent of instructor.

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 training is offered by the U.S. Army Reserve Officers Training Corps or Air Force 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. Non-veteran 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. Any exemption from the Basic Course, however, may bar the students from enrollment in the voluntary Advanced Course ROTC, normally offered to selected juniors and seniors. Therefore, students interested in the Advanced Course are urged to have any previous military training evaluated by the PMST prior to registration, to insure that credit granted by the college toward fulfillment of the requirements of State Law does not operate to bar admission to the Advanced Course.

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 uniforms, 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 offers the General Military Science curriculum to undergraduates. This 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, as well as 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; the successful completion of this course fulfills the requirements of Kansas State Law. In the Basic Course, students receive one credit hour per semester. 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. The Deferment Agreement exempts the student 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 either two years or six months, as determined by the Secretary of the Army.

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 show the greatest promise as potential officer material may be granted a Deferment Agreement, provided they agree to apply for enrollment in the Advanced Course at the appropriate time.

In the Advanced Course, students receive three credit hours each semester. 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, ROTC

BASIC COURSES

FOR UNDERGRADUATE CREDIT

110. Military IA. (1) I. Individual weapons and marksmanship; organization of the Army and ROTC; school of the soldier and exercise of command. Two hours rec. and the equiv. of approximately one hour of practical work a week.

115. Military IB. (1) II. American military history; school of the soldier and exercise of command. Two hours rec. and the equiv. of approximately one hour of practical work a week.

131. Military IIA. (1) I. Map and aerial photograph reading; crew-served weapons and gunnery; school of the soldier and exercise of command. Two hours rec. and the equiv. of approximately one hour of practical work a week.

141. Military IIB. (1) II. Crew-served weapons and gunnery; school of the soldier and exercise of command. Two hours rec. and the equiv. of approximately one hour of practical work a week.

ADVANCED COURSE

256. Military IIIA. (3) I. Leadership; military teaching methods; first aid and military sanitation; rifle marksmanship; organization, function, and mission of the arms and services; school of the soldier and exercise of command. Four hours rec. and the equiv. of approximately one hour of practical work a week. Pr.: Mil. S. 110, 115, 131, 141.

266. Military IIIB. (3) II. Small unit tactics and communications; school of the soldier and exercise of command. Four hours rec. and the equiv. of approximately one hour of practical work a week. Pr.: Mil. S. 256.

276. Military IVA. (3) I. Command and staff; estimate of the situation and combat orders; military intelligence; the military team; training management; motor transportation; school of the soldier and exercise of command. Four hours rec. and the equiv. of approximately one hour of practical work a week. Pr.: Mil. S. 266.

286. Military IVB. (3) II. Military administration; military justice; role of the U. S. in world affairs; leadership; officer indoctrination; school of the soldier and exercise of command. Four hours rec. and the equiv. of approximately one hour of practical work a week. Pr.: Mil. S. 276.

MODERN LANGUAGES

Fritz Moore, *Head of Department*

Students majoring in language should enroll in the Curriculum in Humanities. (See page 104.)

For a minor, eighteen hours in a single language should be completed.

For a major, thirty 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) I.

120. Technical German II. (3) II. Pr.: Mod. L. 110 or equiv.

125. Technical German III. (3) I. Pr.: Mod. L. 120 or 140 or equiv.

130. German I. (3) I, II, S.

140. German II. (3) I, II, S. Pr.: Mod. L. 130 or equiv.

150. German III. (3) I, S. Pr.: Mod. L. 140 or equiv.

160. German IV. (3) II. Pr.: Mod. L. 150 or equiv.

170. German V. (3) I or II. Pr.: Mod. L. 160 or equiv.

190. Russian I. (3) I. Pr.: Six hours of some other foreign language.

195. Russian II. (3) II. Pr.: Mod. L. 190.

210. French I. (3) I, II, S.

220. French II. (3) I, II, S. Pr.: Mod. L. 210 or equiv.

230. French III. (3) I, S. Pr.: Mod. L. 220 or equiv.

240. French IV. (3) II. Pr.: Mod. L. 230 or equiv.

250. French V. (3) I or II. Pr.: Mod. L. 240 or equiv.

260. French Composition and Conversation. (3) I. Pr.: Mod. L. 240.

270. Advanced French Composition and Conversation. (3) II. Pr.: Mod. L. 260 or equiv.

300. Spanish I. (3) I, II, S.

310. Spanish II. (3) I, II, S. Pr.: Mod. L. 300 or equiv.

320. Spanish III. (3) I, S. Pr.: Mod. L. 310 or equiv.

330. Spanish IV. (3) II. Pr.: Mod. L. 320 or equiv.

340. Spanish V. (3) I or II. Pr.: Mod. L. 330 or equiv.

350. Spanish Composition and Conversation. (3) I. Pr.: Mod. L. 330 or equiv.

360. Advanced Spanish Composition and Conversation. (3) II. Pr.: Mod. L. 350 or equiv.

380. Italian I. (3) I.

385. Italian II. (3) II. Pr.: Mod. L. 380 or equiv.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 405. Schiller.** (3) I or II. Pr.: Fifteen hours of college German or equiv.
- 420. Goethe.** (3) I or II. Pr.: Fifteen hours of college German or equiv.
- 435. German Drama I.** (3) I or II. Pr.: Twenty-four hours of college German or equiv.
- 450. German Drama II.** (3) I or II. Pr.: Twenty-four hours of college German or equiv.
- 465. Survey of German Literature I.** (3) I or II. Pr.: Thirty hours of college German or equiv.
- 480. Survey of German Literature II.** (3) I or II. Pr.: Thirty hours of college German or equiv.
- 520. French Novel.** (3) I or II. Pr.: Eighteen hours of college French or equiv.
- 540. French Drama.** (3) I or II. Pr.: Eighteen hours of college French or equiv.
- 560. Moliere.** (3) I or II. Pr.: Twenty-one hours of college French or equiv.
- 580. Contemporary French Literature.** (3) I or II. Pr.: Twenty-one hours of college French or equiv.
- 610. Spanish Novel.** (3) I or II. Pr.: Fifteen hours of college Spanish or equiv.
- 620. Spanish Drama.** (3) I or II. Pr.: Fifteen hours of college Spanish or equiv.
- 645. Spanish-American Literature.** (3) I or II. Pr.: Eighteen hours of college Spanish or equiv.
- 650. Cervantes.** (3) I or II. Pr.: Twenty-one hours of college Spanish or equiv.
- 655. Spanish-American Novel.** (3) I or II. Pr.: Eighteen hours of college Spanish or equiv.
- 660. Contemporary Spanish Literature.** (3) I or II. Pr.: Twenty-one hours of college Spanish or equiv.
- 750. Introduction to Philology.** (2) I or II. Pr.: Thirty hours of modern languages or equiv.
- 799. Problems in Modern Languages.** Credit arranged. I, II, S. Pr.: Consent of department head.

FOR GRADUATE CREDIT

- 999. Research in Modern Languages.** Credit arranged. Pr.: Thirty hours of one modern language or equiv.

MUSIC

LUTHER O. LEAVENGOOD, *Head of Department*

The Department of Music is a member, with institutional accrediting, of the National Association of Schools of Music.

Curriculums in Applied Music and Music Education with majors in voice, piano, organ, string, woodwind, and brass instruments are offered. For specific requirements for each curriculum, see pages 105, 106.

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 Music 105, 150, and 155. Specific requirements for Music are: Instrument or Voice, eight hours; Music 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. (See page 104.)

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: Music 080 (two semesters), 105, 150, 155, 230, 235, 240, 245, 275, or instrument courses (four hours), 279 (four 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, Music 116, 121, and two years in a choral organization; for band and orchestra directors, Music 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 non-music 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 Music 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 instrumental 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 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) I, S. Elementary instruction in the theory of music. Three hours rec. a week. Not open to music students.
- 110. Music for Elementary Teachers.** (3) II, S. Pr.: Music 105.
- 116. School Music I.** (3) I, II, S. Methods and materials for teaching music in kindergarten, primary, and intermediate grades. Pr.: Music 155 or consent of instructor.
- 121. School Music II.** (3) I, II, S. Methods and teaching materials suitable for junior and senior high school. Pr.: Music 116 or consent of instructor.
- 132. Instrumental Methods.** (3) I, S. 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) I, S. An integrated course comprising ear training, sight singing, keyboard assignments and the principles of diatonic harmony. Five hours rec. a week.
- 155. Theory of Music II.** (3) II, S. Cont. of Music 150. Five hours rec. a week. Pr.: Music 150.
- 160. Theory of Music III.** (3) I, S. 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 rec. a week. Pr.: Music 155.
- 165. Theory of Music IV.** (3) II, S. Cont. of Music 160. Five hours rec. a week. Pr.: Music 160.
- 170. Counterpoint I.** (2) I, S. Devices of counterpoint and imitation leading to the writing of short contrapuntal compositions in two voices. Analysis of choral preludes and inventions. Pr.: Music 165.
- 175. Counterpoint II.** (2) II, S. A cont. of Music 170. Contrapuntal composition in three or four voices. Analysis of the fugue. Pr.: Music 170.
- 180. Musical Form and Analysis.** (2) I, II, S. Forms used in composition; the music of Bach, Haydn, Mozart, Beethoven, Schumann, Chopin, Brahms, Wagner, and others. Pr.: Music 165.
- 183. Instrumentation and Orchestration I.** (2) I, S. Instruments of the band and orchestra studies with relation to tone, color, range, and function. Pr.: Music 165.
- 186. Instrumentation and Orchestration II.** (2) II, S. Simple and familiar compositions scored for ensemble, including full orchestra. Pr.: Music 183.

- 190. History of Music I.** (2) I, S. 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) II, S. Cont. of Music 190. Pr.: Music 190.
- 210. Composition I.** (2) I, S. Composition in the small forms for piano, voice, and instruments. Development of style conception. Pr.: Music 175 and conc. enrollment in Music 180.
- 215. Composition II.** (2) II, S. Cont. of Music 210 with emphasis on more complex treatment of the small and compound forms. Pr.: Music 210.
- 222. Theory of Conducting.** (2) I, S. Basic meters and the proper methods of executing each; introduction to score reading and transposition. Pr.: Music 165.
- 230. Orchestral Instruments I.** (1) I, II, S. Methods of tone production of instruments of the orchestra. Two hours lab. a week.
- 235. Orchestral Instruments II.** (1) I, II, S. Cont. of Music 230. Two hours rec. and one hour lab. a week.
- 240. Orchestral Instruments III.** (1) I, II, S. Cont. of Music 235. Two hours rec. and one hour lab. a week.
- 245. Orchestral Instruments IV.** (1) I, II, S. Cont. of Music 240. Two hours rec. and one hour lab. a week.
- 247. Orchestral Instruments V.** (1) II, S. Cont. of Music 245. Two hours rec. and one hour lab. a week.
- 250. Appreciation of Music.** (2) I, II, S. 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) I, II, S. 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 rec. a week. Pr.: Spch. 275 or equiv.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 411. Workshop in School Music.** (1 to 3) S. Operetta and octavo music, unison to eight-part, sacred and secular, accompanied and unaccompanied; organization and rehearsal of choral groups. Pr.: Music 121 and senior standing.
- 415. Music Supervision.** (2) (See Educ. 470.) II, S. Organization, administration, and supervision of school music; materials, methods, organizations, public performances, and festivals. Pr.: Music 125.
- 425. Methods and Materials for the Studio.** (1) I, II. 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 rec. a week.
- 430. Practice Teaching in Applied Music.** (1) II. Practice teaching in private classes for students in Applied Music. Pr.: Music 425.
- 435. Techniques of the Marching Band.** (2) I. Band instrumentation; problems of the band on the field, the drum major. Pr.: Music 132, 247.
- 440. Advanced Conducting.** (2) S. Score reading, crosscueing, development of left-hand technique. Pr.: Music 222 and consent of instructor.
- 445. Ensemble.** (1) I, II, S. A graduate course in ensemble techniques and materials. Pr.: Consent of instructor.
- 455. Psychology of Music.** (3) S. 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. Pr.: Psych. 310.

- 465. Seminar in Music Education.** (3) I. Special phases of music education adapted to need of the student enrolled. Pr.: Music 121, 132.
- 475. Choral Problems.** Credit arranged. S. 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. Pr.: Senior standing.
- 515. Advanced Theory I.** (3) I and alt. S. Combination of harmony, counterpoint, and form as used in compositions in their historical setting. Pr.: Music 165, 180.
- 525. Advanced Theory II.** (3) II and alt. S. Modern chord structures, atonality, polytonality, form used in contemporary compositions. Pr.: Music 165, 180.
- 545. Organ Registration.** (2) I. Study of organ specifications and construction as they apply to the practice of the combination of tone. Four hours rec. a week. Pr.: Two semesters of organ or equiv. playing ability.
- 555. Service Playing.** (2) II. Problems in playing services in the various liturgical and non-liturgical churches. Four hours rec. a week. Pr.: Two semesters of organ or equiv. playing ability.
- 565. Advanced Instrumental Methods.** (2) II. Methods, repertoire, conducting, contest, interpretation, individual instruction, and ensembles. Pr.: Music 130, 135.
- 605. The Opera.** (2) I. Survey of the history of opera from 1600 to the present, with a detailed study of a number of the most important operas. Pr.: Music 195 or Gn. St. 132 or equiv.
- 615. Baroque Music: Bach and Handel.** (2) II. Study of the music of the Baroque period, c. 1600-1750, with emphasis on the music of Bach and Handel. Pr.: Music 165 and Gn. St. 260 or equiv.
- 625. The Symphony.** (2) S. History of the symphony from 1750 to the present, including a survey of pre-symphonic orchestral literature. Pr.: Senior standing.
- 635. Music in History.** (3) I, S. Historical developments of music; its relationship to architecture, painting, sculpture, fine arts; its relationship to political, economic, social, and religious life. Pr.: Senior standing.
- 645. Music Literature I.** (2) I, S. Style characteristics of music as revealed through a careful analysis of the music of different periods.
- 655. Music Literature II.** (2) II, S. Cont. of Music 645. Pr.: Music 645.
- 665. Pedagogy of Music Theory.** (2) S. 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. Pr.: Music 165.
- 675. Techniques and Materials of Instrumental Music.** (1) S. Pr.: Music 132 or consent of instructor.
- 680. Dance Band I.** (2) I, S. Historical and theoretical aspects of dance band playing; problems of organization, presentation, and supervision of high school dance bands; listening to and playing of all styles of dance band literature. Pr.: Junior standing or consent of instructor.
- 685. Dance Band II.** (2) II, S. Cont. of the study of styles; rehearsal techniques, orchestration, modern chordal structure, improvisation, selection of music and rhythmic training. Pr.: Junior standing or consent of instructor.
- 799. Problems in Music.** Credit arranged. I, II, S. Pr.: Background of courses needed for problem undertaken.

FOR GRADUATE CREDIT

- 999. Research in Music.** Credit arranged. I, II, S. Pr.: Registration in the Graduate School, with sufficient training to carry on the line of research undertaken.

COURSES IN APPLIED MUSIC**FOR UNDERGRADUATE CREDIT**

080. Piano Ensemble. (0) I, II. One hour rec. a week. Required of students enrolled in the music curriculums.

090. Recital Attendance. (0) I, II.

271. Laboratory Orchestra. (1) I, II.

274. Laboratory Choir. (1) I, II.

The following undergraduate courses in applied music offered each semester and summer carry from 0 to 4 credits with a maximum of 32 hours in any one applicable to a degree. The fees for these courses are listed following Music 900.

275. Piano

277. Organ

279. Voice

283. Violin

286. Viola

289. Violoncello

291. Double Bass

293. Flute

296. Oboe

298. Clarinet

301. Bassoon

303. Saxophone

306. French Horn

308. Trumpet

311. Trombone

313. Tuba

316. Percussion

320. Junior Recital. (1) II. A joint solo recital appearance. For students in Applied Music.

325. Senior Recital. (2) II. An individual solo recital appearance. For students in Applied Music.

330. Vocal Ensemble. (1) I, II, S. Two hours lab. a week. Elective for students of superior vocal talent.

335. Instrumental Ensemble. (1) I, II, S. Three hours lab. a week. Elective for selected students.

350. A Cappella Choir. (1) I, II. Membership by tryouts; open to all students.

360. College Chorus. (1) I, II. Membership by tryouts; open to all students.

365. Kansas State Singers. (1) I, II. Membership by tryouts; open to all students.

370. Orchestra. (1) I, II. Membership by tryouts; open to all students.

375. Band. (1) I, II. Membership by tryouts; open to all students.

FOR GRADUATE CREDIT

900. Applied Music. Credit arranged. I, II, S. Consent of instructor.

FEES IN MUSIC**Enrolled College Students**

Voice, Piano, Organ, Violin, Violoncello, and all other instruments:

Two thirty-minute lessons each week for a semester including two hours practice room daily—\$35.

One thirty-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 thirty-minute lessons each week for a semester—\$42.

One thirty-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 making 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 Ph. Ed. 010 or 055.

For a major, a student should enroll in one of the curriculums in Physical Education. (See page 107.) For a minor, a student should enroll in the following courses: Ph. Ed. 105, 115,* 121, 130, 136, 155, 165, 175, Sports elective, four hours chosen from 190, 195, 200, 205.

COURSES IN PHYSICAL EDUCATION FOR MEN

FOR UNDERGRADUATE CREDIT

- 010. Physical Education M.** (0) I, II, S. Activities offered: Athletic sports, apparatus work, boxing, calisthenics, individual physical education, swimming, tumbling and wrestling.
- 105. Introduction to Physical Education.** (1) I. Introductory survey of the field and study of the principles of health and physical education.
- 110. History of Physical Education.** (2) I. Pr.: Ph. Ed. 105.
- 115. Physical Education Activities I.** (2) I. Practice and teaching methods of soccer, volleyball, gymnasium games; boxing and wrestling. Six hours lab. a week.
- 121. Physical Education Activities II.** (1) II. Theory and practice of calisthenics, the gymnastic lesson, and tumbling. Three hours lab. a week.
- 126. Physical Education Activities III.** (1) I. Graded exercises on gymnasium apparatus, rhythms, and pyramids. Three hours lab. a week.
- 130. Nature and Function of Play.** (2) I. Theoretical explanations of play; age and sex characteristics which influence play; values of play to individual and community. Pr.: Psych. 310.
- 155. Athletic Injuries and First Aid.** (3) II, S. 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. Pr.: Zool. 210.
- 160. Health Examinations.** (3) I. Methods of giving health examinations; postural deviations; corrective exercise. Pr.: Ph. Ed. 130.
- 165. Public School Program in Physical Education.** (2) II. Educational, health, and recreative significance and content of the school program; types of activities to be used in grades and high school. Pr.: Senior standing.
- 170. Practice Teaching in Physical Education.** (2) II. Supervised students assist in physical education class and officiate in intramural games. Six hours lab. a week.
- 185. Swimming M.** (1) II, S. Theory and practice of various swimming strokes, diving, treading water, and floating. Methods of teaching swimming. Three hours lab. a week. Pr.: One semester of swimming or passing Red Cross intermediate swimmer's test.

* Option on Ph. Ed. 115 and 126.

- 190. Technics of Football.** (2) II. Study of rules, theory, and practice; methods of coaching.
- 195. Technics of Basketball.** (2) I. Study of rules, theory, and practice; methods of coaching.
- 200. Technics of Baseball.** (2) I. Study of rules, theory, and practice; methods of coaching.
- 205. Technics of Track and Field.** (2) II. Study of rules, theory, and practice; methods of coaching.
- 210. Tennis and Golf.** (1) II. Study of rules, theory, and practice, methods of coaching.
- 215. Sports Officiating.** (1) I. Principles and practices of officiating athletic games.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 425. Community Recreation.** (2) II, S. A study of organization and activities of club work for youth, camping, playgrounds, and indoor recreation centers. Pr.: Ph. Ed. 130, Psych. 310.
- 445. Physiology of Exercise.** (2) II, S. Effects of exercise on the tissues, systems, and organs of the body. Pr.: Zool. 465.
- 465. Tests and Measurements in Physical Education.** (3) I, S. A study of capacity, achievement, knowledge, and skill tests, for purposes of classification and measurement of school progress. Pr.: Educ. 405.
- 485. Curriculum Construction in Physical Education.** (2) II, S. A study of materials, problems, and guiding principles involved in curriculum construction. Pr.: Ph. Ed. 165 or equiv.
- 505. Administration of Physical Education in Colleges and Universities.** (2) I, S.
- 525. Advanced Methods of Teaching Physical Education.** (2) II, S. Pr.: Ph. Ed. 105 or equiv.
- 545. Seminar in Physical Education.** Credit arranged. Recent trends and problems in physical education. Pr.: Senior standing and consent of instructor.
- 565. Seminar in Health Education.** Credit arranged. Recent trends and problems in health education. Pr.: Ph. Ed. 150 and consent of instructor.

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) Required. I, II, S. 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) I, II. Required of women enrolled in the Curriculum in Physical Education for Women. Orientation and general survey of health, physical education, and recreation.
- 250. Physical Education Orientation.** (1) II. Self-testing activities and motor ability tests to determine exemption from courses in soccer, speedball, softball, volleyball, basketball, swimming and tennis. For freshman women majors in Physical Education. Three hours lab. a week.
- 260. Life Saving and Water Safety Instruction.** (1) I, II. Methods of teaching swimming and life saving. Upon satisfactory completion of this course a certificate is awarded by the American Red Cross as a senior life saver and a water-safety instructor. Three hours lab. a week. Pr.: Ph. Ed. 055, Advanced Swimming.

- 265. Recreational Leadership W.** (2) II. Principles and methods of organizing communities for leisure activities.
- 270. Tumbling and Recreational Sports.** (2) I. Theory and practice of tumbling and recreational sports. One hour rec. and three hours lab. a week.
- 280. Playground Activities.** (3) I, II, S. 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 rec. and three hours lab. a week. Pr.: Sophomore standing.
- 285. Individual Activities.** (2) II. Methods of teaching tennis, badminton, and archery. One hour rec. and three hours lab. a week. Pr.: Ability to play tennis.
- 295. Team Sports I.** (2) I. Methods of teaching softball, hockey, and volleyball. One hour rec. and three hours lab. a week. Pr.: Ability to play softball, volleyball, and hockey.
- 300. Team Sports II.** (2) I. Methods of teaching soccer, speedball, and basketball. One hour rec. and three hours lab. a week. Pr.: Ability to play soccer or speedball and basketball.
- 305. Health Examinations and First Aid.** (3) I. Methods of giving health examinations, analysis of normal body mechanics, postural deviations; first aid emergency treatment. Two hours rec. and three hours lab. a week. Pr.: Zool. 210, 465, junior standing, or consent of instructor.
- 315. Therapeutics and Massage.** (3) II. 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 rec. and three hours lab. a week. Pr.: Ph. Ed. 290, 305, Zool. 210.
- 320. Folk, Tap, and Social Dance.** (2) II. Methods of teaching folk, tap, and social dance to all age levels. Six hours lab. a week. Pr.: Ph. Ed. 275 and one semester of Ph. Ed. 055 in folk, tap, and social dance.
- 325. Methods and Materials of Modern Dance.** (2) I. History of the dance; methods of teaching modern dance. One hour rec. and three hours lab. a week. Pr.: Semester each of beginning and intermediate modern dance.
- 330. Teaching and Adaptation of Physical Education.** (3) I. Organization of physical education material for progressive program in elementary, junior and senior high schools; teaching methods to achieve desired aims of education. Pr.: Ph. Ed. 270, 280, 285, 295, 300, 320.
- 340. Swimming.** (2) II. Methods of teaching swimming. One hour rec. and three hours lab. a week. Pr.: Semester each of beginning and intermediate swimming.
- 345. Dance Composition.** (1) I, II. Advanced modern dance technique, composition and accompaniment. Participation in one studio production. Three hours lab. a week. Pr.: Ph. Ed. 055, one semester of modern dance, or consent of instructor. May not be taken more than four semesters for credit.
- 355. Principles and Philosophy of Physical Education.** (3) I. Aims and objectives, historical development, relation to general education, and analysis of programs and methods of physical education. Pr.: Junior standing.
- 365. Health and Safety Education W.** (2) S. 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) I, II, S.

- 150. Administration of Health and Physical Education.** (3) I. Pr.: Junior standing.
- 175. Teaching Health.** (2) II. Materials and methods of teaching health in the junior and senior high school. Pr.: Ph. Ed. 136, Zool. 210, 465.
- 220. Methods in Physical Education in Elementary Schools.** (2) S. Methods of teaching and organization of material for a progressive elementary school program.
- 275. Fundamentals of Rhythms.** (2) II. Body rhythm, fundamentals of music, percussion accompaniment for rhythmic activities and traditional dance rhythms. Four hours lab. a week.
- 290. Kinesiology.** (2) II. Mechanics of movement; body movements analyzed and principles involved applied to the teaching of physical education. Pr.: Zool. 210.
- 350. First Aid** (2) I, II, S. 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 Physical Education.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 799. Problems in Physical Education.** Credit arranged. Pr.: Background of courses needed for problem undertaken.

FOR GRADUATE CREDIT

- 820. Supervision of Physical Education.** (2) II, S. A study of the objectives, organization, and methods of supervision for elementary and secondary schools. Pr.: Educ. 150, Ph. Ed. 150.
- 840. Administration of School Health Education Program.** (2) I, S. A study of the organization and administration of health service, health instruction, and health environment for primary and secondary schools; health councils. Pr.: Ph. Ed. 175.
- 860. Advanced Athletic Coaching.** (3) S. 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. Pr.: Graduate standing and one year of coaching experience.
- 999. Research in Physical Education.** Credit arranged. Pr.: Sufficient training to carry on the line of research undertaken.

PHYSICS

STUART E. WHITCOMB, *Head of Department*

Courses offered in the Department of Physics are designed for students whose major interest is in other areas of knowledge and students whose major interest lies in the field of physics.

For a minor in physics 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. The latter courses should be chosen according to the student's interest and major field.

If the student's vocational aim is to enter an industrial or governmental research or development laboratory in the field of physics or to pursue graduate study in physics he should enroll in the Curriculum in Physics. (See page 111.)

If a student plans to combine physics with business, engineering, agriculture, biology or some other science he should enroll in the Curriculum in Physical Science. (See page 110.) The student who has completed these requirements is prepared for graduate work in physics.

If a student plans to teach physics in high school he should enroll in the

Curriculum in Secondary Education (See page 101) with a major in physics. This course provides sufficient training that the student who completes the requirements is prepared for graduate work in physics and has met certification requirements to teach biology, chemistry, general science, mathematics, and physics in high school.

- 110. General Physics I.** (4) I, II, S. Mechanics, heat, and sound. Three hours rec. and three hours lab. a week. Pr.: Math. 190.
- 120. General Physics II.** (4) I, II, S. Magnetism, electricity, and light. Three hours rec. and three hours lab. a week. Pr.: Phys. 110.
- 130. Engineering Physics I.** (5) I, II, S. Mechanics, heat, and sound for technical students. Four hours rec. and three hours lab. a week. Pr.: Math. 215 or conc. registration.
- 140. Engineering Physics II.** (5) I, II, S. Magnetism, electricity, and light for technical students. Four hours rec. and three hours lab. a week. Pr.: Phys. 130, Math. 230, or conc. registration.
- 210. Household Physics.** (4) I, II, S. Physical laws and principles involved in household appliances. Three hours rec. and three hours lab. a week.
- 220. Descriptive Physics.** (3) I, II. Two hours rec. and three hours lab. a week.
- 230. Agricultural Physics.** (3) I, II, S. Fundamental principles related to agriculture. Required of students in agriculture who have no high school physics. Two hours rec. and three hours lab. a week.
- 240. Physics for Musicians.** (2) I, II. Selected topics applied to the physics of music and musical instruments.
- 350. Descriptive Astronomy.** (3) I, II.
- 360. Introductory Meteorology.** (3) I, II. Weather phenomena and principles of forecasting; climatic factors; relation of weather studies to agriculture, general science, and physiography.
- 370. Photography.** (2) I, II, S. Chemical and physical principles involved in photography; practice in making good negatives and prints. One hour rec. and three hours lab. a week.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 405. Demonstration Experiments in Physics.** (2). Apparatus and demonstration methods in teaching physics. One hour rec. and three hours lab. a week. Pr.: Phys. 120 or 140.
- 410. Light.** (3) I. Pr.: Math. 245 or 290, Phys. 120 or 140.
- 420. Light Laboratory.** (1). Pr.: Phys. 410 or conc. enrollment.
- 432. Mechanics I.** (3) I. Principles of statics and dynamics of particles and rigid bodies by the methods of the calculus. Pr.: Math. 245 or 290, Phys. 120 or 140.
- 434. Mechanics II.** (2) II. Cont. of Phys. 432. Pr.: Phys. 432.
- 440. Sound.** (3) Pr.: Math. 245 or 290, Phys. 120 or 140.
- 450. Heat and Thermodynamics.** (3) II and alt. S. Pr.: Math. 245 or 290, Phys. 120 or 140.
- 460. Heat Laboratory.** (1) Pr.: Phys. 450 or conc. enrollment.
- 471. Electricity and Magnetism.** (4) II, S. Principles of electricity and magnetism by the methods of the calculus. Pr.: Math. 245 or 290, Phys. 120 or 140.
- 480. Electricity and Magnetism Laboratory.** (1) Pr.: Phys. 471 or conc. enrollment.
- 520. Electronic Physics I.** (3) I. Pr.: Math. 245 or 290, Phys. 471, 480.
- 522. Electronic Physics Laboratory.** (1) Pr.: Phys. 520 or conc. registration.

- 530. Electronic Physics II.** (3) Pr.: Phys. 520.
- 545. Advanced Electronic Physics Laboratory.** (1) Pr.: Phys. 520, 522.
- 560. Atomic Physics.** (3) I. Contemporary theories and problems. Pr.: Math. 245 or 290, Phys. 120 or 140.
- 575. Nuclear Physics.** (3) II. Modern theories of nuclear physics. Pr.: Phys. 560 or consent of instructor.
- 591. Modern Physics Laboratory I.** (1) I. Selected experiments in atomic and nuclear physics designed to develop appropriate laboratory techniques and methods. Three hours lab. a week. Pr.: Phys. 560 or conc. registration.
- 593. Modern Physics Laboratory II.** (1) II. Cont. of Phys. 591. Three hours lab. a week. Pr.: Phys. 575 or conc. enrollment.
- 604. X-ray and Crystal Physics.** (3) Pr.: Phys. 471.
- 607. X-ray Laboratory.** (1) Three hours lab. a week. Pr.: Phys. 604 or conc. enrollment.
- 618. Geophysics I.** (3) I. Principles and methods of exploration geology by physical methods. Pr.: Phys. 120 or 140.
- 621. Geophysics II.** (3) II. An extension of Phys. 618 to include a quantitative treatment of geophysical principles. Pr.: Phys. 471 and 618.
- 625. Applied Spectroscopy.** (3) II. Spectrographic methods for detecting, qualitatively and quantitatively, chemical constituents of minerals, metals and biological specimens. Two hours rec. and three hours lab. a week.
- 635. Radioactive Tracer Techniques.** (3) On sufficient demand. (See Chem. 635.) Physics and chemistry of radioactive substances in fields of biological and physical science. Two hours rec. and three hours lab. a week. Taught in cooperation with the Department of Chemistry. Pr.: Consent of instructor.
- 740. Colloquium in Physics.** Required of graduate majors and undergraduate majors.
- 799. Topics in Physics.** Credit arranged. Work is offered in electricity, electronics, heat, light, mechanics, nuclear physics, sound and vibrations, spectroscopy, and X-ray. Pr.: Background of courses needed for topic undertaken.

FOR GRADUATE CREDIT

- 805. Theoretical Physics I.** (3) I. Pr.: Math. 600, 615, or conc. enrollment.
- 815. Theoretical Physics II.** (3) II. Pr.: Phys. 805, Math. 620, or conc. enrollment.
- 825. Advanced Dynamics.** (3) Pr.: Phys. 815.
- 835. Electrodynamics.** (3) Pr.: Phys. 815.
- 845. Thermodynamics.** (3) Pr.: Math. 600, 615, Phys. 450.
- 855. Statistical Mechanics.** (3) Pr.: Math. 600, 620, Phys. 450.
- 865. Quantum Mechanics I.** (3) I. Pr.: Phys. 805 or conc. enrollment.
- 875. Quantum Mechanics II.** (3) II. Pr.: Phys. 865.
- 885. Quantum Mechanics III.** (3) Pr.: Phys. 825, 875.
- 895. Atomic Spectra.** (3) I. Pr.: Math. 600, Phys. 560 or consent of instructor.
- 905. Molecular Spectra.** (3) II. Pr.: Phys. 895 or consent of instructor.
- 915. Advanced Molecular Spectra.** (3) Pr.: Phys. 905.
- 925. X-ray.** (3) Pr.: Math. 600, Phys. 604.
- 935. Theory of the Solid State.** (3) Pr.: Phys. 815.
- 945. Advanced Nuclear Physics.** (3) Pr.: Math. 620, Phys. 575, 865.

955. Mathematical Physics. (3) Pr.: Phys. 815.

999. Research in Physics. Credit arranged. Work is offered in electricity, electronics, light, nuclear physics, sound, spectroscopy, thermodynamics, theoretical physics, and X-ray. Pr.: Sufficient training to carry on the line of research undertaken.

PSYCHOLOGY

ARTHUR H. BRAYFIELD, *Head of Department*

Psychology is the study of human behavior and experience. Courses in psychology are designed to provide (1) a general cultural background for students who wish to develop understanding and skill in human relations; (2) pre-professional preparation for work in such fields as business and industrial personnel, human engineering, student personnel and counseling, applied social psychology, and clinical services; and (3) basic knowledge of psychological principles and methods as preparation for graduate study.

For a major, the following courses should be completed: Psych. 330, 600, 610, 611, 612, 720, 775, and nine hours of psychology in addition to Psych. 310. In addition, replace Gn. St. 150, 160, Ec. So. 120, and history elective by Zool. 110, 465, and H. G. P. 380. Math. 145 or 175 is recommended in place of Math. 125. No option is required. (See pages 113, 114.)

For a Psychology minor, the following courses should be completed: Psych. 310 and twelve additional hours of psychology.

Work for the major should be planned in consultation with a member of 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) I, II, S. The study of human behavior: methods, findings, principles.

325. General Applied Psychology. (2) II. Application of psychological methods, findings, and principles to human affairs; psychology in business and industry, government, education, law, medicine and everyday activities. Pr.: Psych. 310.

330. Quantitative Methods in Psychology. (3) I. Elementary experimental procedures and quantitative concepts. Pr.: Psych. 310.

335. Introduction to Student Personnel. (2) I, II. Maximum credit, (4). 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. Pr.: Psych. 310 and consent of instructor.

FOR UNDERGRADUATE AND GRADUATE CREDIT

405. Abnormal Psychology. (3) I, II, S. Behavioral and mental disorders; psychoses, psychoneuroses, and psychopathies; causes and methods of prevention and correction of therapy. Pr.: Psych. 310.

406. Mental Hygiene. (3) S. Problems of mental health and mental hygiene; positive guidance of everyday living to promote desirable personality traits and to facilitate personal and social adjustment. Pr.: Psych. 310.

415. Psychology of Childhood and Adolescence. (3) I, II, S. 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. Pr.: Psych. 310.

425. Psychology of Exceptional Children. (3) I, II, S. 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. Pr.: Psych. 415 or Educ. 100.
- 435. Social Psychology.** (3) I, II, S. Psychology of the interrelations between the individual and groups of people. Pr.: Psych. 310.
- 455. Psychology of Music.** (See Music 455.)
- 465. Psychology of Art.** (3) I, II, S. 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. Pr.: Psych. 310.
- 505. Psychology of Advertising and Selling.** (3) II. 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. Pr.: Psych. 310; junior standing.
- 515. Personnel Psychology.** (3) I, II, S. Psychological aspects of job analysis and evaluation, employee selection, training, and evaluation; problems in human relations including employee morale, supervision, communication, and employee counseling. Pr.: Psych. 310; junior standing.
- 525. Industrial Psychology.** (2) I. Conditions affecting worker efficiency; illumination, ventilation and heating, noise and distractions, work layout, hours, shifts, and rest periods; adaptation of machines and equipment to human capacities. Pr.: Psych. 310, junior standing.
- 530. Occupational Information.** (2) S. 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. Pr.: Junior standing.
- 535. Introduction to Clinical Psychology.** (3) II, S. Nature and scope of clinical psychology. Pr.: Psych. 310 and nine additional hours of psychology, education, or child development.
- 545. Introduction to Counseling.** (3) II, S. Clinical procedures applied to the diagnosis and treatment of educational, vocational, and personal problems. Pr.: Psych. 600 and nine additional hours of psychology, education, or child development.
- 600. Psychological Measurement.** (3) I, II, S. 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. Pr.: Psych. 310; statistics.
- 607. Individual Differences.** (2) I. 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. Pr.: Psych. 600.
- 610. Learning.** (3) I. Pr.: Psych. 330.
- 611. Perception.** (2) II. Pr.: Psych. 610.
- 612. Motivation.** (2) II. Pr.: Psych. 610.
- 638. Group Dynamics.** (3) I, S. 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. Pr.: Psych. 310 and nine additional hours in psychology or consent of instructor.
- 710. Vocational Psychology.** (3) I. Environmental and human factors in occupational adjustment; appraisal of vocational fitness. Pr.: Psych. 600.
- 720. Psychology of Personality.** (3) I. Nature, development, integration, measurement, and theories of personality, with consideration of biological and environmental factors. Pr.: Psych. 600, 611, 612.

- 736. Advanced Social Psychology.** (3) II. 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. Pr.: Psych. 310 and nine additional hours of psychology; consent of instructor.
- 740. Personality Theory.** (3) II. Contemporary personality theories. Pr.: Psych. 720 or consent of instructor.
- 750. Learning Theory.** (3) II. Contemporary learning theories. Psych. 611, 612, or consent of instructor.
- 760. Comparative Psychology.** (3) II. 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. Pr.: Psych. 611, 612, or consent of instructor.
- 775. History and Systems of Psychology.** (3) II. 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. Pr.: Psych. 611, 612.
- 786. Psychology Seminar.** Credit arranged. I, II, S. Pr.: Psych. 611, 612, or consent of instructor.
- 790. Topics in Psychology.** Credit arranged. I, II, S. Pr.: Psych. 611, 612, or consent of instructor.
- 799. Problems in Psychology.** Credit arranged. I, II, S. Pr.: Background of courses needed for problem undertaken; consent of instructor.

FOR GRADUATE CREDIT

- 815. Clinical Testing.** (3) I, S. Testing procedures in clinical practice, with emphasis upon assessment of intellectual status. Pr.: Psych. 600 or consent of instructor.
- 835. Personnel Practicum.** Credit arranged. I, II, S. Directed experience in the application of psychological principles and procedures to personnel work in business and industry or in colleges and universities. Pr.: Psych. 600 or consent of instructor.
- 845. Advanced Counseling.** (3) II, S. Current theories of counseling; case studies. Pr.: Psych. 545 or consent of instructor.
- 855. Counseling Practicum.** Credit arranged. I, II, S. Supervised field practice in the collection and preparation of clinical data; analysis of case reports. Participation in student counseling. Pr.: Psych. 845 or conc. registration; consent of instructor.
- 999. Research in Psychology.** Credit arranged. I, II, S. Pr.: Approval of department.

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 on any of these areas or a combination of areas. For the major in any area or combination the following speech 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. (See page 104.)

Demonstration of proficiency in oral communication is required of all majors prior to the completion of their work. This may be done by pass-

ing a special area proficiency examination or by work in a specially approved extracurricular activity in speech which has met the essential requirements of the examination. Applications for the examination and/or the approval of the extracurricular work must be made to the head of the department on the student's initiative.

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

- 100. Speech Seminar.** (0) I, II. Special topics and lectures for speech majors. Required of all majors each semester.
- 105. Oral Communication I.** (2) I, II, S. 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) I, II, S. Spch. 105 continued, with special attention to illustrative material. Pr.: Spch. 105.
- 135. Voice and Diction.** (2) I, II, S. Improvement of the voice by study of the speech mechanism, tone, quality, and enunciation by means of oral drill. Pr.: Spch. 105 or conc. enrollment.
- 155. Oral Reading.** (2) I, II, S. Attainment of some proficiency in the art of reading aloud. Pr.: Spch. 135.
- 165. Elements of Phonetics.** (2) II. 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.
- 416. Theory and Principles of Communicative Behavior.** (2) I, II. Study of bases of oral communication. Pr.: Spch. 105, consent of instructor.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 450. Teaching of Speech.** (3) II, S. Methods and techniques in the teaching of speech and direction of speech activities. Pr.: Spch. 105, eight additional hours in speech, and consent of instructor.
- 799. Problems in Speech.** Credit arranged. I, II, S. Prerequisites for this work are according to the area in which the problem falls. The following prerequisites apply to the areas noted:

General Speech and Speech Education: Spch. 135 or 155.

Theatre and Interpretation: Spch. 135 or 245.

Rhetoric and Public Address: Spch. 176 or 405.

Discussion and Conference: Spch. 436.

Speech Therapy: Spch. 455 or 465.

Radio and Television: Spch. 115 or 265.

FOR GRADUATE CREDIT

- 800. Introduction to Graduate Study in Speech.** (2) I, S. Methods of research and investigation in speech, nature of research in speech. Required of all graduate majors. Pr.: Graduate standing.
- 999. Research in Speech.** Credit arranged. I, II, S. Work is offered in all of the areas of speech. Pr.: Consent of instructor.

COURSES IN THEATRE AND INTERPRETATION

- 235. Dramatic Participation.** (1 or 2) I, II, S. Pr.: Junior standing.
- 245. Acting and Rehearsal I.** (2) I, S. Fundamentals of acting, using Kansas State Players productions as laboratory. One hour rec. and three hours lab. a week.
- 255. Elementary Stagecraft.** (2) I, II, S. Construction, function, and operation of scenery.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 452. Directing Dramatic Activities.** (2) II of alt. years and S. The organization and operation of extracurricular drama, interpretation, and dramatic reading activities in the high school and junior college. For teachers who will be producing high school plays, preparing contestants for the high school contests, and for other special events. Pr.: Spch. 105 and consent of instructor.
- 472. Storytelling.** (2) I, II. Oral interpretation of literature for children, with special emphasis on aspects of delivery. Pr.: Spch. 105.
- 475. Oral Interpretation of Shakespearean Plays.** (2) I, II. Oral interpretation of selected plays by Shakespeare, with attention to techniques for effective public reading presentation. Pr.: Spch. 105, 155.
- 480. Playwriting.** (3) II, S. Theoretical study and practical application of fundamentals of playwriting with regard to plot, characters, and production; adaptation of drama for the medium of television. Pr.: Junior standing and consent of instructor.
- 526. Oral Interpretation of Literature.** (3) I, II. Application of principles of oral reading to interpretation of prose, poetry, and drama. Pr.: Spch. 155 or consent of instructor.
- 530. Projects in Interpretation.** (1 to 3) I, II. Special work and projects for qualified students. A total of six semester hours may be taken. Pr.: Spch. 526 or consent of instructor.
- 535. Dramatic Production I.** (2) I, II, S. Theory of and practice in fundamentals of acting and direction. One hour rec. and three hours lab. a week. Pr.: Spch. 105 or consent of instructor.
- 555. Acting and Rehearsal II.** (2) II, S. Characterization, interpretation, voice, pantomime, and ensemble. One hour rec. and three hours lab. a week. Pr.: Spch. 245.
- 566. Scene Design.** (3) I, II, S. 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. Pr.: Spch. 255 or consent of instructor.
- 575. Stage Lighting.** (2) I, S. History, problems of application, design of lighting for various types of plays and styles of production. One hour rec. and three hours lab. a week.
- 586. Advanced Stagecraft.** (2) II. Advanced technical problems, including stage makeup, history of stage costumes, stage properties, and architectural requirements of the theatre. Pr.: Spch. 255.
- 600. Techniques of Makeup.** (2) I, S. Techniques of makeup for stage, movies, and television.
- 605. Development of the Theatre I.** (3) I and alt. S. History of the theatre from the beginning to the end of the nineteenth century.
- 615. Development of the Theatre II.** (3) II and alt. S. History of the theatre in America.

COURSES IN RHETORIC AND PUBLIC ADDRESS

FOR UNDERGRADUATE CREDIT

- 176. Argumentation and Debate.** (3) I, II. Basic theories of argumentation, with emphasis on their application in debate. Pr.: Spch. 105.

- 185. Intercollegiate Debate I.** (2) II. Open only to members of the intercollegiate debate squads. Pr.: Spch. 176.
- 195. Intercollegiate Debate II.** (2) II. Open only to members of the intercollegiate debate squads. Pr.: Spch. 176.
- 205. Parliamentary Law.** (1) I, II, S. Study and practical application of the rules of parliamentary procedure. Pr.: Spch. 105.
- 225. Oratorical Contest.** (2) I, II.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 405. Persuasion.** (3) I, II, S. Principles and practice in methods of oral persuasion in human relations. Pr.: Spch. 105.
- 425. Public Program.** (2) II, S. Planning, building, and presenting non-radio public programs. Pr.: Spch. 105.
- 440. History of American Public Address.** (3) II. Study of American speakers, from time of Jonathan Edwards to the present, including their training, speeches, and effectiveness. Pr.: Spch. 176, 405, or consent of instructor.
- 442. History of Rhetorical Theory.** (3) I and alt. S. History of the development of rhetorical theory from early Greek to modern times. Pr.: Spch. 105 and consent of instructor.
- 451. Directing Forensic Activities.** (2) II. The organization and operation of extracurricular debate and forensic programs in the high school and junior college. For teachers who will be coaching debate, extempore speaking, oratory, discussion, and other forensic events. Pr.: Spch. 105 and consent of instructor.
- 470. Business and Professional Speaking.** (2) I, II. Effective and oral reading for presentation of technical and other material to lay audiences and technical societies. Pr.: Junior standing, Spch. 105, and consent of instructor.
- 510. Rhetorical Criticism.** (2) II and alt. S. Problems in the theory and criticism of rhetorical works. Pr.: Spch. 442 and consent of instructor.

COURSES IN DISCUSSION AND CONFERENCE

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 436. Group Discussion Methods.** (3) I, II, S. Principles and techniques of discussion for committee, conferences, public discussions; human relations in education, and in business and professional life. Pr.: Spch. 105.
- 437. Discussion and Conference Leadership.** (2 or 3) II and alt. S. Principles and functions of leadership in discussion and conference activities. Pr.: Spch. 436 or consent of instructor.
- 438. Studies in Group Discussion Methods.** (2) II, alt. years, and alt. S. Problems in the theory and research in group discussion and leadership. Pr.: Psych. 638 and Spch. 437.

COURSES IN SPEECH THERAPY

FOR UNDERGRADUATE CREDIT

- 090. Remedial Instruction in Speech.** (0) I, II. 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) II, S. Types and etiology of speech problems and methods which the classroom teacher can employ. Pr.: Spch. 135 or consent of instructor.
- 465. Introduction to Speech Pathology.** (3) I. Types of speech problems and consideration of etiology in relation to these types. Pr.: Spch. 135, 165.

- 467. Anatomy and Physiology of Speech.** (3) II. Anatomy and physiology of the mechanisms of speech; the larynx, the chest and cardial areas, the nose and throat, and the mouth. Pr.: Spch. 105.
- 468. Speech Therapy I.** (3) II. Methods and materials employed in the treatment of articulation and voice problems; individual and group methods. Pr.: Spch. 455 or 465.
- 760. Clinical Practice.** (3) I, II, S. Supervised practice in clinical teaching, application of methods in diagnosis, and retraining of individuals having disorders of speech. Preparation and reporting of case histories, lesson plans, and progress reports. Pr.: Consent of instructor.

COURSES IN RADIO AND TELEVISION

FOR UNDERGRADUATE CREDIT

- 275. Survey of Broadcasting.** (2) I, II. Survey of radio industry; social importance of broadcasting.
- 285. Radio Speech I.** (2) I, II, S. Training in voice and diction for broadcasting. One hour rec. and three hours lab. a week. For radio majors and minors only.
- 295. Radio Continuity.** (3) I, II. Preparation of introduction to musical shows, talks, programs, and news rewriting. Pr.: Spch. 285.
- 311. KSDB-FM Participation.** (1) I, II, S. Three hours lab. a week.
- 315. Station Production and Announcing.** (2) I, II. Practical experience as announcers, control operators, and other positions in radio stations. Pr.: Admission after satisfactory audition.
- 325. Station Traffic, Music, and Continuity.** (2) I. Practical experience writing commercial continuity, servicing accounts, handling radio traffic, and operating a music library. Six hours lab. a week. Pr.: Spch. 295.
- 326. Introduction to Television.** (2) I, II. Growth and expansion of television; its impact on society and its relation to other media of communications; economic and sociological implications.
- 345. Sports Broadcastng.** (2) I, II. 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 rec. and lab. a week. Pr.: Spch. 285 or consent of instructor.
- 366. Radio and Television Production I.** (3) I. Production and direction of individual programs in radio and television. Two hours rec. and four hours lab. a week. Pr.: Spch. 295, 315, 326.
- 385. Radio Talk.** (2) I, II. Training in writing informative and persuasive material; practical delivery of radio talks. For students not majors or minors in radio. Four hours rec. and lab. a week. Pr.: Spch. 105.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 660. Radio and Television Production II.** (3) II. Cont. of Spch. 366, with emphasis on T. V. production. Pr.: Spch. 366 or consent of instructor.
- 670. Radio and Television Programming.** (3) I. Planning and development of radio and television programs and schedules. Pr.: Spch. 285, 295, 326.
- 672. Radio and Television Dramatic Techniques.** (3) I, II, S. Use of dramatic principles of radio and television. Five hours rec. and lab. a week. Pr.: Spch. 105.
- 675. Radio and Television Advertising.** (3) II. Principles and practice in radio advertising. Pr.: For students in Technical Journalism, Journ. 255; for other students, Spch. 295.
- 685. Radio-Television Writing I.** (3) I. Preparation of dramatized programs. Pr.: Spch. 295.
- 695. Radio-Television Writing II.** (3) II and alt. years. Cont. of Spch. 685. Pr.: Spch. 685 or consent of instructor.

- 705. Radio Speech II.** (2) II. 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. Pr.: Spch. 285 and junior standing.
- 726. Radio-Television Station Management.** (3) II. Radio-television station management problems and methods; programs, news, promotions, sales, engineering, continuity, traffic, accounting, and legal requirements. Pr.: Spch. 325, 366, 670, or consent of instructor.
- 745. Broadcasting of Women's Programs.** (3) II. Writing, production, and criticism of radio programs presented by women and prepared for an audience of women and/or children. Two hours rec. and four hours lab. a week. Pr.: Spch. 295, 315, or consent of instructor.
- 750. Radio-Television Audience.** (3) II, S. Listening and viewing habits, preferences and attitudes. Pr.: Jr. standing and consent of instructor.

STUDENT HEALTH

BENJAMIN W. LAFENE, *Head of Department*

FOR UNDERGRADUATE CREDIT

- 110. Preventive Medicine and Public Health.** (2) I, II. Communicable diseases and their control; factors involved in healthful living. Pr.: Sophomore standing.

TECHNICAL JOURNALISM

RALPH R. LASHBROOK, *Head of Department*

For a major, the student should enroll in Technical Journalism. (See page 115.)

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.** (0) Required. I, II. Addresses by practicing newspaper workers and members of the department. Required of all students in Technical Journalism. Pr.: "C" average or better in all journalism credit hours taken in residence.
- 105. Graphic Arts Survey.** (2) I, II. History and art of printing; typography of advertisements and headline display; principles of effective makeup. Pr.: Sophomore standing and conc. enrollment in Journ. 115.
- 115. Typography Laboratory.** (1) I, II. Typesetting, proofreading, correction of forms as a background for journalism. Three hours lab. a week. Pr.: Sophomore standing and conc. enrollment in Journ. 105.
- 220. Reporting I.** (2) I, II. Introduction to the field of journalism; news gathering and writing. Pr.: Sophomore standing and ability to type thirty words a minute.
- 221. Reporting Laboratory.** (1) I, II.
- 225. Reporting II.** (3) I, II. Two hours rec. and six hours reportorial work on the *Kansas State Collegian* a week. Pr.: Journ. 220.
- 255. Principles of Advertising.** (3) I, II. Study of goods to be advertised, analysis of the market, psychology of advertising, preparation of advertising copy. Pr.: Junior standing.
- 260. Advertising Copy and Layout.** (3) II. The writing of effective copy, testing the pulling power of ads, and the principles covering preparation of copy and layout are stressed. A study is made of current advertising.

- 265. Editing.** (2) I, II. Six hours lab. a week. Pr.: Journ. 225.
- 275. News Photography.** (2) I, II, S. Planning and taking news and feature pictures, writing and editing captions. Open to students in Agricultural Journalism and Technical Journalism. Pr.: Journ. 225.
- 290. Royal Purple.** (1) I, II. Writing copy, preparing layouts, editing, advertising, and business practices on the yearbook. Under supervision of an instructor. Three hours lab. a week. Pr.: Consent of instructor.
- 295. Kansas State Collegian.** (1) I, II, S. Gathering and writing of news, or advertising practice, on student publications, under the supervision of an instructor. Three hours lab. a week. Pr.: Consent of instructor.
- 305. Agricultural Journalism.** (3) I, II, S. Survey of agricultural information techniques, with emphasis on principles of news and feature writing.
- 315. Radio and Television News.** (2) II. Processing and broadcasting of radio news. Pr.: Journ. 215. For non-journalism students, Spch. 295.
- 325. Broadcasting Station Practice.** (1) I, II, S. News gathering, writing, and broadcasting over Radio Station KSAC. Three hours lab. a week. Pr.: Journ. 315.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 405. Reporting III.** (3) I. Reporting news of local, state, and national affairs. Two hours rec. and three hours lab. a week. Pr.: Journ. 225, H. G. P. 690, or consent of instructor.
- 410. Home Economics Journalism.** (3) II. 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. Pr.: Engl. 135 and sr. standing.
- 425. History of Journalism.** (3) I. Pr.: Junior standing and H. G. P. 175, 190, or consent of instructor.
- 445. The Home Page.** (3) I, II, S. Writing and editing materials for a woman's page in a local newspaper, supervision of photography for that page. Pr.: For students in Technical Journalism, Journ. 265; for other students, Journ. 220 and consent of instructor.
- 450. Rural Press.** (2) I. Community newspapers; emphasis on presentation of agriculture and rural life. Pr.: Journ. 220 or 305.
- 465. Magazine Article Writing.** (2) I, S. Study of technical, trade, and general publications; writing for general magazines, agricultural and business publications, and women's departments. Pr.: For students in Technical Journalism, senior standing or consent of instructor; for students in Home Economics and Journalism, Journ. 445; for other students, consent of instructor.
- 485. Interpretation of Contemporary Affairs.** (3) II. Critical questions regarding recent developments in state, national, and international affairs; editorials and interpretative articles which document and analyze the news; introduction to research in public affairs. Pr.: For students in Technical Journalism, Journ. 650; or consent of instructor.
- 505. Formation of Public Opinion.** (3) II, alt. years. Role of the press and communication agencies in formation of public opinion, work of propagandists and pressure groups. Pr.: Junior standing and consent of instructor; for graduate credit, eight hours of social science.
- 510. Public Information Methods.** (2) I. Pr.: Journ. 225.
- 515. Public Relations.** (3) II. Media, methods, principles, and practices of public relations. Pr.: Junior standing or consent of instructor.
- 580. Industrial Editing.** (3) II. A study of the publications that represent business, industry, and other institutions, with especial reference to their public relations function; the development of skills in interpretative writing, editing, pictorial journalism, layout, typography, and production techniques. One hour lec. and six hours lab. a week. Pr.:

Journ. 265, adequate background in business and journalism, and consent of instructor.

605. Readings in Journalism. (2) I, II. Investigation of the literature of journalism. Pr.: Junior standing and consent of instructor.

625. Yearbook Editing and Management. (2) I. Planning, editing, layout, financing, and management of a yearbook, with special emphasis on the problems of *The Royal Purple*. One hour lec. and three hours lab. a week. Pr.: Journ. 225 and junior standing.

646. Workshop in School Publications. (3) S of odd years. Supervision of high school yearbooks and newspapers. The workshops are offered consecutively, and either or both may be taken. Pr.: Graduate standing or consent of instructor.

650. The Journalist in a Free Society. (3) I.

665. Newspaper Management. (2) II, alt. years. Relations of departments of a newspaper to one another; costs, statistics, advertising, news, and business methods in publishing. Pr.: Journ. 255.

685. Advertising Salesmanship. (2) I. Application of principles of space selling and layout to specific lines of business by work with advertising clients of a newspaper. Pr.: Jr. standing and consent of instructor.

799. Problems in Technical Journalism. Credit arranged. I, II, S. Pr.: Background of courses needed for problems undertaken.

FOR GRADUATE CREDIT

999. Research in Technical Journalism. Credit arranged. I, II, S. Pr.: Sufficient training to carry on the line of research undertaken.

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. (See page 94.)

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) I, II, S. Three hours rec. and six hours lab. a week.

210. Human Anatomy. (5) I, S. General anatomy studies by means of dissectible models, skeletons, and charts. Three hours rec. and six hours lab. a week. Pr.: Zool. 110.

240. Human Anatomy and Physiology. (5) S. For students in Home Economics and Nursing. Three hours rec. and six hours lab. a week. Pr.: Zool. 110.

405. Comparative Anatomy of Vertebrates. (4) II. Two hours rec. and six hours lab. a week. Pr.: Zool. 110.

420. Embryology. (4) I, II, S. Developmental anatomy and physiology of reproduction of domestic birds and mammals. Three hours rec. and three hours lab. a week. Pr.: Zool. 110.

436. Advanced Embryology. (3) II. Principles of embryology as determined by comparative and experimental methods. One hour lec. and six hours lab. a week. Pr.: Zool. 420. Offered 1956-'57 and alternate years, alternating with Zool. 451.

- 451. Cytology.** (3) I. Structure and physiology of cells, with an introduction to modern methods of studying cells. One hour lec. and six hours lab. a week. Pr.: Zool. 110 and one of Zool. 420, 465, or 635. Offered 1955-'56 and alternate years, alternating with Zool. 436.
- 465. Human Physiology.** (4) I, II, S. Functions of various organ systems of the body. Three hours rec. and three hours lab. a week. Pr.: Zool. 110 or equiv.
- 470. Physiology of the Sense Organs.** (2) I. 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 rec. and two hours lab. a week. Pr.: Zool. 465.
- 480. General Physiology.** (3) II. A study of the nature and mechanism of living matter. Two hours rec. and three hours lab. a week. Pr.: Chem. 330, Zool. 110.
- 495. Endocrinology.** (3) I, S. Pr.: Zool. 110 and consent of instructor.
- 510. Animal Parasitology.** (3) I. Biology, pathology, and prophylaxis of the principal external and internal parasites of the domestic animals. Two hours rec. and three hours lab. a week. Pr.: Zool. 110.
- 525. Human Parasitology Recitation.** (3) II. Pr.: Zool. 110 or equiv.
- 540. Human Parasitology Laboratory.** (1) II. Three hours lab. a week. Pr.: Zool. 525.
- 555. Taxonomy of Parasites.** (2) II. One hour rec. and three hours lab. a week. Pr.: Zool. 510 or 540 and consent of instructor.
- 570. Protozoology.** (3) II. Taxonomy, morphology, and biology of the free-living and parasitic protozoa. Two hours rec. and three hours lab. a week. Pr.: Zool. 110.
- 585. Invertebrate Zoology.** (3) I. Essentials of structure, function, and classification of the invertebrates. One hour rec. and six hours lab. a week. Pr.: Zool. 110. (See also course number 589, Special Topics in Invertebrate Zoology.)
- 589. Special Topics in Invertebrate Zoology.** (1) I. Special phases of development, embryology, phylogeny, and historical perspectives in classification of invertebrates. To be elected only concurrently with Zool. 585.
- 605. Invertebrate Ecology.** (3) II. Environmental factors in relation to the establishment of invertebrate animal populations. Pr.: Gl. Gg. 455 or Zool. 585 and consent of instructor.
- 620. Heredity and Eugenics.** (2) I. Human inheritance and the interactions of nature and heredity. Pr.: Zool. 110 or equiv.
- 635. Zoological Technic.** (1 or 2) I, II, S. Methods and processes in preparation of microscopical slides; principles of photomicrography. Pr.: Zool. 110.
- 650. Field Zoology.** (2 or 3) II. Habitat, distribution, and relationship of animals. One hour rec. and three hours lab. a week or one hour rec. and six hours lab. a week. Pr.: Zool. 110 or equiv.
- 665. Bird Study.** (3) II or (2) S. Lecture, laboratory, and field studies in identification and adaptations of birds. Two hours rec. and three hours lab. a week the second semester or one hour rec. and three hours lab. a week in summer school. Pr.: Zool. 110 or equiv.
- 675. Mammalogy.** (3) I. Classification, distribution, and natural history of mammals; collecting of specimens and preparation of study skins. Two hours rec. and three hours lab. a week. Pr.: Zool. 110.
- 680. Wildlife Conservation.** (3) I, S. Methods and techniques in the management and propagation of wildlife. Pr.: Zool. 110 or equiv.
- 685. Wildlife Management Techniques.** (3) I. Ecology and management of game birds and mammals, including field studies of research and management techniques. Two hours rec. and three hours lab. a week. Pr.: Zool. 110.

- 690. Fisheries Management.** (5) II. 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 rec. and six hours lab. a week. Pr.: Zool. 110.
- 695. Social Behavior in Vertebrates.** (2) II or S. Animal behavior from the viewpoint of social dominance and group organization; contributions of social behavior in the classes of vertebrates. Pr.: Zool. 110, or equiv., and junior standing.
- 795. Zoology and Entomology Seminar.** (1) I, II. Pr.: Consent of department head.
- 799. Problems in Zoology.** Credit arranged. I, II, S. Work is offered in animal behavior, bird study, cytology and embryology, ecology, endocrinology, histology, parasitology, physiology, protozoology, wildlife conservation, and zoological technic. Pr.: Background of courses needed for problem undertaken and consent of head of the department.

FOR GRADUATE CREDIT

- 999. Research in Zoology.** Credit arranged. I, II, S. Work is offered in animal behavior, bird study, cytology, and embryology, ecology, endocrinology, histology, parasitology, physiology, protozoology, and wildlife conservation. Pr.: Sufficient training to carry on the line of research undertaken and consent of department head.

(For Genetics Seminar, see A. H. 426.)

The School of Engineering and Architecture

MERRILL AUGUSTUS DURLAND, *Dean*

RICHARD CARTER POTTER, *Associate 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 preparation 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 (Page 187)

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 (Page 188)

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 (Page 189)

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 (Page 190)

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 (Page 191)

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 (Page 192)

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 (Page 194)

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 (Page 195)

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 (Page 196)

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 activity 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 especially to 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 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 (Page 198)

The Curriculum in Mechanical Engineering is designed to prepare students for research, design, production, operation, and sales positions in industries that provide 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 (Page 200)

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 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. & Calc. I ..	4
Math.	190	Plane Trigonometry	3	Engl.	135	Written Comm. II	2
Engl.	125	Written Comm. I	3	M. E.	215	Desc. Geometry	2
M. E.	210	Engg. Drawing	2	I. E.	125	Shop A	2
I. E.	180	Welding	1	Speh.	105	Oral Comm. I	2
		Air or Military Science ..	1			Air or Military Science ..	1
G. E.	110	Engg. Lectures	0	G. E.	110	Engg. Lectures	0
Ph. Ed.	010	Physical Education	0	Ph. Ed.	010	Physical Education	0
Total			17	Total			17

SOPHOMORE

Math.	230	Anal. Geom. & Calc. II	4	Math.	245	Anal. Geom. & Calc. III	4
Phys.	130	Engg. Physics I	5	Phys.	140	Engg. Physics II	5
M. E.	220	Mach. Drawing I	2	Ag. E.	130	Agricultural Machinery ..	3
I. E.	175	Metals and Alloys	2	C. E.	120	Surveying I	2
Gn. St.	150	Biology I	4	Gn. St.	160	Biology II	4
		Air or Military Science ..	1			Air or Military Science ..	1
G. E.	115	Engg. Assembly	0	G. E.	115	Engg. Assembly	0
Ph. Ed.	010	Physical Education	0	Ph. Ed.	010	Physical Education	0
Total			18	Total			19

JUNIOR

Ap. M.	405	Applied Mechanics	4	Ap. M.	410	Mech. of Mtls. I Rec. ..	4
M. E.	411	Engg. Thermodynamics I	4	Ap. M.	418	Mech. of Mtls. Lab.	1
Ag. E.	435	Des. of Farm Mach.	4	Ap. M.	470	Fluid Mechanics A	4
Ec. So.	110	Economics I	3	Ag. E.	446	Tractors	4
Gl. Gg.	110	General Geology	3	Agron.	106	Farm Crops	4
G. E.	115	Engg. Assembly	0	Engl.	435	Technical Reports	1
Engl.	090	English Proficiency	0	G. E.	115	Engg. Assembly	0
Total			18	Total			18

SENIOR

Ag. E.	465	Farm Structures	4	Ag. E.	500	Rural Electrification	4
Agron.	149	Soils	4	Ag. E.	480	Soil and Water Conserv.	4
Ag. E.	475	Ag. Hydrology	3	E. E.	120	Elec. Engg. C Rec.	2
Ag. Ec.	206	Farm Organization	3	E. E.	124	Elec. Engg. C Lab.	1
G. E.	115	Engg. Assembly	0	M. E.	690	Patents and Inventions ..	2
Ag. E.	200	Inspection Trip	0	G. E.	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. & Calc. I	4
Math.	190	Plane Trigonometry	3	Engl.	135	Written Comm. II	2
Engl.	125	Written Comm. I	3	Spch.	105	Oral Comm. I	2
M. E.	210	Engg. Drawing	2	M. E.	215	Desc. Geometry	2
		Air or Military Science ..	1	Arch.	120	Freehand Drawing I	2
Ph. Ed.		Physical Education	0			Air or Military Science ..	1
G. E.	110	Engg. Lectures	0	Ph. Ed.		Physical Education	0
				G. E.	110	Engg. Lectures	0
Total			16	Total			17

SOPHOMORE

Phys.	130	Engg. Physics I	5	Phys.	140	Engg. Physics II	5
Math.	230	Anal. Geom. & Calc. II ..	4	Math.	245	Anal. Geom. & Calc. III ..	4
Arch.	106	Shades and Shadows	1	Arch.	230	Elem. of Arch. I	4
Arch.	111	Perspective Drawing	1	Arch.	274	Hist. of Arch. II	2
Arch.	130	Pencil Sketching	2	Ap. M.	408	Statics	3
Arch.	270	Hist. of Arch. I	2			Air or Military Science ..	1
C. E.	120	Surveying I	2	Ph. Ed.		Physical Education	0
		Air or Military Science ..	1	G. E.	115	Engg. Assembly	0
Ph. Ed.		Physical Education	0				
G. E.	115	Engg. Assembly	0				
Total			18	Total			19

JUNIOR

Arch.	234	Elem. of Arch. II	4	Arch.	240	Arch. Design I	5
Arch.	278	Hist. of Arch. III	2	Arch.	280	Hist. of Arch. IV	2
Ec. So.	110	Economics I	3	Arch.	300	Bldg. Mtls. and Const.	3
Ap. M.	409	Dynamics	2	Arch.	310	Working Drawings	3
Ap. M.	410	Mech. of Mtls. I Rec.	4	C. E.	421	Stress Anal. I Rec.	3
Ap. M.	418	Mech. of Mtls. Lab.	1	E. E.	130	Illumination A	2
G. E.	115	Engg. Assembly	0	G. E.	115	Engg. Assembly	0
Engl.	090	English Proficiency	0				
		Elective*	2				
Total			18	Total			18

SENIOR

Gn. St.	150	Biology I	4	Gn. St.	160	Biology II	4
C. E.	424	Stress Anal. I Lab.	2	C. E.	470	Des. of Framed Struc.	3
C. E.	428	Stress Anal. II	3	C. E.	478	Reinf. Conc. Des. Rec.	2
C. E.	460	Foundations	2	C. E.	480	Reinf. Conc. Des. Lab.	2
Ap. M.	450	Soil Mechanics I	2	Arch.	305	Building Equipment	2
M. E.	130	Air Conditioning A	3	Arch.	340	Professional Practice	2
Arch.	390	Inspection Trip	0	G. E.	115	Engg. Assembly	0
G. E.	115	Engg. Assembly	0			Elective*	3
		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
M. E.	210	Engg. Drawing	2	M. E.	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
Spch.	105	Oral Comm. I	2	Ec. So.	110	Economics I	3
		Air or Military Science ..	1			Air or Military Science ..	1
Ph. Ed.		Physical Education	0	Ph. Ed.		Physical Education	0
G. E.	110	Engg. Lectures	0	G. E.	110	Engg. 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. M.	105	Applied Mechanics A	3
Phys.	110	General Physics I	4	Phys.	120	General Physics II	4
		Air or Military Science ..	1			Air or Military Science ..	1
Ph. Ed.		Physical Education	0	Ph. Ed.		Physical Education	0
G. E.	115	Engg. Assembly	0	G. E.	115	Engg. 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 Structures I ..	4
Arch.	310	Working Drawings	3	Arch.	170	Life Drawing I	2
Arch.	285	Hist. Paint. and Sculp. ..	3	E. E.	130	Illumination A	2
Ap. M.	120	Str. of Mtls. A Rec.	3	G. E.	115	Engg. Assembly	0
Ap. M.	124	Str. of Mtls. A Lab.	1			Elective*	3
G. E.	115	Engg. 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 Structures II ..	5	Arch.	328	Theory of Structures III ..	4
Arch.	174	Life Drawing II	2	M. E.	130	Air Conditioning A	3
Gn. St.	150	Biology I	4	Gn. St.	160	Biology II	4
G. E.	115	Engg. Assembly	0	G. E.	115	Engg. 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	G. E.	115	Engg. Assembly	0
Arch.	390	Inspection Trip	0			Elective*	7
G. E.	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			
		<i>Course</i>	<i>Sem. Hrs.</i>			<i>Course</i>	<i>Sem. Hrs.</i>
Chem.	210	Chemistry I	5	Ch. E.	201	Ch. E. Orientation	1
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. & Calc. I ...	4
M. E.	210	Engg. Drawing	2	Engl.	135	Written Comm. I	2
		Air or Military Science ..	1	Spch.	105	Oral Comm. I	2
Ph. Ed.	010	Physical Education	0	M. E.	215	Descrip. Geometry	2
G. E.	110	Engg. Lectures	0			Air or Military Science ..	1
				Ph. Ed.	010	Physical Education	0
				G. E.	110	Engg. Lectures	0
Total			17	Total			17

SOPHOMORE

Ch. E.	205	Ch. E. Materials	2	Ch. E.	211	Indust. Stoichiometry	4
Chem.	435	Quant. Analysis	4	Phys.	140	Engg. Physics II	5
Phys.	130	Engg. Physics I	5	Math.	245	Anal. Geom. & Calc. III ..	4
Math.	230	Anal. Geom. & Calc. II ..	4	M. E.	220	Mach. Drawing I	2
Ec. So.	110	Economics I	3			Air or Military Science ..	1
		Air or Military Science ..	1	Ph. Ed.	010	Physical Education	0
Ph. Ed.	010	Physical Education	0	G. E.	115	Engg. Assembly	0
G. E.	115	Engg. Assembly	0			Soc. Sc. Elective*	2
Total			19	Total			18

JUNIOR

Ch. E.	492	Ch. E. Thermo. I	3	Ch. E.	420	Unit. Op. I Rec.	3
Ch. E.	493	Ch. E. Measurements	1	Ch. E.	424	Unit Op. I 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
Ap. M.	405	Applied Mechanics	4	Ap. M.	410	Mech. of Mtls. I Rec.	4
G. E.	115	Engg. Assembly	0	G. E.	115	Engg. Assembly	0
Engl.	090	English Proficiency	0				
Total			18	Total			18

SENIOR

Ch. E.	428	Unit. Op. II Rec.	3	Ch. E.	440	Unit Process Lab.	2
Ch. E.	430	Unit. Op. II Lab.	1	Ch. E.	465	Ch. E. Design II	4
Ch. E.	461	Ch. E. Design I	3	Ch. E.	501	Industrial Reaction Rates ..	1
Ch. E.	495	Ch. E. Thermo. II	4	E. E.	470	Indust. Electronics Rec. ..	3
E. E.	120	Elec. Engg. C. Rec.	2	G. E.	115	Engg. Assembly	0
E. E.	124	Elec. Engg. C. Lab.	1			Humanities Elective*	4
Ch. E.	200	Inspection Trip	0			Soc. Sc. Elective*	3
G. E.	115	Engg. Assembly	0				
		Humanities Elective*	4				
Total			18	Total			17

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			
		<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
Chem.	140	Chemistry E-I	4	Spch.	105	Oral Comm. I	2
Math.	175	College Algebra†	3	Math.	215	Anal. Geom. & Calc. I ..	4
Math.	190	Plane Trigonometry	3	Chem.	170	Chemistry E-II	4
M. E.	210	Engg. Drawing	2	M. E.	215	Desc. Geometry	2
		Air or Military Science ..	1	C. E.	120	Surveying I	2
Ph. Ed.	010	Physical Education	0			Air or Military Science ..	1
G. E.	110	Engg. Lectures	0	Ph. Ed.	010	Physical Education	0
				G. E.	110	Engg. Lectures	0
Total			16	Total			17

SOPHOMORE

Phys.	130	Engg. Phys. I	5	Phys.	140	Engg. Phys. II	5
Math.	230	Anal. Geom. & Calc. II ..	4	Math.	245	Anal. Geom. & Calc. III	4
M. E.	220	Machine Drawing I	2	Ap. M.	408	Statics	3
C. E.	125	Surveying III	3	C. E.	131	Surveying III	3
Ec. So.	110	Economics I	3	I. E.	175	Metals and Alloys	2
		Air or Military Science ..	1			Air or Military Science ..	1
Ph. Ed.	010	Physical Education	0	Ph. Ed.	010	Physical Education	0
G. E.	115	Engg. Assembly	0	G. E.	115	Engg. Assembly	0
Total			18	Total			18

JUNIOR

C. E.	411	Photogrammetry	3	C. E.	421	Stress Anal. I Rec.	3
E. E.	120	Elec. Engg. C Rec.	2	Bact.	190	Water and Sewage Bact.	3
E. E.	124	Elec. Engg. C. Lab.	1	Ap. M.	450	Soil Mechanics I	2
Ap. M.	409	Dynamics	2	Ap. M.	470	Fluid Mechanics A	4
Ap. M.	410	Mech. of Mtls. I Rec.	4	Ap. M.	478	Hydraulics Lab.	1
Ap. M.	418	Mech. of Mtls. I Lab.	1	Gl. Gg.	110	General Geology	3
Ap. M.	420	Hwy. & Airpt. Mtls. Lab.	1	G. E.	115	Engg. Assembly	0
M. E.	115	El. of Thermodynamics ..	3			Non-technical elective*†..	2
Engl.	090	English Proficiency	0				
G. E.	115	Engg. Assembly	0				
		Non-technical elective*†..	2				
Total			19	Total			18

SENIOR

C. E.	428	Stress Anal. II	3	C. E.	470	Des. Fr. Str.	3
C. E.	424	Stress Anal. I Lab.	2	C. E.	478	Reinf. Conc. Des. Rec. ..	2
C. E.	451	Transport. Engg. Rec.	3	C. E.	480	Reinf. Conc. Des. Lab. ..	2
C. E.	453	Transport. Engg. Lab.	2	C. E.	455	Applied Hydrology	3
C. E.	405	Astr. and Geodesy	3	C. E.	440	Sanitary Engg.	4
C. E.	460	Foundations	2	Engl.	435	Technical Reports	1
C. E.	200	Inspection Trip	0	G. E.	115	Engg. Assembly	0
G. E.	115	Engg. Assembly	0			Non-technical elective*†..	3
		Non-technical 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.

‡ Non-technical electives to be selected from approved lists on page 197. 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		
	<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. & Calc. I ..	4
Math.	190 Plane Trigonometry	3	M. E.	215 Desc. Geometry	2
Engl.	125 Written Comm. I	3	Engl.	135 Written Comm. II	2
M. E.	210 Engineering Drawing	2	I. E.	125 Shop A	2
E. E.	110 Orientation E	1	Spch.	105 Oral Comm. I	2
	Air or Military Science ..	1		Air or Military Science ..	1
Ph. Ed.	010 Physical Education	0	Ph. Ed.	010 Physical Education	0
G. E.	110 Engg. Lectures	0	G. E.	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. & Calc. II ..	4	Math.	245	Anal. Geom. & Calc. III ..	4
C. E.	120	Surveying I	2	E. E.	405	Basic Elec. Engg.	4
Ec. So.	110	Economics I	3	I. E.	175	Metals and Alloys	2
M. E.	220	Machine Drawing I	2			Air or Military Science ..	1
I. E.	180	Welding	1	Ph. Ed.	010	Physical Education	0
		Air or Military Science ..	1	G. E.	115	Engg. Assembly	0
Ph. Ed.	010	Physical Education	0			Soc. Science Electives*‡	1
G. E.	115	Engg. Assembly	0			Humanities Electives*‡ ..	1
Total			18	Total			18

JUNIOR

E. E.	426	A-C Circuits	5	Ap. M.	405	Applied Mechanics	4
E. E.	411	D-C Machinery Rec.	3	E. E.	464	Electronics II Rec.	4
E. E.	414	D-C Machinery Lab.	1	E. E.	468	Electronics II Lab.	2
E. E.	460	Electronics I	2	E. E.	430	A-C Machinery I Rec.	3
E. E.	490	Elec. Meas. Rec.	2	E. E.	437	A-C Machinery Lab.	1
E. E.	494	Elec. Meas. Lab.	1	Engl.	435	Technical Reports	1
Math.	360	Diff. Equa. for Engrs.	2	G. E.	115	Engg. Assembly	0
G. E.	115	Engg. Assembly	0			Soc. Science Elective*‡ ..	3
Engl.	090	English Proficiency	0				
		Science Elective*‡	2				
Total			18	Total			18

SENIOR

M. E.	411	Engg. Thermodynamics I ..	4	M. E.	460	Heat Power Lab.	1
E. E.	439	A-C Machinery II Rec. ..	2	E. E.	576	Elec. Engg. Summary	2
E. E.	442	A-C Machinery Lab.	1	Ap. M.	410	Mech. of Mtls. I Rec.	4
E. E.	539	Networks Rec.	3	G. E.	115	Engg. Assembly	0
E. E.	541	Networks Lab.	1			Humanities Elective*‡ ..	3
G. E.	115	Engg. Assembly	0				
E. E.	160	Inspection Trip	0				
		Humanities Elective*‡ ..	3				

Power Option

Elective*	4	M. E.	440 Heat Power Engg. A	3
			Elective*	5

Communication and Electronics Option

E. E.	550	Electromag. Waves Rec.	3	E. E.	530	Radio Comm. Rec.	3
E. E.	554	Electromag. Waves Lab.	1	E. E.	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 197.

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:

E. E. 570	Illuminating Engineering Recitation	3
E. E. 590	Transmission and Distribution of Electrical Energy	3
E. E. 600	Transient Electrical Phenomena	3
E. E. 480	Industrial Electronics and Control Recitation	2
E. E. 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:†

Ec. So.	430	Money and Banking	3	Ec. So.	120	Economics II	3
Ec. So.	470	Public Finance	3	B. A.	310	Accounting II	3
B. A.	440	Marketing	3	B. A.	405	Bus. Org. and Finance ..	3
Psych.	310	General Psychology	3	H. G. P.	310	Business Law II	3
B. A.	300	Accounting I	3	B. A.	511	Business Policy	2
H. G. P.	295	Business Law I	3	Engl.	155	Comm'l Corresp.	3
						Business Elective*	3

† 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
M. E.	210	Engg. Drawing	2	M. E.	215	Desc. Geometry	2
I. E.	130	Woodwork I	2	I. E.	125	Shop A	2
I. E.	180	Welding	1	I. E.	200	Sheet Metal I	2
		Air or Military Science ..	1			Air or Military Science ..	1
Ph. Ed.	010	Physical Education	0	Ph. Ed.	010	Physical Education	0
G. E.	110	Engg. Lectures	0	G. E.	110	Engg. Lectures	0
Total			16	Total			16

SOPHOMORE

Phys.	110	General Physics I	4	Phys.	120	General Physics II	4
M. E.	220	Machine Drawing I	2	Educ.	100	Educ. Psych. I, Pupil Dev.	3
Psych.	310	General Psychology	3	Gn. St.	160	Biology II	4
Gn. St.	150	Biology I	4	I. E.	134	Woodwork II	2
Spch.	105	Oral Comm. I	2	I. E.	144	Woodturning	2
		Air or Military Science ..	1			Air or Military Science ..	1
Ph. Ed.	010	Physical Education	0	Ph. Ed.	010	Physical Education	0
G. E.	115	Engg. Assembly	0	G. E.	115	Engg. Assembly	0
Total			16	Total			16

JUNIOR

Educ.	105	Educ. Psych. II, Learning	3	Educ.	120	Prin. of Secondary Educ.	3
H. G. P.	175	U. S. Before 1865	3	H. G. P.	190	U. S. Since 1865	3
I. E.	110	Auto Mechanics I	4	Ec. So.	110	Economics I	3
I. E.	175	Metals and Alloys	2	Spch.	115	Oral Comm. II	2
Engl.	090	English Proficiency	0	I. E.	211	Industrial Safety	2
G. E.	115	Engg. Assembly	0	G. E.	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. Schools	4
I. E.	244	Meth. of Teach. Ind. Arts	3	H. G. P.	160	Current History	1
I. E.	402	Highway Safety and Driver Educ.	3	I. E.	122	Appliance Servicing	4
I. E.	280	Inspection Trip	0	G. E.	115	Engg. Assembly	0
G. E.	115	Engg. Assembly	0	Educ.		Educ. Elective*	3
		Elective and Major*	7			Elective and Major*	4
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
M. E.	210	Engg. Drawing	2	Math.	215	Anal. Geom. & Calc. I ..	4
Math.	175	College Algebra†	3	M. E.	215	Desc. Geometry	2
Math.	190	Plane Trigonometry	3	Spch.	105	Oral Comm. I	2
Engl.	125	Written Comm. I	3	Engl.	135	Written Comm. II	2
I. E.	180	Welding	1	I. E.	125	Shop A	2
		Air or Military Science ..	1			Air or Military Science ..	1
Ph. Ed.	010	Physical Education	0	Ph. Ed.	010	Physical Education	0
G. E.	110	Engg. Lectures	0	G. E.	110	Engg. Lectures	0
Total			17	Total			17

SOPHOMORE

Math.	230	Anal. Geom. & Calc. II	4	Math.	245	Anal. Geom. & Calc. III	4
Phys.	130	Engg. Physics I	5	Phys.	140	Engg. Phys. II	5
M. E.	220	Mach. Drawing I	2	I. E.	175	Metals and Alloys	2
M. E.	230	Mechanism	3	I. E.	155	Foundry I	1
Ec. So.	110	Economics I	3	Psych.	310	General Psychology	3
		Air or Military Science ..	1	M. E.	110	Steam and Gas Engg. C,	2
Ph. Ed.	010	Physical Education	0			Air or Military Science ..	1
G. E.	115	Engg. Assembly	0	Ph. Ed.	010	Physical Education	0
				G. E.	115	Engg. Assembly	0
Total			18	Total			18

JUNIOR

I. E.	190	Machine Tool I	2	I. E.	194	Machine Tool II	2
I. E.	410	Industrial Mgt.	3	Engl.	155	Comm'l Correspondence ..	3
H. G. P.	190	U. S. Since 1865	3	E. E.	120	Elec. Engg. C Rec.	2
Ap. M.	405	Applied Mechanics	4	E. E.	124	Elec. Engg. C Lab.	1
B. A.	330	Principles of Acctg.	3	Ap. M.	410	Mech. of Mtls. I Rec. ..	4
I. E.	184	Electric Welding	1	Ap. M.	418	Mech. of Mtls. I Lab. ..	1
Engl.	090	English Proficiency	0	I. E.	460	Metallography I	1
G. E.	115	Engg. Assembly	0	I. E.	211	Industrial Safety	2
		Non-technical elective*†..	2	G. E.	115	Engg. Assembly	0
						Non-technical elective*†..	2
<hr/>				<hr/>			
Total			18	Total			18

SENIOR

I. E.	425	Time and Motion	2	E. E.	470	Ind. Electronics Rec.	3		
I. E.	415	Production Control	2	E. E.	474	Ind. Electronics Lab.	1		
M. E.	490	Engg. Economics	3	Engl.	435	Technical Reports	1		
Psych.	715	Personnel Psychology	3	I. E.	442	Ind. Engg. Practice	3		
I. E.	419	Manufacturing Processes	3	I. E.	421	Prod. Cost Estimating	2		
I. E.	427	Plant Planning and		I. E.	431	Tool Engineering	2		
		Layout	2	Ec. So.	440	Marketing	3		
I. E.	280	Inspection Trip	0	G. E.	115	Engg. Assembly	0		
G. E.	115	Engg. Assembly	0			Technical electives*	3		
		Non-technical 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.

† Non-technical electives are to be selected from the approved list of Humanities electives, page 197.

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
I. E.	125	Shop A	2	I. E.	144	Wood Turning	2
I. E.	130	Woodwork I	2	I. E.	180	Welding	1
M. E.	210	Engg. Draw.	2	I. E.	200	Sheet Metal I	2
Math.	175	Col. Algebra†	3	M. E.	215	Desc. Geometry	2
		Air or Military Science ..	1	Math.	190	Plane Trigonometry	3
Ph. Ed.	010	Physical Education	0			Air or Military Science ..	1
G. E.	110	Engg. Lectures	0	Ph. Ed.	010	Physical Education	0
				G. E.	110	Engg. Lectures	0
Total			17	Total			17

SOPHOMORE

C. E.	120	Surveying I	2	Ec. So.	110	Economics I	3
Gn. St.	150	Biology I	4 or	Engl.	155	Comm'l Corres.	3
Gn. St.	250	Intro. to Human. I	4	Gn. St.	160	Biology II	4 or
M. E.	220	Mach. Drawing I	2	Gn. St.	260	Intro. to Human. II	4
Phys.	110	General Physics I	4	I. E.	155	Foundry I	1
Psych.	310	General Psychology	3	M. E.	224	Mach. Drawing II	2
Spch.	105	Oral Comm. I	2	Phys.	120	General Physics II	4
		Air or Military Science ..	1			Air or Military Science ..	1
Ph. Ed.	010	Physical Education	0	Ph. Ed.	010	Physical Education	0
G. E.	115	Engg. Assembly	0	G. E.	115	Engg. Assembly	0
Total			18	Total			18

JUNIOR

B. A.	330	Prin. of Acctg.	3	Ap. M.	105	App. Mech. A	3
I. E.	110	Auto Mechanics I	4	E. E.	120	Elec. Engg. C Rec.	2
I. E.	150	Pattern Making	2	E. E.	124	Elec. Engg. C Lab.	1
I. E.	175	Metals and Alloys	2	I. E.	194	Machine Tool II	2
I. E.	184	Electric Welding	1	I. E.	211	Industrial Safety	2
I. E.	188	Gas Welding	1	I. E.	460	Metallography I	1
I. E.	190	Machine Tool I	2	M. E.	230	Mechanism	3
I. E.	442	Industrial Management ..	3	M. E.	110	Steam and Gas Engg. C ..	2
Engl.	090	English Proficiency	0	Spch.	115	Oral Comm. II	2
G. E.	115	Engg. Assembly	0	G. E.	115	Engg. Assembly	0
Total			18	Total			18

SENIOR

Ap. M.	120	Str. of Mtls. A Rec.	3	Engl.	435	Technical Reports	1
Ap. M.	124	Str. of Mtls. A Lab.	1	I. E.	122	Appliance Servicing	4
I. E.	220	Gaging	1	I. E.	421	Prod. Cost Estimating ..	2
I. E.	419	Mfg. Processes	3	I. E.	442	Ind. Engg. Practice	3
I. E.	425	Time and Motion	2	H. G. P.	190	U. S. Since 1865	3
Psych.	715	Personnel Psychology	3	G. E.	115	Engg. Assembly	0
I. E.	280	Inspection Trip	0			Elective*	5
G. E.	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 Non-Technical 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, Gn. St. 210 ..	4	United States Since 1865, H. G. P. 190	3
Introductory Social Science II, Gn. St. 220	4	American Industrial History, H. G. P. 205	3
Economics II, Ec. So. 120	3	New American Nation, H. G. P. 445	3
Money and Banking, Ec. So. 430	3	Adv. Economic History of the U. S.,	
Personal Finance, B. A. 140	2	H. G. P. 465	2
Business Management, B. A. 150	3	American Diplomatic History, H. G. P. 475	3
Labor Management, Ec. So. 465	2	Russia and the Soviet Union, H. G. P. 585 ..	3
Public Finance, Ec. So. 470	3	American Government, H. G. P. 255	3
Business Cycles, Ec. So. 480	2	Contemporary Governments, H. G. P. 270 ..	3
International Trade, Ec. So. 485	2	International Relations, H. G. P. 655	2
Introduction to Sociology, Ec. So. 250	3	General Psychology, Psych. 310	3
Sociology of the Family, Ec. So. 630	3	General Applied Psychology, Psych. 325	2
Social Systems, Ec. So. 655	3	Social Psychology, Psych. 435	3
Development of Social Thought, Ec. So. 675	3	Contemporary Social Philosophies,	
Contemporary World History, H. G. P. 145	2	H. G. P. 780	3
Current History, H. G. P. 160	1	Recent Political Philosophies, H. G. P. 785	2
United States Before 1865, H. G. P. 175	3	Effective Citizenship, H. G. P. 285	3

Humanities Electives

(Not more than 2 courses from any one field)

Introduction to Humanities I,		Books and Men II, Engl. 320	3
Gn. St. 250	4	Elementary Logic, H. G. P. 365	3
Introduction to Humanities II,		Philosophy of Science I, H. G. P. 380	3
Gn. St. 260	4	Ethics, H. G. P. 775	2
Civilization I, H. G. P. 115	3	Appreciation of Music, Music 250	2
Civilization II, H. G. P. 130	3	Music in History, Music 635	3
Current History, H. G. P. 160	1	Appreciation of Architecture, Arch. 200	3
Far East, H. G. P. 595	3	History of Painting and Sculpture,	
History of Religions, H. G. P. 605	3	Arch. 285	3
Books and Men I, Engl. 310	3	Modern Language	6

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. & Calc. I	4
Math.	190	Plane Trigonometry	3	Engl.	135	Written Comm. II	2
Engl.	125	Written Comm. I	3	Spch.	105	Oral Comm. I	2
M. E.	210	Engg. Drawing	2	M. E.	215	Desc. Geometry	2
I. E.	180	Welding	1	I. E.	125	Shop A	2
		Air or Military Science ..	1			Air or Military Science ..	1
Ph. Ed.	010	Physical Education	0	Ph. Ed.	010	Physical Education	0
G. E.	110	Engg. Lectures	0	G. E.	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. & Calc. II ..	4	Math.	245	Anal. Geom. & Calc. III ..	4
I. E.	175	Metals and Alloys	2	Ap. M.	405	Applied Mechanics	4
I. E.	460	Metallography I	1			Air or Military Science ..	1
M. E.	220	Mach. Drawing I	2	Ph. Ed.	010	Physical Education	0
Ec. So.	110	Economics I	3	G. E.	115	Engg. Assembly	0
		Air or Military Science ..	1			Non-technical elective‡ ..	4
Ph. Ed.	010	Physical Education	0				
G. E.	115	Engg. Assembly	0				
Total			18	Total			18

JUNIOR

Ap. M.	474	Fluid Mech. B	3	Ap. M.	410	Mech. of Mtls. I Rec.	4
M. E.	411	Engg. Thermodynamics I ..	4	M. E.	621	Mach. Design I	5
E. E.	500	Elec. Engg. M-I Rec.	4	E. E.	508	Elec. Engg. M-II Rec.	3
E. E.	504	Elec. Engg. M-I Lab.	1	E. E.	510	Elec. Engg. M-II Lab.	1
Engl.	090	English Proficiency	0	M. E.	412	Engg. Thermodynamics II ..	2
G. E.	115	Engg. Assembly	0	G. E.	115	Engg. Assembly	0
		Option	2 or 3			Option	3 or 4
		Non-technical elective‡ ..	4				
Total			18 or 19	Total			18 or 19

SENIOR

Ap. M.	418	Mech. of Mtls. Lab.	1	M. E.	623	Mach. Design III	3 or
I. E.	410	Indus. Management or ..		M. E.	428	Air Conditioning	3
Phys.	560	Atomic Physics	3	M. E.	150	Prof. Development	1
		(Except Mgmt. Op.)		G. E.	115	Engg. Assembly	0
M. E.	464	Mech. Engg. Lab. I	2			Option	10 or 11
M. E.	440	Heat-Power Engg. A	3			Non-technical elective‡ ..	3
M. E.	622	Mach. Design II	3				
G. E.	115	Engg. Assembly	0				
		Option	3 or 6				
		Non-technical elective‡ ..	3				
M. E.	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.

‡ Non-technical 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

M. L.	421 Heat Transfer	3	Ap. M.	414 Mech. of Mtls. II Rec.	2
			M. E.	468 Mech. Engg. Lab. II	2
			M. E.	445 Mech. Engg. Design	3
			M. E.	625 Machine Design Lab.	2
				Technical Elective*	2
Total	.....	3	Total	.....	11

Management Option**JUNIOR**

B. A.	330 Prin. of Accounting	3	Math.	785 Statistical Qual. Control	3
Total	.....	3	Total	.....	3

SENIOR

M. E.	490 Engg. Economics	3	I. E.	442 Ind. Engg. Practice	3
I. E.	410 Indus. Management	3	Psych.	715 Personnel Psych.	3
			M. E.	468 Mech. Engg. Lab. II	2
			M. E.	625 Mach. Des. Lab.	2
Total	.....	6	Total	.....	10

Aeronautical Option**JUNIOR**

Math.	360 Diff. Equa. for Engrs.	2	M. E.	640 Aerodynamics I Rec.	3
			M. E.	644 Aerodynamics I Lab.	1
Total	.....	2	Total	.....	4

SENIOR

Ap. M.	491 Airpl. Stress Anal. I	3	M. E.	480 Aero. Engg. Lab.	2
			M. E.	430 Int. Comb. Engines	3
			M. E.	668 Airpl. Des. and Const. ..	3
				Technical Elective*	2
Total	.....	3	Total	.....	10

Petroleum Production Option**JUNIOR**

C. E.	120 Surveying I	2	Gl. Gg.	110 Gen. Geology	3
Total	.....	2	Total	.....	3

SENIOR

M. E.	510 Petroleum Prod. I	3	M. E.	514 Petroleum Prod. II	3
			M. E.	468 Mech. Engg. Lab. II	2
			M. E.	625 Machine Des. Lab.	2
			Gl. Gg.	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	Ch. E.	201	Ch. E. Orientation	1
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. & Calc. I ...	4
M. E.	220	Engg. Drawing	2	Engl.	135	Written Comm. II	2
		Air or Military Science ..	1	Spch.	105	Oral Comm. I	2
Ph. Ed.	010	Physical Education	0	M. E.	215	Descrip. Geometry	2
G. E.	110	Engg. Lectures	0			Air or Military Science ..	1
				Ph. Ed.	010	Physical Education	0
				G. E.	110	Engg. Lectures	0
Total			17	Total			17

SOPHOMORE

Ch. E.	205	Ch. E. Materials	2	Ch. E.	211	Indust. Stoichiometry	4
Chem.	435	Quant. Analysis	4	Chem.	505	Organic Chemistry	5
Phys.	130	Engg. Physics I	5	Phys.	140	Engg. Physics II	5
Math.	230	Anal. Geom. & Calc. II ..	4	Math.	245	Anal. Geom. & Calc. III ..	4
Ec. So.	110	Economics I	3			Air or Military Science ..	1
		Air or Military Science ..	1	Ph. Ed.	010	Physical Education	0
Ph. Ed.	010	Physical Education	0	G. E.	115	Engg. Assembly	0
G. E.	115	Engg. Assembly	0				
Total			19	Total			19

JUNIOR

Ch. E.	492	Ch. E. Thermo. I	3	Ch. E.	420	Unit Op. I Rec.	3
Ch. E.	493	Ch. E. Measurements	1	Ch. E.	424	Unit Op. I Lab.	1
Chem.	585	Phys. Chem. I Rec.	3	Chem.	595	Phys. Chem. II Rec.	3
Chem.	590	Phys. Chem. I Lab.	2	Chem.			
Phys.	560	Atomic Physics	3	(Phys.)	635	Tracer Techniques	3
Phys.	591	Modern Physics Lab. I ...	1	Ap. M.	405	Applied Mechanics	4
G. E.	115	Engg. Assembly	0	G. E.	115	Engg. Assembly	0
Engl.	090	English Proficiency	0			Humanities Elective*	4
		Soc Science Elective*	5				
Total			18	Total			18

SENIOR

Ch. E.	701	Nuclear Reactor Tech.	4	Ch. E.	711	Nuclear Reactor Design ..	5
Ch. E.	428	Unit Op. II Rec.	3	Phys.	575	Nuclear Physics	3
Ch. E.	430	Unit Op. II Lab.	1	E. E.	470	Ind. Electronics Rec.	3
Ch. E.	495	Ch. E. Thermo. II	4	Ap. M.	410	Mech. of Mtls. I, Rec.	4
E. E.	120	Elec. Engg. C. Rec.	2	G. E.	115	Engg. Assembly	0
E. E.	124	Elec. Engg. C. Lab.	1			Humanities Elective*	2
Ch. E.	200	Inspection Trip	0				
G. E.	115	Engg. Assembly	0				
		Humanities Elective*	2				
Total			17	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.

AGRICULTURAL ENGINEERINGGEORGE H. LARSON, *Head of Department*

For Curriculum in Agricultural Engineering see page 187.

FOR UNDERGRADUATE CREDIT

- 110. Farm Mechanics.** (2) I. 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 lab. a week. For students in Agricultural Education. Pr.: I. E. 184.
- 115. Farm Machinery Repair.** (3) II. Construction, repair, operation, adjustment, calibration, and maintenance of farm machinery and equipment. One hour rec. and six hours lab. a week. For students in Agricultural Education. Pr.: Ag. E. 110.
- 120. Farm Power.** (3) II. 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 rec. and six hours lab. a week. For students in Agricultural Education.
- 125. Farm Machinery.** (3) I, II, S. Construction, operation, adjustment, power requirements, use, service, and repair of farm machinery. Two hours rec. and three hours lab. a week. For agricultural students.
- 130. Agricultural Machinery.** (3) II. Selection, adjustment, operation, servicing, economics, and application of agricultural machines. Two hours rec. and three hours lab. a week.
- 136. Tractor Operation and Maintenance.** (3) I, II, S. 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 rec. and three hours lab. a week. For agricultural students.
- 140. Farm Shop.** (2) I, II. 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 lab. a week. For agricultural students.
- 160. Farm Buildings.** (3) II. and S in alt. 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 rec. and three hours lab. a week.
- 200. Inspection Trip.** (0) I. Required. 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. Pr.: Senior classification.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 405. Farm Mechanics Methods.** (3) II. 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 Agricultural Education. One hour rec. and six hours lab. a week. Pr.: Ag. E. 110, 120.
- 410. Farm Building Construction.** (3) I. 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 Agricultural Education. One hour rec. and six hours lab. a week. Pr.: Ag. E. 110.
- 415. Agricultural Engineering Applications.** (2) I. Practical laboratory exercises, surveying, terracing, contouring, drainage, irrigation, fencing, electric wiring, farm water supply, sewage disposal, heating, lighting,

refrigeration, etc. For students in Agricultural Education. Six hours lab. a week. Pr.: Junior standing.

421. Drainage and Erosion Control. (3) II. Principles and practices of land improvement by drainage and various methods of erosion control. Two hours rec. and three hours lab. a week. For agricultural students. Pr.: Agron. 149.

425. Irrigation Practice. (3) I. Principles and practices of irrigation involved in the setup and operation of various irrigation systems on the farm. Two hours rec. and three hours lab. a week. For agricultural students. Pr.: Agron. 149.

430. Irrigation and Drainage. (3) I. Design and operation problems involved in irrigation or drainage of agricultural land. Two hours rec. and three hours lab. a week. Pr.: Agron. 149, Ap. M. 470, Ag. E. 475.

435. Design of Farm Machinery. (4) I. Functional requirements and principles of operation of farm machinery. Analysis of the problems involved in the design and construction of farm machines. Two hours rec. and six hours lab. a week. Pr.: Phys. 140; pr. or conc.: Ap. M. 405.

440. Power and Machinery in Agriculture. (2) I. 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. E. 125 or 136. Two hours rec. a week. Pr.: Junior or senior classification.

446. Tractors. (4) II. Theory, design, operation, and adjustment of the internal combustion engine and a comprehensive study of power and its relation to agriculture. Two hours rec. and six hours lab. a week. Pr.: Phys. 140, M. E. 411.

455. Dairy Mechanics. (3) II. Installation, adjustment, and operation of dairy plant equipment; boilers, engines, motors, pumps, refrigeration machinery, water supply, waste disposal. Two hours rec. and three hours lab. a week.

465. Farm Structures. (4) I. Design of farm structures, details and materials of construction; specifications and estimates. Two hours rec. and six hours lab. a week. Pr.: Ap. M. 410.

475. Agricultural Hydrology. (3) I. The hydrologic cycle, rainfall, runoff, soil and water relationships affecting crop production, drainage, irrigation, and erosion. Watershed surveys. Two hours rec. and three hours lab. a week. Pr.: C. E. 120.

480. Soil and Water Conservation. (4) II. Principles and methods of land drainage, soil and water conservation, and irrigation. Two hours rec. and six hours lab. a week. Pr.: Ap. M. 470, Ag. E. 475, Agron. 149.

490. Electricity in Agriculture. (3) I. 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 rec. and three hours lab. a week. For agricultural students.

500. Rural Electrification. (4) II. Water supply, sewage disposal, lighting, heating, and ventilation of farm buildings; refrigeration; rural electrification. Two hours rec. and six hours lab. a week. Pr.: Ap. M. 470, M. E. 411.

520. Problems in Agricultural Engineering. Credit arranged. I, II, S. Problems in the design, construction, or application of machinery or power in agriculture, structures, modern conveniences, and rural electrification. Pr.: Permission of instructors.

FOR GRADUATE CREDIT

810. Research in Agricultural Engineering. Credit arranged. I, II, S. 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. Pr.: Agron. 149, Phys. 140, or equiv.

APPLIED MECHANICS

MILTON E. RAVILLE, *Head of Department*

FOR UNDERGRADUATE CREDIT

- 105. Applied Mechanics A.** (3) I, II. A study of statics, with application to stress in structure; center of gravity; moment of inertia. Three hours rec. a week. Pr.: Math. 190, Phys. 110.
- 120. Strength of Materials A Recitation.** (3) I, II. 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 rec. a week. Pr.: Ap. M. 105.
- 124. Strength of Materials A Laboratory.** (1) I, II. 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 lab. a week. Pr. or conc.: Ap. M. 120.
- 140. Foundation Materials.** (3) II. The properties and testing of natural materials, including soils, commonly used for foundations. Three hours rec. a week. Pr.: Gl. Gg. 515.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 405. Applied Mechanics.** (4) I, II, S. Composition, resolution, and conditions of equilibrium of concurrent and non-concurrent 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 rec. a week. Pr.: Phys. 130, Math. 290; or conc.: Math. 245.
- 408. Statics.** (3) I, II. 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. M. 405. Pr.: Phys. 130, Math. 290; or conc.: Math. 245. Ap. M. 408 and 409 together constitute an acceptable substitute for Ap. M. 405 in all engineering curriculums.
- 409. Dynamics.** (2) I, II. Plane kinematics, Newton's Laws, d'Alembert's principle, the concepts of work and energy, impulse and momentum, and their application to problems of particle and rigid body motion. Not open to students with credit in Ap. M. 405. Pr.: Ap. M. 408. Ap. M. 408 and 409 together constitute an acceptable substitute for Ap. M. 405 in all engineering curriculums.
- 410. Mechanics of Materials I Recitation.** (4) I, II, S. 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 rec. a week. Pr.: Ap. M. 405 or 408.
- 414. Mechanics of Materials II Recitation.** (2) II. An extension of Ap. M. 410, with special reference to the needs of students in mechanical engineering. Two hours rec. a week. Pr.: Ap. M. 410.
- 418. Mechanics of Materials Laboratory.** (1) I, II, S. 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 lab. a week. Pr. or conc.: Ap. M. 410.

420. Highway and Airport Materials Laboratory. (1) I, II. A comprehensive course in the examination and testing of materials used in the construction of highways and airports. Three hours lab. a week. Pr.: Ap. M. 418.

425. Design and Control of Asphalt Mixtures. (2) I. A practical study of the factors involved in selecting, designing, and constructing the various types of bituminous highway surfaces. One hour rec. and three hours lab. a week. Pr.: Ap. M. 420.

430. Experimental Stress Analysis. (1) I. 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 lab. a week. Pr.: Ap. M. 418; pr. or conc.: Ap. M. 414.

435. Design of Concrete Mixtures. (3) II. 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 rec. and six hours lab. a week. Pr.: Ap. M. 418.

440. Cement and Concrete Technology. (2) I. 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. Pr.: Ap. M. 418.

450. Soil Mechanics I. (2) I, II. 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 rec. and three hours lab. a week. Pr.: Ap. M. 410.

454. Soil Mechanics II. (3) I. Subsurface investigations; permeability, seepage, and capillarity; consolidation and settlement; stress distribution in soils and shearing strength. Two hours rec. and three hours lab. a week. Pr.: Ap. M. 450.

458. Soil Mechanics III. (3) II. 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 rec. and three hours lab. a week. Pr.: Ap. M. 450.

470. Fluid Mechanics A. (4) I, II, S. 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 rec. a week. Pr.: Ap. M. 405 or 409.

474. Fluid Mechanics B. (3) II. An optional course for mechanical engineering students, in which both gaseous and liquid fluids are treated. Three hours rec. a week. Not open to students with credit in Ap. M. 470. Pr.: Ap. M. 405 or 409, M. E. 411.

478. Hydraulics Laboratory. (1) I, II. Tests to determine the coefficients of weirs and orifices, loss of head in pipes, water wheels, water turbines, rams and pumps. Three hours lab. a week. Pr. or conc.: Ap. M. 470 or 474.

480. Hydraulic Machinery. (2) I or II. Characteristics and applications of water wheels, turbines, pumps, and other hydraulic machinery. Two hours rec. a week. Pr.: Ap. M. 470 or 474.

491. Airplane Stress Analysis I. (3) I. Analysis of stress and stability problems in the structural elements of airplanes. Three hours rec. a week. Pr.: Math. 360, Ap. M. 410.

494. Airplane Stress Analysis II. (2) II. A cont. of Airplane Stress Analysis I. Two hours rec. a week. Pr.: Ap. M. 491.

- 511. Energy Methods in Engineering Mechanics.** (3) I. 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. Pr.: Ap. M. 410.
- 515. Elastic Stability.** (3) I. 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 rec. a week. Pr.: Ap. M. 410.
- 525. Mathematical Methods in Engineering Research.** (3) I. The application of the methods of Euler, Lagrange, Ritz, Southwell, Timoshenko, Runge, Heaviside, and Kron to problems in various fields in engineering. Three hours rec. a week. Pr.: Math. 615 or equiv.
- 541. Intermediate Dynamics.** (3) II. General vector principles of the dynamics of particles and rigid bodies; an introduction to the energy methods of advanced dynamics. Pr.: Ap. M. 405 or 409, Math. 360, or equiv.
- 545. Non-linear Mechanics.** (2) II. 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. Pr.: Math. 360.

FOR GRADUATE CREDIT

- 805. Problems in Applied Mechanics.** Credit arranged. I, II, S. Special problems in the fields of Applied Mechanics. Pr.: Consult instructors.
- 810. Research in Applied Mechanics.** Credit arranged. I, II, S. 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. Pr.: Consult instructors.
- 820. Theory of Elasticity I.** (2) II. Equations of elasticity in two and three dimensions; two-dimensional problems in rectangular and in polar coordinates; torsion of shaft of non-circular section. Pr.: Ap. M. 414, Math. 615, or equiv.
- 824. Theory of Elasticity II.** (2) I. Bending of prismatic bars and circular plates; stresses around cavities; stresses within soils; thermal stresses. Pr.: Ap. M. 820.
- 840. Theory of Plates and Slabs.** (3) II. 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 rec. a week. Pr.: Ap. M. 414, Math. 615, or equiv.
- 850. Vibration of Elastic Bodies.** (3) I. 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 rec. a week. Pr. or conc.: Ap. M. 820, M. E. 630.
- 861. Plasticity.** (2) I. Elastic-plastic and fully plastic problems of trusses, beams, and bars in torsion; unrestricted and contained plane strain; limit analysis. Pr.: Ap. M. 414, Math. 615, or equiv.
- 870. Transform Calculus Applied to Engineering Problems.** (3) I. 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. Pr.: Math. 615 or equiv.

- 880. Advanced Fluid Mechanics.** (3) I. Principles of flow, irrotational motion, conformal mapping, viscous flow, fluid turbulence, boundary layers, lift and draft, transportation of sediment. Three hours rec. a week. Pr.: Ap. M. 474, Math. 615, or equiv., and preferably Ap. M. 820.

ARCHITECTURE AND ALLIED ARTS

EMIL C. FISCHER, *Head of Department*

For Curriculum in Architectural Engineering see page 188.

For Curriculum in Architecture see page 189.

FOR UNDERGRADUATE CREDIT

- 106. Shades and Shadows.** (1) I, II. Principles of shades and shadows. One hour rec. a week. Pr.: M. E. 210 or equiv.
- 111. Perspective Drawing.** (1) I, II. The principles of perspective drawing. One hour rec. a week. Pr.: M. E. 210 or equiv.
- 115. Elementary Drawing.** (2) I, II, S. The principles and fundamentals of sketching and drawing intended for non-professional students. Six hours lab. a week. Not to be taken for credit by students enrolled in Architecture and Humanities (Art Adaptation).
- 120. Freehand Drawing I.** (2) I, II, S. A basic course in the fundamentals of freehand drawing. Six hours lab. a week.
- 124. Freehand Drawing II.** (2) I, II, S. A cont. of Arch. 120. Six hours lab. a week. Pr.: Arch. 120.
- 130. Pencil Sketching.** (2) I, II, S. Six hours lab. a week. Pr.: Arch. 120.
- 135. Pen and Ink Drawing.** (2) I, II, S. Six hours lab. a week. Pr.: Approval of instructor.
- 140. Still-life Drawing.** (2) I, S. Sketches in various media of still-life groups in the studio and out-of-doors. Six hours lab. a week. Pr.: Arch. 120.
- 145. Clay Modeling.** (2) I, S. The making of original clay models, plaster casts of simple decorative and anatomical forms. Six hours lab. a week. Pr.: Arch. 140.
- 150. Block Prints.** (2) I, S. The carving of original compositions in linoleum and wood blocks. Six hours lab. a week. Pr.: Arch. 124 or approval of instructor.
- 155. Elementary Painting.** (2) I, II, S. The principles and fundamentals of painting in oil or water color intended for non-professional students. Six hours lab. a week. Not to be taken for credit by students enrolled in Architecture and Humanities (Art Adaptation).
- 160. Water Color I.** (2) I, II, S. 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 lab. a week. Pr.: Arch. 130 or approval of instructor.
- 164. Water Color II.** (2) I, II, S. Advanced study in the technique of the medium. Includes both studio work and outdoor sketching. Six hours lab. a week. Pr.: Arch. 160.
- 170. Life Drawing I.** (2) I, II. Six hours lab. a week. Pr.: Arch. 160.
- 174. Life Drawing II.** (2) I, II. A cont. of Arch. 170. Six hours lab. a week. Pr.: Arch. 170.
- 180. Oil Painting I.** (2) I, II, S. Principles of oil painting, with emphasis on technical aspects of the medium; theory of color and composition; both studio and outdoor work. Six hours lab. a week. Pr.: Arch. 120 or approval of instructor.
- 184. Oil Painting II.** (2) I, II, S. A cont. of Arch. 180. Six hours lab. a week. Pr.: Arch. 180 or approval of instructor.

- 190. Pictorial Composition I.** (2) I, II, S. 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 lab. a week. An elective course intended for students not enrolled in the Department of Architecture and Allied Arts.
- 194. Pictorial Composition II.** (2) I, II, S. Cont. of Arch. 190. Six hours lab. a week. An elective course intended for students not enrolled in the Department of Architecture and Allied Arts. Pr.: Arch. 190.
- 200. Appreciation of Architecture.** (3) I, II. A survey of the history of architecture. Three hours rec. a week. An elective course intended for students not enrolled in the Department of Architecture and Allied Arts.
- 205. Domestic Architecture.** (2) I, II. A study of the design and planning problems of the small home. Two hours rec. a week. An elective course intended for students not enrolled in the Department of Architecture and Allied Arts.
- 210. Commercial Illustration I.** (2) I, II. 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 lab. a week.
- 214. Commercial Illustration II.** (2) I, II. Cont. of Arch. 210. Six hours lab. a week. Pr.: Arch. 210.
- 218. Commercial Illustration III.** (3) I, II. Cont. of Arch. 214, with particular emphasis upon the perfecting of professional techniques employed in advertising work. Nine hours lab. a week. Pr.: Arch. 214.
- 220. Commercial Illustration IV.** (3) I, II. Cont. of Arch. 218. Nine hours lab. a week. Pr.: Arch. 218.
- 230. Elements of Architecture I.** (4) I, II. A study of the fundamentals of architectural design by their application in the original solution and presentation of simple architectural problems. Twelve hours lab. a week.
- 234. Elements of Architecture II.** (4) I, II. A cont. of Arch. 230. Twelve hours lab. a week. Pr.: Arch. 230.
- 240. Architectural Design I.** (5) I, II. A cont. of Arch. 234. Fifteen hours lab. a week. Pr.: Arch. 234.
- 244. Architectural Design II.** (5) I, II. A cont. of Arch. 240. Fifteen hours lab. a week. Pr.: Arch. 240.
- 248. Architectural Design III.** (5) I, II. Cont. of Arch. 244; time problems and rapid design sketches required at frequent intervals. Fifteen hours lab. a week. Pr.: Arch. 244.
- 250. Architectural Design IV.** (5) I, II. Cont. of Arch. 248. Fifteen hours lab. a week. Pr.: Arch. 248.
- 255. Interior Design.** (2) I, S. A study of the principles of interior architecture. Six hours lab. a week. Pr.: Arch. 160, 200, 248.
- 270. History of Architecture I.** (2) I. Pre-classical and classical architecture. Two hours rec. a week.
- 274. History of Architecture II.** (2) II. Medieval architecture. Two hours rec. a week. Pr.: Arch. 270.
- 278. History of Architecture III.** (2) I. Italian and French Renaissance architecture. Two hours rec. a week. Pr.: Arch. 274.
- 280. History of Architecture IV.** (2) II. Cont. of Arch. 278 through modern architecture. Two hours rec. a week. Pr.: Arch. 278.
- 285. History of Painting and Sculpture.** (3) I, II, S. The appreciation and development of painting and sculpture. Three hours rec. a week.

A required course for students in architecture and a recommended elective for other students.

- 290. Contemporary Art.** (2) I, II, S. Appreciation and development of contemporary art. Two hours rec. a week. Pr.: Arch. 285 or approval of instructor.
- 300. Building Materials and Construction.** (3) I, II. An introduction to the properties and uses of the materials of construction; construction methods; occasional visits to buildings under construction. Three hours rec. a week.
- 305. Building Equipment.** (2) I, II. A study of plumbing, sanitation systems, and mechanical equipment of buildings. Two hours rec. a week. Pr.: Arch. 300.
- 310. Working Drawings.** (3) I, II. Preparing working drawings for a residence. Nine hours lab. a week. Pr.: Arch. 240, 300.
- 320. Theory of Structures I.** (4) II. 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 rec. and six hours lab. a week. Pr.: Ap. M. 120, 124.
- 324. Theory of Structures II.** (5) I. A cont. of Arch. 320. Three hours rec. and six hours lab. a week. Pr.: Arch. 320.
- 328. Theory of Structures III.** (4) II. A cont. 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 rec. and six hours lab. a week. Pr.: Arch. 324.
- 340. Professional Practice.** (2) I, II. 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 lab. a week. Pr.: Arch. 310; senior classification.
- 390. Inspection Trip.** (0) Required. I. 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. Pr.: Senior classification. Approximate cost of trip, \$60.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 406. Problems in Art.** Credit arranged. I, II, S. Work offered in drawing, painting, sculpture, commercial illustration. Pr.: Background of courses needed for work undertaken.
- 410. Etching.** Credit arranged. I, II, S. Technical principles and practice of etching on copper and zinc plate. Pr.: Arch. 170 or approval of instructor.
- 415. Lithography.** Credit arranged. I, II, S. Technical principles and practice of lithography on stone and metal plate and their application in creative work. Pr.: Arch. 170 or approval of instructor.
- 420. Oil Painting III.** (2) I, II, S. Work in the various methods and historical techniques of painting. Six hours lab. a week. Pr.: Arch. 184 or approval of instructor.
- 424. Oil Painting IV.** (2) I, II, S. A cont. of Arch. 420, with a selected study and practice of mural painting. Six hours lab. a week. Pr.: Arch. 420 or approval of instructor.
- 440. Portraiture I.** (2) I, II, S. Principles and elements of portrait drawing. Various media may be employed. Six hours lab. a week. Pr. Arch. 174 or approval of instructor.
- 444. Portraiture II.** (2) I, II, S. A cont. of Arch. 440. Six hours lab. a week. Pr.: Arch. 440 or approval of instructor.

- 448. Sculpture I.** (2) I, II, S. Work in three-dimensional media to develop an understanding of mass and volume through an analysis of sculptural form in various materials. Six hours lab. a week. Pr.: Arch. 124.
- 452. Sculpture II.** (2) I, II, S. Advanced work in various media. Pr.: Arch. 448.
- 461. City Planning I.** (3) I. 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. Pr.: Junior or senior standing. Nine hours lab. a week.
- 463. City Planning II.** (3) II. 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 lab. a week. Pr.: Arch. 461.
- 465. Problems in Architecture.** Credit arranged. I, II, S. Under direct supervision of some member of the departmental staff; study of specific architectural problems. Pr.: Approval of instructor.
- 480. Theory of Structures IV.** (4) I. A cont. of Theory III, with special emphasis being placed on the complete problem of the structure as a whole. Three hours rec. and three hours lab. a week. Pr.: Arch. 328.
- 491. Architectural Design V.** (5) I, II. A cont. of Arch. 250. Fifteen hours lab. a week. Pr.: Arch. 250.
- 495. Architectural Design VI.** (5) I, II. A cont. of Arch. 491. Fifteen hours lab. a week. Pr.: Arch. 491.
- 500. Contemporary Creative Art.** (3) S. Importance of creative thinking in composition and painting as it pertains both to the artist and art teacher. One hour rec. and six hours lab. a week. Pr.: Approval of instructor.
- 506. Creative Drawing.** (3) S. The logic and aesthetics of creative drawing for the artist and teacher. One hour rec. and six hours lab. a week. Pr.: Junior standing or approval of instructor.
- 510. Contemporary Approach to Figure Drawing.** (3) S. Aesthetic problems involved in drawing and painting the figure. One hour rec. and six hours lab. a week. Pr.: Approval of instructor.

FOR GRADUATE CREDIT

- 810. Research in Architecture.** Credit arranged. I, II, S. Original investigation or advanced study in architectural design, planning, industrial design, and related fields. Pr.: Approval of instructor.
- 820. Research in Painting and Sculpture.** Credit arranged. I, II, S. Original investigation or advanced study in painting, sculpture, and related fields. Pr.: Approval of instructor.
- 830. Advanced Architectural Design I.** Credit arranged. I, II, S. A study of the planning of important buildings and groups of buildings. Pr.: Arch. 494.
- 834. Advanced Architectural Design II.** Credit arranged. I, II, S. A cont. of Arch. 830; may furnish material for the master's thesis. Pr.: Arch. 830.

CHEMICAL ENGINEERING
HENRY T. WARD, *Head of Department*

For Curriculum in Chemical Engineering see page 190.

For Curriculum in Nuclear Engineering see page 200.

FOR UNDERGRADUATE CREDIT

- 200. Inspection Trip.** (0) Required. I. Inspections are made of chemical industries in Kansas by visits to plants making chemicals such as am-

monia, methanol, soap, glass, cement, petroleum products, fertilizers, etc. Approximate cost to student, \$30. Pr.: Senior standing.

201. Chemical Engineering Orientation. (1) II. Fundamentals and standards in chemical engineering computations. One hour rec. a week. Pr.: Chem. 210.

205. Chemical Engineering Materials. (2) I, II. Manufacture, use, and properties of metallic and non-metallic materials of construction. Two hours rec. a week. Pr. or conc.: Chem. 230, 250.

211. Industrial Stoichiometry. (4) I, II. Calculation of material and energy balances in industrial chemical processes. Four hours rec. a week. Pr.: Chem. 435.

FOR UNDERGRADUATE AND GRADUATE CREDIT

420. Unit Operations I Recitation. (3) II. Class and problem work on fluid flow, heat transfer, and evaporation. Three hours rec. a week. Pr.: Ch. E. 492, Math. 245 or 290; pr. or conc., Chem. 585, 590.

424. Unit Operations I Laboratory. (1) II. Laboratory work in fluid flow and heat transfer. Three hours lab. a week. Pr. or conc.: Ch. E. 420.

428. Unit Operations II Recitation. (3) I. Class and problem work on humidification, drying, absorption, distillation, crystallization, and filtration. Three hours rec. a week. Pr.: Ch. E. 420; or conc.: Ch. E. 495.

430. Unit Operations II Laboratory. (1) I. Laboratory work in evaporation, humidification, drying, and distillation. Three hours lab. a week. Pr.: Ch. E. 424; pr. or conc.: Ch. E. 428.

440. Unit Process Laboratory. (2) II. Investigation of important unit processes. Six hours lab. a week. Pr. or conc.: Ch. E. 428, 461.

461. Chemical Engineering Design I. (3) I. Inter-relationships and economics of the chemical industry. Cost accounting and economic balances in chemical development and plant location. Three hours rec. a week. Pr.: Chem. 516, 595.

465. Chemical Engineering Design II. (4) II. Problems in designing processes, equipment, and plants for chemical and allied industries. Three hours rec. and three hours lab. a week. Pr.: Ch. E. 428, 461, 495.

480. Problems in Chemical Engineering. Credit arranged. I, II, S. An introduction to chemical engineering research. Pr.: Permission of head of department.

492. Chemical Engineering Thermodynamics I. (3) I. Development and application of the first and second laws of thermodynamics as applied to chemical engineering problems. Three hours rec. a week. Pr.: Ch. E. 211.

493. Chemical Engineering Measurements. (1) I. Principles and techniques of physical measurements basic to unit operations and chemical engineering thermodynamics. Three hours lab. a week. Pr. or conc.: Ch. E. 492.

495. Chemical Engineering Thermodynamics II. (4) I. Thermodynamics applied to physical and chemical equilibria in complex, non-ideal systems. Three hours rec. and three hours lab. a week. Pr.: Ch. E. 492.

501. Industrial Reaction Rates. (1) II. Fundamentals in chemical reaction rates and the application of kinetic data in process design calculations. One hour rec. a week. Pr.: Ch. E. 495.

550. Ceramic Engineering. (3) I or II. A study of the utilization of clays and siliceous materials in the manufacture of glass, refractories, building materials, and other ceramic products. Three hours rec. a week. Pr.: Ch. E. 428, 492.

560. Plastics Technology. (3) I or II. Reactions in the formation of high polymers, manufacturing processes and physical and chemical properties of various types of plastics, resins, and elastomers. Three hours rec. a week. Pr.: Chem. 516, Ch. E. 428.

- 570. Petroleum Refining Engineering I.** (3) I. Properties of hydrocarbon mixtures; separation by distillation and extraction; cracking, polymerization, hydrogenation, and alkylation. Three hours rec. a week. Pr. or conc.: Ch. E. 428, senior standing.
- 575. Petroleum Refining Engineering II.** (3) II. Methods for the design and analysis of equipment and processes for the production and utilization of petroleum hydrocarbons. Pr.: Ch. E. 570; or conc.: Ch. E. 495.
- 701. Nuclear Reactor Technology.** (4) I. Reactor fuels, types of reactions, separation and purification of fission products, operation, control and maintenance problems. Four hours rec. a week. Pr.: Phys. 560.
- 711. Nuclear Reactor Design.** (5) II. Methods of reactor calculation, heat transfer and thermal problems in reactors, materials of construction, waste disposal problems, construction and operation costs. Five hours rec. a week. Pr.: Phys. 560; or conc.: Phys. 575.

FOR GRADUATE CREDIT

- 810. Research in Chemical Engineering.** Credit arranged. I, II, S. 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. Pr.: Consent of head of department.
- 815. Advanced Chemical Engineering Thermodynamics.** (3) I or II. Advanced topics; practical methods of computing thermodynamic functions from molecular structure and statistical and quantum mechanics. Three hours rec. a week. Pr.: Ch. E. 495.
- 821. Advanced Industrial Reaction Rates and Catalysis.** (3) I or II. Theory of kinetics and catalysis in homogeneous and heterogeneous systems, with application to chemical reactor design and process development. Three hours rec. a week. Pr.: Ch. E. 501.
- 825. Distillation.** (3) I or II. Advanced study of distillation. Three hours rec. a week. Pr.: Ch. E. 428, 495.
- 830. Drying.** (3) I or II. Development of drying theory and an analysis of industrial drying systems. Three hours rec. a week. Pr.: Ch. E. 428, 495.
- 835. Filtration and Mechanical Separation.** (3) I or II. Theory and practice of filtration, screening, flotation, air separation, centrifugation, and sedimentation. Three hours rec. a week. Pr.: Ch. E. 428, 495.
- 840. Evaporation.** (3) I or II. Theory of evaporation and design of evaporators. Three hours rec. a week. Pr. or conc.: Ch. E. 428, 495.
- 845. Absorption and Extraction.** (3) I or II. Advanced study of absorption and extraction. Three hours rec. a week. Pr. or conc.: Ch. E. 428, 495.
- 850. Chemical Engineering Analysis.** (3) I or II. Graphical methods and dimensional analysis applied to chemical engineering problems. Three hours rec. a week. Pr. or conc.: Ch. E. 428, 495.

CIVIL ENGINEERINGREED F. MORSE, *Head of Department*

For Curriculum in Civil Engineering see page 191.

FOR UNDERGRADUATE CREDIT

- 120. Surveying I.** (2) I, II, S. Care and use of engineers' surveying instruments. Six hours lab. a week. Pr. or conc.: Math. 190.
- 125. Surveying II.** (3) I, II. Land, topographic, and city surveying. One hour rec. and six hours lab. a week. Pr.: C. E. 120.

- 131. Surveying III.** (3) I, II. Curves and earthwork, surveying incidental to alignment of highways and railways. One hour rec. and six hours lab. a week. Pr.: C. E. 120.
- 200. Inspection Trip.** (0) Required. I. A trip of four to six days to one or more industrial centers. Approximate cost to student, \$60. Pr.: Senior classification.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 405. Astronomy and Geodesy.** (3) I. The elements of astronomy; precise methods of surveying and leveling. Two hours rec. and three hours lab. a week. Pr.: C. E. 411.
- 411. Photogrammetry.** (3) I, II. Construction of mosaics and contour maps from aerial photographs. One hour rec. and six hours lab. a week. Pr.: C. E. 125, 131.
- 421. Stress Analysis I Recitation.** (3) I, II. Stresses in simple beams and framed structures, with an introduction to deflections and redundants. Three hours rec. a week. Pr.: Ap. M. 410.
- 424. Stress Analysis I Laboratory.** (2) I, II. Graphical determination of stresses and deflections. Six hours lab. a week. Pr. or conc.: C. E. 421.
- 428. Stress Analysis II.** (3) I, II, S. 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 rec. a week. Pr.: C. E. 421, 424.
- 440. Sanitary Engineering.** (4) II. Design, construction, and operation of water supply and sewerage systems. Three hours rec. and three hours lab. a week. Pr.: Ap. M. 470, Bact. 190.
- 444. Sanitary Engineering Design.** (2) II. A cont. of C. E. 440, with emphasis on cost, estimates, and methods of financing. Six hours lab. a week. Pr.: C. E. 440.
- 451. Transportation Engineering Recitation.** (3) I. The design, construction, and maintenance of railroads, highways, and airports. Three hours rec. a week. Pr.: C. E. 131, Ap. M. 450.
- 453. Transportation Engineering Laboratory.** (2) I. Field and office work incidental to the design, construction, and maintenance of railroads, highways, and airports. Six hours lab. a week. Pr. or conc.: C. E. 451.
- 455. Applied Hydrology.** (3) II. A study of the sources of supply, amount, and movement of underground and surface waters; their collection, control, and utilization. Three hours rec. a week. Pr.: Ap. M. 470.
- 460. Foundations.** (2) I, II. Design and construction of foundations for pavements, bridges, and buildings. Two hours rec. a week. Pr.: Ap. M. 450.
- 470. Design of Framed Structures.** (3) II, S. Designs and general drawings of highway and railroad truss and girder bridges. Nine hours lab. a week. Pr.: C. E. 421.
- 474. Reinforced Concrete Arches.** (3) II. The elastic theory applied to the design of reinforced concrete arches for bridges, buildings, and dams. Three hours rec. a week. Pr.: C. E. 428.
- 478. Reinforced Concrete Design Recitation.** (2) II, S. A study of the characteristics of concrete as a building material and the design of reinforced concrete structures. Two hours rec. a week. Pr.: C. E. 421.
- 480. Reinforced Concrete Design Laboratory.** (2) II, S. Design drawings of reinforced concrete structures. Six hours lab. a week. Pr. or conc.: C. E. 478.
- 484. Advanced Structural Design A.** (3) I. The design of statically indeterminate reinforced concrete structures. Three hours rec. a week. Pr.: C. E. 428, 478, 480.

- 488. Advanced Structural Design B.** (3) II. The design of statically indeterminate steel structures. Three hours rec. a week. Pr.: C. E. 428, 470.
- 500. Airport Design.** (3) I. An advanced study of the problems encountered in the design, construction, and maintenance of large airports. Two hours rec. and three hours lab. a week. Pr.: C. E. 450.
- 510. Highway Design.** (3) II. Survey and preparation of highway plans based on economic studies. Two hours rec. and three hours lab. a week. Pr.: C. E. 450.
- 520. Economics of Design and Construction.** (3) I. A study of methods, construction equipment, and economic factors affecting engineering projects. Three hours rec. a week. Pr.: Sr. or graduate classification.
- 600. Problems in Civil Engineering.** Credit arranged. I, II, S. Pr.: Approval of instructor.

FOR GRADUATE CREDIT

- 810. Research in Civil Engineering.** Credit arranged. I, II, S. Original investigation or advanced study in some field related to the practice of civil engineering. Pr.: Consult instructors.

ELECTRICAL ENGINEERING

RUSSELL M. KERCHNER, *Head of Department*

For Curriculum in Electrical Engineering see page 192.

FOR UNDERGRADUATE CREDIT

- 110. Orientation E.** (1) I, II. The electrical engineer's duties and responsibilities. Electrical and safety codes applied to electrical equipment and construction. Three hours lec. and lab. a week.
- 120. Electrical Engineering C Recitation.** (2) I, II, S. The fundamental principles of direct-current and alternating-current circuits and machinery. For non-electrical students. Two hours rec. a week. Pr.: Phys. 140.
- 124. Electrical Engineering C Laboratory.** (1) I, II, S. Experiments covering characteristics and applications of direct-current and alternating-current machinery. Three hours lab. a week. Pr. or conc.: E. E. 120.
- 130. Illumination A.** (2) I, II. Systems, calculations, and specifications of interior wiring; principles of illumination. Two hours rec. a week. Pr.: Phys. 120 or 140.
- 160. Inspection Trip.** (0) Required. I. 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. Pr.: Senior classification.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 405. Basic Electrical Engineering.** (4) I, II, S. Fundamentals of electric, magnetic, and electrostatic circuits. Four hours rec. a week. Pr. or conc.: Phys. 140, Math. 245 or 290.
- 411. Direct-current Machinery Recitation.** (3) I, II, S. Principles of operation and the characteristics of direct-current generators and motors. Three hours rec. a week. Pr.: Phys. 140; or conc.: E. E. 405.
- 414. Direct-current Machinery Laboratory.** (1) I, II, S. Characteristics of direct-current machines. Three hours lab. a week. Pr. or conc.: E. E. 411.
- 426. Alternating-current Circuits.** (5) I, II, S. A mathematical treatment of alternating-current phenomena in single and polyphase circuits. Four hours rec. and a three-hour calculating period a week. Pr.: E. E. 405; or conc.: Math. 360.

- 430. Alternating-current Machinery I Recitation.** (3) I, II, S. Principles of design, construction, and operation of transformers, alternating-current generators, and polyphase induction motors. Three hours rec. a week. Pr.: E. E. 426.
- 437. Alternating-current Laboratory.** (1) I, II, S. Experiments illustrating the characteristics of alternating-current circuits and transformers. Three hours lab. a week. Pr. or conc.: E. E. 430.
- 439. Alternating-current Machinery II Recitation.** (2) I, II, S. Cont. of E. E. 430, including synchronous motors, parallel operation of alternators, converters, induction and commutator alternating-current motors, rectifiers, and accessory apparatus. Two hours rec. a week. Pr.: E. E. 430, 437.
- 442. Alternating-current Machinery Laboratory.** (1) I, II, S. Cont. of E. E. 436, with experiments on machines listed in E. E. 439. Six hours lab. a week. Pr. or conc.: E. E. 439.
- 460. Electronics I.** (2) I, II. The fundamental principles of electron tubes. Two hours rec. a week. Pr.: Phys. 140, E. E. 405.
- 464. Electronics II Recitation.** (4) I, II. A study of basic electronic circuits, amplifiers, and oscillators. Four hours rec. a week. Pr.: E. E. 426, 460.
- 468. Electronics II Laboratory.** (2) I, II. Basic electronic circuits and characteristics. Six hours lab. a week. Pr. or conc.: E. E. 464.
- 470. Industrial Electronics Recitation.** (3) II. Fundamental principles of electron tubes and circuits and applications in industry. Three hours rec. a week. Pr.: E. E. 120 or 426 or 508.
- 474. Industrial Electronics Laboratory.** (1) II. Industrial electronic equipment. Three hours lab. a week. Pr. or conc.: E. E. 470 or 480.
- 480. Industrial Electronics and Control Recitation.** (2) II. Applications and circuits of electronics in industry. Servomechanisms and other control devices. Two hours rec. a week. Pr.: E. E. 464.
- 490. Electrical Measurements Recitation.** (2) I, II. Methods for electric and magnetic measurements; resistance, quantity, current, electromotive force, capacity, inductance. Two hours rec. a week. Pr. or conc.: E. E. 426.
- 494. Electrical Measurements Laboratory.** (1) I, II. Measurements of resistance, current, electromotive force, capacity, inductance, watts, energy. Three hours lab. a week. Pr. or conc.: E. E. 490.
- 500. Electrical Engineering M-I Recitation.** (4) I, II, S. Theory of direct-current circuits and machines, magnetic circuits, and alternating-current circuits. Four hours rec. a week. Pr.: Phys. 140; pr. or conc.: Math. 245 or 290.
- 504. Electrical Engineering M-I Laboratory.** (1) I, II, S. Experiments on measurement of resistance and study of direct-current machinery characteristics. Three hours lab. a week. Pr. or conc.: E. E. 500.
- 508. Electrical Engineering M-II Recitation.** (3) I, II. Theory of alternating-current machinery. Three hours rec. a week. Pr.: E. E. 500, 504.
- 510. Electrical Engineering M-II Laboratory.** (1) I, II. Experiments on alternating-current circuits and alternating-current machinery characteristics. Three hours lab. a week. Pr. or conc.: E. E. 508.
- 530. Radio Communication Recitation.** (3) I. Radio-frequency amplifiers and oscillators, modulation; application to transmitter circuits; antennae and wave propagation. Three hours rec. a week. Pr.: E. E. 464, 468.
- 534. Radio Communication Laboratory.** (1) I. Experiments on modulation, demodulation; fundamental design of receivers and transmitters; and antennae measurements. Three hours lab. a week. Pr. or conc.: E. E. 530.

- 539. Networks Recitation.** (3) I. Network theorems, infinite line, wave filters, equalizers, impedance matching. Three hours rec. a week. Pr.: E. E. 426.
- 541. Networks Laboratory.** (1) I. Communication circuits and equipment. Three hours lab. a week. Conc.: E. E. 539.
- 550. Electromagnetic Waves Recitation.** (3) II. Principles of guided and free electromagnetic wave propagation, including generation, radiation, and reception. Three hours rec. a week. Pr.: E. E. 539.
- 554. Electromagnetic Waves Laboratory.** (1) II. Experiments on the generation, propagation, radiation, and reception of electromagnetic waves. Three hours lab. a week. Pr. or conc.: E. E. 550.
- 560. Television Recitation.** (3) I. Theory of scanning, television, cathode-ray tubes, pulse generators, video amplifiers and circuits, television transmitters and receivers. Three hours rec. a week. Pr. or conc.: E. E. 550, 539.
- 564. Television Laboratory.** (1) II. Television circuits and equipment. Three hours lab. a week. Pr. or conc.: E. E. 560.
- 570. Illuminating Engineering Recitation.** (3) II. Photometry, light standards, principles of illumination, and illumination design. Three hours rec. a week. Pr.: Math. 245 or 290, Phys. 140.
- 576. Electrical Engineering Summary.** (2) I, II. An integration of the theory and applications of electrical engineering, with special emphasis on engineering economics. Two hours rec. a week. Pr.: Senior standing.
- 590. Transmission and Distribution of Electrical Energy.** (3) II. Transmission line design, economic and technical features; properties of cables and insulators. Three hours rec. a week. Pr.: E. E. 430.
- 600. Transient Electrical Phenomena.** (3) II. Two phases of electrical phenomena: (a) Transients in time, and (b) transients in space. Three hours rec. a week. Pr.: E. E. 426, Math. 360.
- 610. Problems in Electrical Engineering.** Credit arranged. I, II, S.
- 620. Analog Computation.** (3) II. Use of analog computers; solution of linear and non-linear algebraic and differential equations—scaling problems into machine units. Two hours rec. and three hours lab. a week. Pr.: Math. 360 or 600, Phys. 120 or 140.
- 630. Transistor Circuitry.** (3) I. A study of transistor circuits. Three hours rec. a week. Pr.: E. E. 530.
- 640. Design of Switching Circuits.** (3) I. Boolean algebra applied to design of switching networks, digital calculating circuits, codes, and translating circuits; sequential relay circuits. Three hours rec. a week. Pr.: E. E. 464.
- 650. Operational Circuit Analysis.** (3) II. Unit function, transforms, and other methods of Heaviside and Bromwich applied to electric circuits. Three hours rec. a week. Pr.: E. E. 426.
- 660. Advanced Electric Circuits I.** (3) I. 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 rec. a week. Pr.: E. E. 439.
- 670. Servomechanisms.** (3) I. Theory of closed servo loops, including a study of dynamics and stability using the Laplace transform. Three hours rec. a week. Pr.: Math. 360 or 600, E. E. 468.
- 680. Power System Stability.** (3) II. The stability problem, physical and analytical concepts, characteristics of power system apparatus from the standpoint of stability, and calculation of steady-state and transient stability. Three hours rec. a week. Pr.: E. E. 430.

FOR GRADUATE CREDIT

- 810. Research in Electrical Engineering.** Credit arranged. I, II, S. 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. Pr.: E. E. 464.
- 840. High-frequency Measurements Recitation.** (2) II. Theory of measurement at radio frequencies of current, voltage, frequency, modulation; antenna and transmission line characteristics. Two hours rec. a week. Pr.: E. E. 426, 530.
- 844. High-frequency Measurements Laboratory.** (1) II. Application of high-frequency measurements. Three hours lab. a week. Pr. or conc.: E. E. 840.
- 850. Advanced Radio Communication.** (3) II. An advanced course in radio communication covering high-frequency and transit-time effects, noise antennas, communication systems, and acoustics. Three hours rec. a week. Pr.: E. E. 530.
- 855. Advanced Electromagnetic Waves.** (3) II. Mathematical development of electromagnetic wave theory. Three hours rec. a week. Pr.: E. E. 554.
- 870. Vacuum Tubes.** (3) I. Principles of vacuum-tube design; development, description, and utilization of the physical laws involved. Three hours rec. a week. Pr.: E. E. 464.
- 880. Advanced Electrical Theory.** Credit arranged. I, II. Pr.: E. E. 464.

GENERAL ENGINEERING

MERRILL A. DURLAND, *Dean*

- 110. Engineering Lectures.** (0) Required. I, II. 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.** (0) Required. I, II. 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) I, II. Maximum, 4 hours of credit. Editorial and business staff work on the *Kansas State Engineer*. Pr.: Junior classification and consent of dean.

INDUSTRIAL ENGINEERING AND INDUSTRIAL ARTS

GABE A. SELLERS, *Head of Department*

For Curriculum in Industrial Education see page 194.
 For Curriculum in Industrial Engineering see page 195.
 For Curriculum in Industrial Technology see page 196.

FOR UNDERGRADUATE CREDIT

- 110. Auto Mechanics I.** (4) I. A study of the automobile, its construction and maintenance. Two hours rec. and six hours lab. a week. Pr.: Phys. 120 or equiv.
- 114. Aero Mechanics I.** (4) Taught upon request. A study of the airplane and its maintenance. Two hours rec. and six hours lab. a week.

- 122. Appliance Servicing.** (4) II. 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 rec. and six hours lab. a week. Pr.: Phys. 120 or equiv.
- 125. Shop A.** (2) I, II, S. An introductory course in forging and heat treating, foundry practice and machine shop work. Six hours lab. a week.
- 130. Woodwork I.** (2) I, II, S. Elementary woodwork. Six hours lab. a week.
- 134. Woodwork II.** (2) II, S. Cont. of I. E. 130. Six hours lab. a week. Pr.: I. E. 130.
- 138. Woodwork III.** (2) Taught upon request. Advanced woodwork and cabinetmaking. Six hours lab. a week. Pr.: I. E. 134.
- 140. Woodwork IV.** (2) 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 lab. a week. Pr.: I. E. 138.
- 144. Wood Turning.** (2) I, II, S. Practice in handling the lathe and turning tools. Six hours lab. a week. Pr.: I. E. 130.
- 148. Carpentry.** (3) II. 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 rec. and six hours lab. a week. Pr.: I. E. 130.
- 150. Pattern Making.** (2) II. 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 lab. a week. Pr.: I. E. 125.
- 155. Foundry I.** (1) I, II. (a) Bench, floor and pit molding, use of molding and core machines, operating non-ferrous furnaces and cupola; (b) study of commercial foundry equipment and the operation and control of the foundry. Three hours lab. a week. Pr.: I. E. 125.
- 160. Finishing I.** (2) I, II, S. A study of materials, processes, methods of applications of finishes for both wood and metal. Brush and spray equipment used. Six hours lab. a week. Pr. or conc.: I. E. 134.
- 165. Forging and Heat Treating.** (1) 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 lab. and one hour of outside preparation a week. Pr.: I. E. 125.
- 170. Heat Treating I.** (2) Taught upon request. A cont. 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 non-ferrous construction materials. Six hours lab. a week. Pr.: I. E. 125.
- 175. Metals and Alloys.** (2) I, II, S. The manufacture and use of iron, steel, copper, aluminum, and their alloys. Two hours rec. a week. Pr. or conc.: Chem. 170.
- 180. Welding.** (1) I, II, S. The theory and practice of fusion welding, covering gas and electric welding. Three hours lab. a week.
- 184. Electric Welding.** (1) I, S. The theory and practice of electric welding, including inspection methods. Three hours lab. a week. Pr.: I. E. 180.
- 188. Gas Welding.** (1) I, S. The theory and practice of gas welding, including inspection methods. Three hours lab. a week. Pr.: I. E. 180.
- 190. Machine Tool I.** (2) I, II, S. A cont. of the machine shop phase of I. E. 125. Six hours lab. a week. Pr.: I. E. 125.

- 194. Machine Tool II.** (2) I, II, S. 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 lab. a week. Pr.: I. E. 190.
- 198. Machine Tool III.** (1) 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 lab. a week. Pr.: I. E. 194.
- 200. Sheet Metal I.** (2) II. Covers developments, the use of templets, practice in soldering, folding, wiring, flanging, seaming, rolling, and the more common operations on sheet metal. Six hours lab. a week. Pr.: M. E. 210 or equiv.
- 204. Sheet Metal II.** (2) Taught upon request. A cont. of I. E. 200, with welding of sheet metal. Six hours lab. a week. Pr.: I. E. 184, 188.
- 211. Industrial Safety.** (2) II. Fundamentals of accident analysis and prevention. One hour rec. and three hours lab. a week.
- 220. Gaging.** (1) I. Systems of measurements and the use of various types of gages and devices for checking industrial products. Three hours lab. a week. Pr.: I. E. 125.
- 225. Inspection.** (2) 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 lab. a week.
- 240. Shop for Elementary Teachers.** (2) 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 lab. a week.
- 244. Methods of Teaching Industrial Arts.** (3) I. (See Department of Education, School of Arts and Sciences.) One hour rec. and six hours lab. a week. Pr. or conc.: Educ. 120 and approval of instructor.
- 280. Inspection Trip.** (0) Required. I. A trip of three to six days to industrial centers for inspection of establishments of special interest to industrial engineering and industrial arts students. Pr.: Senior classification.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 402. Highway Safety and Driver Education.** (3) I, S. 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 rec. and three hours lab. a week. Pr.: Senior standing, driver's license, and 10,000 miles driving experience.
- 405. Advanced Appliance Servicing.** Credit arranged. I, II, S. Pr.: I. E. 122 and consent of instructor.
- 408. Advanced Auto Mechanics.** Credit arranged. I, II, S. Pr.: I. E. 110 and consent of instructor.
- 410. Industrial Management.** (3) I. 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 rec. a week. Pr.: Junior standing.
- 415. Production Control.** (2) I. The organization for industrial control, control planning, control systems, work routing, scheduling, dispatching, materials control, and related topics. Two hours rec. a week. Pr.: I. E. 410.
- 419. Manufacturing Processes.** (3) I. 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 rec. a week. Pr.: I. E. 194, 410.

- 421. Production Cost Estimating.** (2) II. Estimating techniques for tool and equipment costs, production rates, production costs, cost ratios, establishment of basic time charts, and related topics. Two hours rec. a week. Pr.: I. E. 410.
- 425. Time and Motion.** (2) I. 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 rec. and three hours lab. a week. Pr.: I. E. 190; junior standing in engineering or industrial arts.
- 427. Plant Planning and Layout.** (2) I. 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 rec. and three hours lab. a week. Pr. or conc.: I. E. 425.
- 431. Tool Engineering.** (2) II. Analyzing, planning, selecting and designing the tooling for mass production, including production type gages, jigs, fixtures, and dies. Six hours lab. a week. Pr. or conc.: I. E. 419.
- 442. Industrial Engineering Practice.** (3) I, II. A practical term problem embracing the fields of industrial organization, financing, marketing, plant site research, production, plant layout, and other industrial engineering activities. One hour lec. and six hours lab. a week. Pr.: I. E. 410.
- 450. Advanced Foundry.** Credit arranged. I, II, S. Pr.: I. E. 155, 460, and consent of instructor.
- 455. Advanced Machine Shop.** Credit arranged. I, II, S. Pr.: I. E. 194, 460, and consent of instructor.
- 460. Metallography I.** (1) I, II. 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 lab. a week. Pr. or conc.: I. E. 175.
- 464. Metallography II.** (2) I, II, S. A cont. of I. E. 460, non-ferrous metals, with special attention to photomicrographic analysis. Six hours lab. a week. Pr.: I. E. 460.
- 468. Physical Metallurgy.** (2) II, S. 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 rec. a week. Pr.: I. E. 460.
- 475. Advanced Welding.** Credit arranged. I, II, S. Pr.: I. E. 184, 188, 460, and consent of instructor.
- 480. Aircraft Materials and Fabrication.** (3) Taught upon request. Materials and methods employed in fabricating airplanes. One hour rec. and six hours lab. a week. Pr. or conc.: Ap. M. 405, I. E. 175, 460.
- 490. General Shop Organization.** (3) Taught upon request. A course covering the organization, methods of teaching, and equipment for the general shop. One hour rec. and six hours lab. a week. Pr.: I. E. 125, 148, 180, 200.
- 493. Advanced Woodwork.** Credit arranged. I, II, S. Pr.: I. E. 134, 160, and consent of instructor.
- 495. Shop Practice Teaching.** Credit arranged. I, II. 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. Pr.: Consult instructor.
- 500. Wood Technology.** (2) II, S. A study of the identification, structure, physical properties, uses, and defects of the commercial woods. Two

hours rec. a week. Pr.: I. E. 134 or junior standing and consent of the instructor.

504. Problems in Industrial Engineering. Credit arranged. I, II, S. Pr.: Approval of instructor.

505. Problems in Industrial Arts. Credit arranged. I, II, S. Pr.: Approval of instructor.

FOR GRADUATE CREDIT

815. Research in Industrial Engineering. Credit arranged. I, II, S. 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. Pr.: Consult instructors.

820. Research in Industrial Arts. Credit arranged. I, II, S. 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. Pr.: Consult instructors.

MECHANICAL ENGINEERING

LINN HELANDER, *Head of Department*

For Curriculum in Mechanical Engineering see page 198.

FOR UNDERGRADUATE CREDIT

110. Steam and Gas Engineering C. (2) I, II. Steam boilers, steam engines, steam turbines, internal combustion engines and auxiliaries. Two hours rec. a week. Pr.: Phys. 110 or 130.

115. Elements of Thermodynamics. (3) I, II. Thermodynamic principles and introduction to engineering applications. Three hours rec. a week. Pr.: Phys. 130, Math. 230 or 290.

120. Professional Orientation I. (1) II. A general development course for sophomores in mechanical engineering. One hour rec. a week. Pr.: Sophomore standing.

125. Professional Orientation II. (1) I. A general development course for juniors in mechanical engineering. One hour rec. a week. Pr.: Junior standing.

130. Air Conditioning A. (3) II. Principles of heating, cooling, and ventilating; heat transmission; equipment used for heating, cooling, and ventilating. Three hours rec. a week. Primarily for students who have not had engineering thermodynamics. Pr.: Phys. 110 or 130.

145. Greenhouse Heating. (3) I. Air-conditioning equipment and systems; fuels; heat transmission; problems applied to greenhouses. Two hours rec. and three hours lab. a week. Pr.: Junior classification.

150. Professional Development. (1) I, II. The social and professional aspect of engineering. One hour rec. a week. Pr.: Senior classification.

180. Inspection Trip. (0) Required. I. A trip of three to six days to industrial centers for the purpose of inspecting industrial plants of special interest to mechanical engineering students. Pr.: Senior classification.

210. Engineering Drawing. (2) I, II. The selection and use of drawing instruments; construction of geometrical figures; lettering; orthographic projections and sections; pictorial methods of representation. Six hours lab. a week.

215. Descriptive Geometry. (2) I, II. 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 lab. a week. Pr.: M. E. 210, Math. 110, or equiv.

220. Machine Drawing I. (2) I, II. 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 lab. a week. Pr.: M. E. 215.

224. Machine Drawing II. (2) I, II. Machine sketching from parts of actual machines; complete working and assembly drawings; tracing and blueprinting. Six hours lab. a week. Pr.: M. E. 220, 230.

230. Mechanism. (3) I, II. 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 rec. a week. Pr.: Math. 190, M. E. 215.

240. Aviation Ground Instruction I. (3) I, II, S. Civil air regulations, simple avigation, simple meteorology, and general service of aircraft. Three hours rec. a week. Pr.: Math. 190 or approval of department head.

244. Aviation Ground Instruction II. (4) I, II, S. Advanced avigation, aeronautical meteorology, aircraft engines, aerodynamics, and aircraft construction. Four hours rec. a week. Pr.: M. E. 240 or private pilot certificate.

250. Flight Instruction I. (2) I, II, S. 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 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

411. Engineering Thermodynamics I. (4) I, II. 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 rec. a week. Pr.: Math. 245 or 290, Phys. 130.

412. Engineering Thermodynamics II. (2) I, II. Extension of Engineering Thermodynamics I; principally for mechanical engineering students. Two hours rec. a week. Pr.: M. E. 411.

414. Advanced Thermodynamics I. (3) I. Three hours rec. a week. Pr.: M. E. 412.

418. Advanced Thermodynamics II. (3) II. Cont. of Advanced Thermodynamics I. Three hours rec. a week. Pr.: M. E. 414.

421. Heat Transfer. (3) I. Particular reference to heat exchangers, air preheaters, economizers, boilers, condensers, evaporators, and similar equipment. Two hours rec. and three hours lab. a week. Pr.: M. E. 411, Ap. M. 474, Math. 360.

424. Refrigeration. (2) I. 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 rec. a week. Pr.: M. E. 411.

428. Air Conditioning. (3) I, II. Psychrometry; heat transmission; air-conditioning equipment and systems; design problems. Two hours rec. and three hours lab. a week. Pr.: M. E. 411.

430. Internal Combustion Engines. (3) II. Three hours rec. a week. Pr.: M. E. 411.

435. Aircraft Power Plants. (2) II. Design and performance characteristics of airplane power plants. Two hours rec. a week. Pr.: M. E. 430.

440. Heat-power Engineering A. (3) I, II. Power-plant equipment, fuels, and combustion. Three hours rec. a week. Pr.: M. E. 411.

445. Mechanical Engineering Design. (3) II. Professional-type problems involving thermal, thermodynamic, electrical, mechanical, and economic factors. One hour rec. and six hours lab. a week. Pr.: M. E. 440.

- 448. Advanced Power-plant Engineering.** Credit arranged. II. 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 inter-connections between utilities and industrial plants for the economical interchange of power. Pr.: M. E. 445.
- 460. Heat-power Laboratory.** (1) I, II. Lab. course in heat-power equipment for non-mechanical engineering students. Three hours lab. a week. Pr.: M. E. 110 or 411.
- 464. Mechanical Engineering Laboratory I.** (2) I, II. Lab. course in heat-power equipment for mechanical engineering students. Six hours lab. a week. Pr. or conc.: M. E. 440.
- 468. Mechanical Engineering Laboratory II.** (2) I, II. Power-generating equipment, fans, air-conditioning equipment, internal combustion engines, steam engines, turbines, and auxiliaries. Six hours lab. a week. Pr.: M. E. 464.
- 480. Aeronautical Engineering Laboratory.** (2) II. Aircraft engines, propellers, engine accessories, and instruments. Six hours lab. a week. Pr.: M. E. 460 or 464.
- 485. Airplane Instruments.** (2) II. Instruments and controls for the airplane. Two hours rec. a week. Pr.: E. E. 120 and M. E. 640.
- 490. Engineering Economics.** (3) I. Economic analysis of principles as applied in engineering. Pr.: Ec. So. 110; senior standing.
- 501. Principles of Industrial Instrumentation.** (2) I. Instrumentation applicable to mechanical engineering fields. Pr.: E. E. 508, 510.
- 505. Automatic Controls.** (2) II. Principles underlying the design and application of devices used to control or regulate industrial processes and operations. Pr.: M. E. 501.
- 510. Petroleum Production I.** (3) I. Properties of petroleum; exploration methods; field developments; drilling; oil field hydrology; casing and well completion; and fishing tools and methods. Three hours rec. a week. Pr.: Senior standing in the Department of Mechanical Engineering or permission of department head.
- 514. Petroleum Production II.** (3) II. Principles of drainage; production methods; secondary methods of recovery. Two hours rec. and three hours lab. a week. Pr.: M. E. 510.
- 520. Gas Dynamics I.** (3) II. Properties of compressible fluids, subsonic and supersonic flow, steady and non-steady motion with emphasis on one-dimensional flow. Pr.: Math. 360 or 600, M. E. 412, Ap. M. 470 or 474.
- 530. Problems in Mechanical Engineering.** Credit arranged. I, II.
- 535. Engineering Analysis.** (3) I. The engineering method of analysis employed in the solution of professional-level problems selected from various branches of engineering. Pr.: Math. 360 or 600 and senior standing in engineering.
- 540. Advanced Heat Transfer.** (3) I, II. Pr.: M. E. 421.
- 610. Kinematics and Kinetics.** (2) II. A study of the velocities and accelerations in mechanisms and machines, and of the forces resulting therefrom. Two hours rec. a week. Pr.: M. E. 230, Ap. M. 405.
- 615. Engine Dynamics.** (2) I. 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 rec. a week. Pr.: M. E. 610.
- 621. Machine Design I.** (5) II. Displacement, velocity, and acceleration in machinery; static and dynamic forces; introduction to machine vibration. Four hours rec. and three hours lab. a week. Pr.: Ap. M. 405.

- 622. Machine Design II.** (3) I. The straining action in machine elements; friction and lubrication; high-speed machinery fastenings. Three hours rec. a week. Pr.: Ap. M. 410, M. E. 220, 230.
- 623. Machine Design III.** (3) II. More advanced consideration of the design of machine elements and of simple machines. Three hours rec. a week. Pr.: M. E. 622.
- 625. Machine Design Laboratory.** (2) II. Calculations for a number of simple machines and machine parts, paralleling the recitation class assignments. Six hours lab. a week. Pr. or conc.: M. E. 623.
- 630. Machine Vibration I.** (3) II. A general consideration of free and forced vibration in machines for various degrees of freedom; critical speed; vibration isolation. Three hours rec. a week. Pr.: Ap. M. 405, Math. 360.
- 634. Machine Vibration II.** (3) I. 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; non-linear forms. Three hours rec. a week. Pr.: M. E. 630.
- 640. Aerodynamics I Recitation.** (3) II. A general introduction to aerodynamics. Three hours rec. a week. Pr.: Ap. M. 405.
- 644. Aerodynamics I Laboratory.** (1) II. Operation of wind tunnel. Three hours lab. a week. Pr. or conc.: M. E. 640.
- 648. Aerodynamics II Recitation.** (3) I. A cont. of Aerodynamics I. Three hours rec. a week. Pr.: M. E. 640, Ap. M. 474.
- 650. Aerodynamics II Laboratory.** (1) I. Determination of performance curves and stability of an airplane. Pr. or conc.: M. E. 648.
- 660. Airplane Design I.** (3) I. The general principles of airplane design. One hour rec. and six hours lab. a week. Pr.: Ap. M. 410, M. E. 644.
- 664. Airplane Design II.** (3) II. Airplane design and performance calculations. One hour rec. and six hours lab. a week. Pr.: M. E. 660.
- 668. Airplane Design and Construction.** (3) II. The structure and rigging of aircraft, the design directive of a small plane, the general layout and weight analysis. One hour rec. and six hours lab. a week. Pr.: M. E. 640, Ap. M. 410.
- 670. Propeller Theory and Design.** (2) I. Theory of air screw, effect of propeller characteristics on airplane performance, and calculation of stresses. Pr.: Ap. M. 474, M. E. 640.
- 680. Graphics of Engineering Formulas.** (2) II. Simple empirical equations; diagramming of formulas; nomographic or alignment charts; special slide rules. Two hours rec. a week. Pr.: Math. 215 or 260.
- 690. Patents and Inventions.** (2) II. 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 rec. a week. Pr.: Junior or senior standing.

FOR GRADUATE CREDIT

- 810. Research in Mechanical Engineering.** Credit arranged. I, II, S. The lab. 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. Pr.: Consult instructors.
- 815. Research in Machine Design.** Credit arranged. I, II, S. Original investigation in some advanced subject related to courses in this department. This work may furnish material for the master's thesis. Pr.: Consult instructors.
- 820. Advanced Air Conditioning.** (2) I. Similar to Air Conditioning, M. E. 428, but more advanced. Two hours rec. a week. Pr.: M. E. 428.
- 825. Advanced Machine Design.** Credit arranged. I, II. At the option of the student this course may include a study of some advanced subject related to courses in this department. Pr.: Consult instructors.

- 830. Gas Dynamics II.** (3) S. An extension of Gas Dynamics I, with emphasis on two- and three-dimensional problems, shock waves, special problems in connection with combustion engines. Pr.: M. E. 520, Math. 615, or the equiv.
- 840. Research Methodology.** (2) I, II. Principles and techniques of engineering research. Two hours rec. a week. Pr.: 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 for collecting and presenting technical information for the use of the industries and the people of the state. In recent years the Engineering Experiment Station has given increased assistance to industrial development work in the state and especially to assisting those industries that are operating in the state.

The organization and personnel of the Engineering Experiment Station are composed of the departments and staff of the School of Engineering and some additional departments at the College that carry on research in fields related to engineering. The staff with the laboratory facilities in these departments carries on projects in both fundamental and applied research. Many of these projects are directed toward specific problems for the purpose of aiding the industrial development of the state. Projects which are for specific industrial concerns are financed in whole by those concerns. Other projects which are for the purpose of disclosing new technical knowledge of value to science and industry may be financed in part by commercial organizations, by the federal government, or by the state government. The major portion of funds used by the Engineering Experiment Station is supplied to the College by the state.

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 and operation of industry. Counsel and assistance can be given in fields of mechanical, electrical, civil, 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.

Among the investigations now being carried on are: electronic analog computer construction and operation; the development of pre-stressed concrete; the use of light-weight aggregates; effectiveness of sodium methyl silicate in water proofing building materials; industrial building design; stability of rings and circular arches under arbitrary loading; effect of sonic vibrations on rates of mass transfer; construction and operation of an anechoic chamber; sound-level measurement in rooms; study of retained austenite in quenched alloy steels; testing and rating roof ventilators; carburizing properties of natural gas; radiant heating and cooling; downward projection of heated air; radioactive salts in studying the migration of soluble salts in Portland concrete; properties of arc-welded joints in cast iron; heat transfer of condensing freon; and many other subjects.

A complete list of projects and a brief description of each is published in a bulletin entitled, "Research Activities, Kansas Engineering Experiment Station, 1955." Also the results of some of the projects are published in detail in Engineering Experiment Station bulletins. Copies of any of these bulletins will be sent free of charge to any citizen of Kansas upon request.

Persons interested in obtaining information or assistance or copies of bulletins should address their inquiries to the Engineering Experiment Station, Kansas State College, Manhattan, Kansas.

The School of Home Economics

DORETTA SCHLAPHOFF HOFFMAN, *Dean*

MARTHA M. KRAMER, *Assistant Dean*

MARGARET E. RAFFINGTON, *Assistant to the Dean*

Two major objectives are basic to the program for each student in home economics. The first objective is to contribute to general education through a combination of required courses. The goal of these courses is to help the student become a well-informed person trained for responsible citizenship, with a sound philosophy of personal and family living, and an appreciation of the aesthetic in daily living. The second major objective is to provide a sound background for homemaking or for entering one of the many professions open to home economists.

Programs of study leading to the degree Bachelor of Science can be planned within the five curriculums offered in the School of Home Economics. These curriculums are designed to meet the needs of students with varying interests. They are listed below and described on the following pages.

1. Curriculum in Home Economics (page 227) with Options in
 - Interior Decoration (page 228)
 - Crafts (page 228)
 - Costume Design (page 228)
 - Teaching Art in High School (page 229)
 - Clothing Retailing (page 229)
 - Clothing and Costume Design (page 229)
 - Clothing and Textiles Research (page 229)
 - Nursery School Teaching (page 230)
 - Family and Child Development with Community Services (page 230)
 - Homemaking (page 230)
 - Family Economics and Finance (page 231)
 - Household Equipment, Housing, and Home Management (page 231)
 - Foods and Nutrition Research (page 231)
 - Foods Demonstrating (page 232)
 - Home Demonstration Work (page 232)
 - Teaching Home Economics in High School (page 232)
2. Curriculum in Dietetics and Institutional Management (page 233)
3. Curriculum in Restaurant Management (page 234)
4. Curriculum in Home Economics and Journalism (page 235)
5. Curriculum in Home Economics and Nursing (page 236)

It is possible, therefore, with the guidance of a faculty adviser to plan a program that will prepare the student for homemaking and for such professional careers as teacher, home demonstration agent, interior decorator, home economist in business or in social welfare, nursery school supervisor, specialist in housing or home management, women's page editor, textile chemist, clothing designer, food and equipment demonstrator, nutritionist, dietitian, restaurant manager, nurse, or research technician. The requirements of these curriculums for the first year are much the same, so the student has time to study possibilities in all areas in home economics before choosing the one best suited to her needs and interests. The Bachelor of Science degree is earned by fulfilling the requirements in the curriculum chosen by the student.

Home economics students take courses offered by many departments at Kansas State College. Most of the home economics courses are taken in the six departments in the School of Home Economics: Art, Clothing and Textiles, Family and Child Development, Foods and Nutrition, Family Economics, and Institutional Management. However, courses in Home Economics Education are offered in the Department of Education and those in Home Economics and Journalism in the Department of Technical Journalism in the School of Arts and Sciences.

Adequate foundation for graduate study is provided for students who wish to continue beyond the bachelor's degree. Courses are offered which lead to the Master of Science and Doctor of Philosophy degrees.

Curriculum in Home Economics

B. S. in Home Economics

This curriculum provides basic training in home economics. In addition, students may specialize in any of the following areas: art, clothing and textiles, family and child development, family economics, foods and nutrition, home demonstration work, and teaching home economics in high school. The specific options and their requirements are given on the following pages.

For the student who does not wish to choose any of these options, the curriculum provides enough flexibility so that programs in home economics may be set up according to the interests of the student and the kind of career in home economics that she desires. Combinations within home economics such as home demonstration work and teaching home economics, clothing retailing and teaching, or foods and nutrition and teaching are possible.

Also, the electives in this curriculum may be taken in a special field of interest other than home economics. For example, home economics students with aptitudes and interests in the direction of radio and television may use their electives for courses such as:

Spch.	275	Survey Broadcasting	2	Spch.	326	Intro. to T. V.	2
Spch.	285	Radio Speech I	2	Spch.	745	Broadcasting Women's	
Spch.	295	Radio Continuity	3			Programs	3
Spch.	311	KSDB-FM Partic.	1				

Another example of this type of plan is in the use of the electives in the home economics curriculum to fulfill the requirements for teaching in the elementary schools of Kansas. For students interested in this combination, some courses in family and child development are suggested as electives.

FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Chem.	110	General Chemistry	5 or	Chem.	330	Gen. Org. Chem.	5 or
Gn. St.	110	Man's Phys. World I	4	Gn. St.	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. C. Dev.	210	Human Relations	2	F. & N.	110	Foods I	5
F. Ec.	102	Family Finance	2	C. & T.	150	Selection of Clothing	2
Spch.	105	Oral Comm. I	2	Gn. H. E.	020	H. E. Lect.	0
Gn. H. E.	020	H. E. Lect.	0	Ph. Ed.	055	Physical Education	0
Ph. Ed.	055	Physical Education	0				
Total				15 or 16	Total		
					15 or 16		

SOPHOMORE

Gn. St.	210	Introd. Soc. Sci. I†	4	Gn. St.	220	Introd. Soc. Sci. II	4
Gn. St.	150	Biology I†‡	4	Gn. St.	160	Biology II†	4
F. & N.	130	Applied Nutrition	2	C. & T.	255	Textiles	3 or
		Elective	5	C. & T.	170	Pattern Study	3
Gn. H. E.	020	H. E. Lect.	0			Elective	4
Ph. Ed.	055	Physical Education	0	Gn. H. E.	020	H. E. Lect.	0
				Ph. Ed.	055	Physical Education	0
Total				15	Total		
					15		

JUNIOR

Art	119	Int. Dec. I	2	F. C. Dev.	490	Family Health	3 or
F. Ec.	202	The House	3	F. C. Dev.	450	Family Relationships	2
		Elective	11			Elective	13 or 14
Gn. H. E.	020	H. E. Lect.	0	Gn. H. E.	020	H. E. Lect.	0
Engl.	090	English Proficiency	0				
Total				16	Total		
					16		

† Or substitute, such as Zoology, Physiology.

‡ One course in General Studies may be deferred to junior year.

Option in Teaching Art in High School (Art)

This option includes courses in crafts, design, drawing, and appreciation of art; provides requirements for Kansas certification to teach secondary school art.

	<i>Course</i>	<i>Sem. Hrs.</i>		<i>Course</i>	<i>Sem. Hrs.</i>
Art	102 Elementary Design II	2	Art	430 Problems in Teaching Art	2
Art	104 Intermediate Design	2	Educ.	100 Educ. Psychology I	3
Art	106 Lettering	2	Educ.	105 Educ. Psychology II	3
Art	114 Fashion Life Sketching ..	2	Educ.	276 Meth. of Teaching	
Art	130 Drawing I	2		Home Economics ..	2 or
Art	132 Drawing II	2	Educ.	135 Meth. of Teaching	
Art	134 Design in Crafts I	2		in Sec. Schools	3
Art	136 Design in Crafts II	2	Educ.	120 Prin. of Sec. Educ.	3
Art	139 Ceramics I	2	Educ.	295 Teaching Partic. in	
Art	140 Weaving	2 or		Home Economics ..	4 or
Art	415 Drawing III	2	Educ.	150 Tchg. Partic. in the	
Art	401 Survey of Art I	3		Secondary Schools	3
Art	402 Survey of Art II	3	Psych.	310 General Psychology	3
Art	405 Advanced Design	2		One other course in educ.	3
Art	411 Metal Work and Jewelry	2			
Option Requirements					53 — 53
Electives					5 — 2
Curriculum Requirements					66 — 69
Total					124 124

Option in Clothing Retailing (C. & T.)

Courses designed to prepare the student for a career in retailing are combined with those providing a comprehensive background in home economics. Elective hours may include courses in radio and television in addition to those satisfying other interests of the student. Opportunities for those completing this option are found in department stores and specialty shops.

	<i>Course</i>	<i>Sem. Hrs.</i>		<i>Course</i>	<i>Sem. Hrs.</i>
Art	125 Window Display	3	C. & T.	650 Clothing Economics	3
B. A.	330 Principles in Acctg.	3	C. & T.	700 History of Costume	3
B. A.	150 Business Management	3	Engl.	155 Commercial Corres.	3
B. A.	440 Marketing	3	Psych.	505 Psych. of Adv. & Selling	3
B. A.	445 Retailing	3	Psych.	515 Personnel Psychology	3
C. & T.	610 Intermediate Textiles	3			
Option Requirements					33 — 33
Electives					24 — 21
Curriculum Requirements					67 — 70
(Take Ec. So. 110, 250, and Psych. 310 in place of Gn. St. 210 and 220.)					
Total					124 124

Option in Clothing and Costume Design (C. & T.)

This option is designed to provide background work and experience in creative design in addition to providing a comprehensive background in home economics.

	<i>Course</i>	<i>Sem. Hrs.</i>		<i>Course</i>	<i>Sem. Hrs.</i>
Art	117 Costume Design II	3	C. & T.	525 Design by Draping	3
Art	130 Drawing I	2	C. & T.	555 Advanced Tailoring	3
Art	434 Historic Fabric Design ..	2	C. & T.	600 Intermediate Textiles	3
Art	437 Costume Design III	3	C. & T.	650 Clothing Economics	3
C. & T.	255 Textiles	3	C. & T.	700 History of Costume	3
C. & T.	300 Tailoring	3	Psych.	310 General Psychology	3
C. & T.	350 Flat Pattern Designing ..	3	Psych.	465 Psychology of Art	3
Option Requirements					41 — 41
Electives					17 — 14
Curriculum Requirements					66 — 69
Total					124 124

Option in Clothing and Textiles Research (C. & T.)

Courses in science, mathematics, textile testing and research are combined with those providing a comprehensive background in home economics to prepare students for textile testing and as assistants in textile research. Opportunities for those completing this option are found in the

Option in Family Economics and Finance (F. Ec.)

This option is intended to prepare students for work as family financial consultants and as consumer education specialists, in adult education, with commercial companies, and in social welfare. Also, this option is intended to provide basic training for further study of family living in today's economy, that is, for those students preparing for college teaching, research, or work in areas of government related to family living.

<i>Course</i>			<i>Sem. Hrs.</i>	<i>Course</i>			<i>Sem. Hrs.</i>
B. A.	330	Principles of Acctg.	3	F. Ec.	572	Consumers and the Mkt.	3
Ec. So.	120	Economics II	3	F. Ec.	505	Finan. Prob. of Families	2
Ec. So.	130	Money and Banking	3	Math.	145	Algebra	5
F. C. Dev.	410	Child Guidance I	3	Math.	160	Math. of Finance	3 or
F. Ec.	503	Home Management	2	Math.	320	Statistics	3
F. Ec.	504	Home Management Lab.	2	Psych.	435	Social Psychology	3 or
F. Ec.	555	Families in Am. Econ. ..	3	Ec. So.	650	Cultural Anthropology ..	3
Option Requirements							35 — 35
Electives							22 — 19
Curriculum Requirements							67 — 70
(Take Ec. So. 110, 250, and Psych. 310 in place of Gn. St. 210 and 220.)							

Total 124 124

Option in Household Equipment, Housing, and Home Management (F. Ec.)

The required courses are basic for all three areas. However, sufficient electives are allowed for further specialization: in **equipment** for those training to become demonstrators of household equipment; in **housing** for those interested in house planning, kitchen designing, and home furnishings, or in research in housing as it relates to family living; and in **home management** for those interested in positions as "home adviser" with commercial companies or press, radio, and T. V., as adviser in home management houses, or as home management specialist with extension service. This option also provides basic training for those who wish to prepare for research in work simplification and home management.

<i>Course</i>		<i>Sem. Hrs.</i>	<i>Course</i>		<i>Sem. Hrs.</i>		
Art	123	Home Furnishings	2	F. Ec.	504	Home Management Lab.	2
F. C. Dev.	410	Child Guidance I	3	F. Ec.	522	Time and Motion in	
F. Ec.	352	Household Equipment	2			Household Tasks	2
F. Ec.	422	Houseing Requirements		F. Ec.	555	Families in Am. Ec.	3
		of Families	2	F. Ec.	572	Consumers and the Mkt.	3
F. Ec.	452	Adv. Hshld. Equipment	3	F. & N.	240	Foods II	3
F. Ec.	503	Home Management	2	Phys.	210	Household Physics	4
Option Requirements							31
Electives							23
Curriculum Requirements							70
(Take Chem. 110 and 330; F. C. Dev. 490. Take Ec. So. 110, 250, Psych. 310 in place of Gn. St. 210 and 220.)							

Total 124 124

Option in Foods and Nutrition Research (F. & N.)

A student completing this option may become an assistant or technologist in a research laboratory, a home economist in a test kitchen or a product development laboratory, a nutritionist, or a teacher of foods and nutrition. Commercial or promotional food organizations, colleges and universities, and state and federal agencies employ young people trained in foods and nutrition. Many research positions in colleges and universities offer opportunity for graduate study.

<i>Course</i>			<i>Sem. Hrs.</i>	<i>Course</i>			<i>Sem. Hrs.</i>
Bact.	110	General Microbiology	3	F. & N.	417	Experimental Cookery	3
Chem.	230	Chem. Recitation II	3	F. & N.	553	Seminar in Foods	2 or
Chem.	250	Chem. Laboratory II	2	F. & N.	554	Seminar in Nutrition	2
Chem.	435	Gen. Quan. Analysis	4	F. & N.	557	Problems in Foods 1 or 2 or	
Chem.	650	General Biochemistry	5	F. & N.	558	Problems in Nutrition 1 or 2	
F. & N.	240	Foods II	3	Phys.	110	General Physics I	4 or
F. & N.	250	Dietetics	3	Phys.	210	Household Physics	4
F. & N.	412	Human Nutrition	3				
Option Requirements							36 — 37
Electives							19 — 17
Curriculum Requirements							69 — 70

Total 124 124

Option in Foods Demonstrating (F. & N.)

Students completing this option are prepared to become home economists with utility companies, food manufacturers or processors, and food promotional agencies. Young women in these positions do educational work by giving demonstrations and illustrated talks, writing food columns for newspapers, and taking part in radio and television programs.

Course			Sem. Hrs.	Course			Sem. Hrs.
A. H.	219	Meat Selec. & Util.,		F. & N.	417	Experimental Cookery	3
		H. E.	2	F. & N.	553	Seminar in Foods	2 or
Bact.	110	General Microbiology	3	F. & N.	554	Seminar in Nutrition	2
F. Ec.	352	Household Equipment	2	Ins. M.	207	Quantity Food Prep. I	2
F. Ec.	503	Home Management	2	Phys.	210	Household Physics	4
F. Ec.	504	Home Management Lab.	2	Spch.	385	Radio Talk	2
F. & N.	240	Foods II	3	Journ.	220	Reporting I	2
F. & N.	250	Dietetics	3	Journ.	221	Reporting Laboratory	1
F. & N.	315	Food Demon. Techniques	2				
Option Requirements							35 — 35
Electives							21 — 20
Curriculum Requirements							68 — 69
(Take Chem. 110 and 330.)							
Total							124 124

Option in Home Demonstration Work

This option is designed for the student who wishes to become a home demonstration agent. After completing the requirements for the bachelor's degree in Home Economics including the courses in this option, the student will be prepared to join the Extension service for work in a county in Kansas or another state.

The State Home Demonstration Leader advises with the student who selects this option.

Course			Sem. Hrs.	Course			Sem. Hrs.
C. & T.	170	Pat. Study & Garment		F. C. Dev.	515	Devel. and Guid. of	
		Construction	3			Youth	3
C. & T.	300	Tailoring	3	F. Ec.	503	Home Management	2
C. & T.	650	Clothing Economics	3	F. Ec.	504	Home Management Lab.	2
Educ.	276	Meth. of Teach. H. Ec.	2	F. Ec.	555	Families in Am. Econ. ..	3
Educ.	460	Exten. Organ. & Policies	3	F. Ec.	572	Consumers and the Mkt.	3
Educ.	595	Exten. Meth. for H. Ec.	3	F. & N.	240	Foods II	3
F. C. Dev.	410	Child Guidance I	3	Phys.	210	Household Physics	4
F. C. Dev.	450	Family Relationships	2	Psych.	310	General Psychology	3
Option Requirements							45
Electives							10
Curriculum Requirements							69
(Take Chem. 110 and 330; F. C. Dev. 490; C. & T. 255.)							
Total							124

Option in Teaching Home Economics in High School (H. E. Educ.)

This option prepares the student for teaching home economics in Kansas secondary schools. After completing this curriculum and receiving the B. S. degree, the student is eligible for a secondary three-year certificate to teach home economics in any Kansas junior or senior high school and for approval to teach in a vocational homemaking department.

Course			Sem. Hrs.	Course			Sem. Hrs.
C. & T.	170	Pat. Study & Garment		F. C. Dev.	410	Child Guidance I	3
		Construction	3	F. C. Dev.	450	Family Relationships	2
C. & T.	300	Tailoring	3	F. Ec.	503	Home Management	2
Educ.	100	Educ. Psychology I	3	F. Ec.	504	Home Management Lab.	2
Educ.	105	Educ. Psychology II	3	F. & N.	250	Dietetics	3
Educ.	120	Prin. of Sec. Educ.	3	Ins. M.	430	School Food Service	3
Educ.	276	Meth. of Tchg. Home Ec.	2	Phys.	210	Household Physics*	4
Educ.	295	Tchg. Partic. in Home		Psych.	310	General Psychology	3
		Economics	4				
Educ.	575	Voc. Home Econ.					
		Curriculum	3				
Option Requirements							46
Electives							9
Curriculum Requirements							69
(Take Chem. 110 and 330; F. C. Dev. 490; C. & T. 255.)							
Total							124

* Four hours in Art or Family and Child Development may be substituted.

Curriculum in Dietetics and Institutional Management

B. S. in Home Economics

This curriculum is designed to meet the needs of students who wish to become dietitians or directors of food services in hospitals, college residence halls, school lunch rooms, cafeterias, and tea rooms. After graduation, students usually accept appointments to internships accredited by the American Dietetic Association in which satisfactory completion of the year's training makes them eligible for membership.

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. C. Dev.	210	Human Relations	2	Art	100	El. Des. I	2
F. & N.	110	Foods I	5	F. & N.	130	Applied Nutrition	2
Gn. H. E.	020	H. E. Lect.	0	Psych.	310	Gen. Psychology	3
Ph. Ed.		Physical Education	0	C. & T.	150	Selection of Clothing	2
				Gn. H. E.	020	H. E. Lect.	0
				Ph. Ed.		Physical Education	0
Total			15	Total			16

SOPHOMORE

Ec. So.	110	Economics I	3	Ec. So.	250	Introd. Sociology	3
Art	113	Cost. Des. I	2 or	Ins. M.	207	Quan. Food Prep. I	2
Art	119	Int. Dec. I	2	Zool.	465	Human Physiology	4
F. & N.	240	Foods II	3	Phys.	210	Hshld. Physics	4
Spch.	105	Oral Comm. I	2			Elective	2
Zool.	110	Gen. Zoology	5	Gn. H. E.	020	H. E. Lect.	0
Gn. H. E.	020	H. E. Lect.	0	Ph. Ed.		Physical Education	0
Ph. Ed.		Physical Education	0				
Total			15	Total			15

JUNIOR

Gn. St.	250	Intro. to Human. I	4	Gn. St.	260	Intro. to Human. II	4
F. & N.	250	Dietetics	3	Chem.	650	Gen. Biochemistry	5
Ins. M.	212	Quan. Food Prep. II	3	F. & N.	417	Exp. Cookery	3
Ins. M.	220	Inst. Purchasing I	3	F. C. Dev.	410	Child Guid. I	3
A. H.	219	Meat Sel.	2			Elective	2
Gn. H. E.	020	H. E. Lect.	0	Gn. H. E.	020	H. E. Lect.	0
Engl.	090	English Proficiency	0				
Total			15	Total			17

SENIOR

Bact.	150	Gen. Micro.	3	B. A.	725	Inst. Accounting	2
Educ.	285	Meth. of Tchg. for Diet.	3	F. & N.	514	Diet. for Abn. Cond.	2
		Stu.	3	Ins. M.	403	Org. and Mgmt. of Inst.	3
F. & N.	412	Human Nutr.	3	Ins. M.	402	Org. and Mgmt. of Inst.	2
		Elective	7			Lab.	5
Gn. H. E.	020	H. E. Lect.	0	Gn. H. E.	020	H. E. Lect.	0
Total			16	Total			15

Number of hours required for graduation, 124.

Curriculum in Restaurant Management

B. S. 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.

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
F. & N.	110	Foods I	5	F. & N.	130	Applied Nutr.	2
Psych.	310	Gen. Psychology	3 or	Art	100	El. Des. I	2
F. C. Dev.	310	Human Relations	2	Spch.	105	Oral Comm. I	2
Gn. H. E.	020	H. E. Lect.	0	Ec. So.	110	Economics I	3
Ph. Ed.		Physical Education	0	Gn. H. E.	020	H. E. Lect.	0
		Air or Military Science ..	1	Ph. Ed.		Physical Education	0
						Air or Military Science ..	1
Total			15 to 17	Total			16 or 17

SOPHOMORE

Zool.	110	Gen. Zoology	5	Bact.	110	Gen. Micro.	3
F. & N.	240	Foods II	3	Ins. M.	207	Quan. Fd. Prep. I	2
Phys.	210	Hshld. Physics	4	C. & T.	255	Textiles	3
A. H.	219	Meat Sel.	2	F. & N.	250	Dietetics	3
M. E.	210	Engg. Drawing	2	Zool.	465	Human Physiology	4
Gn. H. E.	020	H. E. Lect.	0			Elective	1
Ph. Ed.		Physical Education	0	Gn. H. E.	020	H. E. Lect.	0
		Air or Military Science ..	1	Ph. E. D.		Physical Education	0
						Air or Military Science ..	1
Total 16 or 17				Total 16 or 17			

JUNIOR

Gn. St.	250	Intro. to Human. I	4	Gn. St.	260	Intro. to Human. II	4
Ins. M.	212	Quan. Fd. Prep. II	3	F. & N.	417	Exp. Cookery	3
Ins. M.	220	Inst. Purch. I	3	Ec. So.	455	Labor Economics I	3
		Elective	5	Ins. M.	250	Restaurant Mgmt. I	2
Gn. H. E.	020	H. E. Lect.	0			Elective	3 or 4
Engl.	090	English Proficiency	0	Gn. H. E.	020	H. E. Lect.	0
Total			15	Total			15 or 16

SENIOR

Bact.	545	Micro. of Foods	5	B. A.	725	Inst. Acct.	2
H. G. P.	295	Business Law I	3 or	Psych.	515	Personnel Psych.	3
H. G. P.	310	Business Law II	3	Ins. M.	425	Restaurant Mgmt. II	5
Ins. M.	420	Inst. Purch. II	3	B. A.	415	Small Bus. Operation	3
Educ.	285	Meth. of Tchg. for				Elective	2
		Diet. Stu.	3	Gn. H. E.	020	H. E. Lect.	0
Gn. H. E.	020	H. E. Lect.	0				
Total			15	Total			15

Number of hours required for graduation: 134 (women) or 128 (men).

Curriculum in Home Economics and Journalism

B. S. in Home Economics and Journalism

This curriculum 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 prepared to handle material in her chosen area, as foods, child guidance, interior decoration, housing, or clothing and textiles.

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
Gn. St.	110	Man's Phys. World I	4	Gn. St.	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. & N.	110	Foods I	5	Spch.	105	Oral Comm. I	2
Gn. H. E.	020	H. E. Lect.	0	C. & T.	150	Selection of Clothing	2
Ph. Ed.		Physical Education	0	F. Ec.	102	Family Finance	2
				Journ.	050	Tech. Journ. Lect.	0
				Ph. Ed.		Physical Education	0
Total			14 or 15	Total			14 or 15

SOPHOMORE

Gn. St.	150	Biology I*	4	Gn. St.	160	Biology II	4	
Gn. St.	210	Introd. Soc. Sci. I*	4	Gn. St.	220	Introd. Soc. Sci. II	4	
F. & N.	130	Applied Nutrition	2	C. & T.	255	Textiles	3	or
Journ.	220	Reporting I	2	C. & T.	170	Pattern Study	3	
Journ.	221	Reporting I Lab.	1	Journ.	225	Reporting II	3	
		Elective	2 or 3			Elective	1 or 2	
Gn. H. E.	020	H. E. Lect.	0	Journ.	050	Tech. Journ. Lect.	0	
Ph. Ed.		Physical Education	0	Ph. Ed.		Physical Education	0	
Total			15 or 16	Total			15 or 16	

JUNIOR

Gn. St.	250	Intro. to Human. I	4	Gn. St.	260	Intro. to Human. II	4
F. C. Dev.	450	Family Relationships ..	2 or	F. C. Dev.	450	Family Relationships ..	2 or
F. C. Dev.	410	Child Guidance I	3	F. C. Dev.	490	Family Health	3
F. Ec.	202	The House	3 or	Art	119	Int. Dec. I	2
F. Ec.	572	Cons. and Mkt.	3	Journ.	265	Editing	2
Spch.	385	Radio Talk	2 or			Elective	5 or 6
Journ.	510	Publ. Infm. Methods	2	Gn. H. E.	020	H. E. Lect.	0
		Elective	4 or 5				
Journ.	050	Tech. Journ. Lect.	0				
Engl.	090	English Proficiency	0				
<hr/>				<hr/>			
Total			16	Total			16

SENIOR

Journ.	685	Adver. Salesmanship ..	2	or	Journ.	465	Magazine Article Writ. ..	2	
Journ.	255	Prin. of Advertising	3	Journ.	485	Inter. of Cont. Affairs ..	3		
Journ.	445	The Home Page	3			Elective	11		
Journ.	650	Journ. in a Free Society ..	3	Gn. H. E.	020	H. E. Lect.	0		
		Elective	7	or	8				
Journ.	050	Tech. Journ. Lect.	0						
Total			16	Total			16		

Number of hours required for graduation, 124.

* 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

This curriculum is for the girl who wishes to have a college degree in home economics and also be prepared to enter the profession of nursing. The student must complete 72 semester hours of required subjects as prescribed at Kansas State College and the nursing program in the Department of Nursing, School of Medicine, University of Kansas. A student who progresses according to schedule will spend four semesters and one summer session at Kansas State College and 27 months in the Department of Nursing at the Medical Center in Kansas City.

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.	320	Introd. Org. and Bio.	
Engl.	125	Written Comm. I	3			Chem.	5
F. C. Dev.	210	Human Relations	2	Engl.	135	Written Comm. II	2
F. & N.	110	Foods I	5	Psych.	310	Gen. Psych.	3
Gn. H. E.	020	H. E. Lect.	0	Art	100	El. Des. I	2
Ph. Ed.		Physical Education	0	C. & T.	150	Selection of Clothing	2
				F. Ec.	102	Fam. Finance	2
				Gn. H. E.	020	H. E. Lect.	0
				Ph. Ed.		Physical Education	0
Total			15	Total			16

SOPHOMORE

Gn. St.	250	Intro. to Human. I	4	Gn. St.	260	Intro. to Human. II	4
Educ.	110	Educ. Psych. for Nurses	4	Bact.	250	Bacteriology	5
Spch.	105	Oral Comm. I	2	F. C. Dev.	410	Child Guidance I	3
Zool.	110	Gen. Zool.	5	F. C. Dev.	450	Family Relationships ...	2
F. & N.	130	Applied Nutr.	2			Elective in H. E.	3
Gn. H. E.	020	H. E. Lect.	0	Gn. H. E.	020	H. E. Lect.	0
Ph. Ed.		Physical Education	0	Ph. Ed.		Physical Education	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).

Ec. So.	250	Introd. Sociology	3
Zool.	240	Hum. Anat. and Physiol.	5
Total			8

Summer session is followed by the 27-month program in the Department of Nursing, University of Kansas School of Medicine. This program includes theoretical courses and practice in general medicine and surgery and in specialties, as nursing of children, maternity nursing, and work in the psychiatric and out-patient departments.

Number of semester hours required for graduation, 72* plus completion of the total program in the Department of Nursing and a satisfactory score on the pre-nursing and guidance examination of the National League of Nursing education.

* College grades averaging C or more are required for entrance to the Department of Nursing. (For graduation in 1958 or thereafter.)

ART

DOROTHY BARFOOT, *Head of Department*

Concentration in art is designed to provide a background for home-making or other professional work. Depending upon their interests, the undergraduate students may select options in interior decoration, crafts, 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) I, II, S. An introduction to the arts and application of their principles to daily living. One hour rec. and three hours lab. a week.
- 102. Elementary Design II.** (2) I, II, S. Theory of design and color continued and a practical application of it made to functional items in the home. Pr.: Art 100.
- 104. Intermediate Design.** (2) I. Theory of color and design. Special emphasis on abstractions and non-subjective motifs and their influence in contemporary design. Pr.: Art 102.
- 106. Lettering.** (2) I. Creative design in the field of lettering in relation to historic and modern forms. Pr.: Art 100.
- 113. Costume Design I.** (2) I, II, S. 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 rec. and three hours lab. a week. Pr.: Art 100.
- 114. Fashion Life Sketching.** (2) I. The professional fashion approach to the live model; various media; fashion posture, drapery, silhouettes. Pr.: Art 100, 130.
- 117. Costume Design II.** (3) I. Creative designing for the fashion figure. Sources of fashion inspiration. Nine hours lab. a week. Pr.: Art 113, 130.
- 119. Interior Decoration I.** (2) I, II, and alt. S. Designing of interiors for homes of today. One hour rec. and three hours lab. a week. Pr.: Art 100.
- 121. Interior Decoration II.** (2) I. Designing interiors with regard to traditional and 20th century furniture and fabrics. Elevation and perspective renderings. Pr.: Art 119, 130, or consent of instructor.
- 123. Home Furnishing.** (2) I, II, S. Refinishing, restyling, upholstering and/or slipcovering furniture; also designing and making draperies and lamp shades. Pr.: Art 119.
- 125. Window Display.** (3) II. Designing and executing displays for windows and interior cases. Actual experience through the cooperation of the local stores. Pr.: Art 106, 130, or consent of instructor.
- 130. Drawing I.** (2) I, II, and alt. S. Fundamentals of freehand sketching in which a variety of media is used. Students work out-of-doors as well as in the studio. Pr.: Art 100.
- 132. Drawing II.** (2) II. Creative work in oil, water color, and lithograph crayon. The student works both in the studio and outdoors. Pr.: Art 130.
- 134. Design in the Crafts I.** (2) I, II, S. Leatherwork, wood carving, and enameling, with emphasis on contemporary design. Pr.: Art 100 or consent of instructor.
- 136. Design in the Crafts II.** (2) I, S. Further experience in the basic principles and techniques of crafts. Pr.: Art 100 and junior standing.
- 139. Ceramics I.** (2) I, II, S. Creative design of pottery; formation, firing, and decoration. Pr.: Art 100 or consent of instructor.
- 140. Weaving I.** (2) I, II, S. Principles of design, color, and texture applied to textile construction. Pr.: Art 100 or consent of instructor.
- 172. Contemporary Homes.** (3) II. The design of the contemporary home as an art expression of the family in relation to everyday living. Three rec. periods a week. Pr.: Art 100 or equivalent.

- 190. Art for Elementary Schools.** (3) I, II, S. Art methods, materials, and philosophy of children's art at different grade levels.
- 192. Crafts for Elementary Schools.** (3) I, II, S. Crafts design, methods and materials for different grade levels in the elementary schools. Not to be substituted for Design in the Crafts I or II. Pr.: Art 190.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 401. Survey of Art I.** (3) I, S. 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. Pr.: Art 100.
- 402. Survey of Art II.** (3) II, S. The culture of various peoples as expressed in historic painting. Pr.: Art 401.
- 405. Advanced Design.** (2) II, S. Special emphasis on art structure; designs for textiles using modern commercial repeats. Pr.: Art 104.
- 411. Metal Crafts and Jewelry.** (2) I, S. Design, raising, and stretching of holloware in copper; design and execution of contemporary jewelry in precious metals including setting of semi-precious and precious stones. Pr.: Art 100 or consent of instructor.
- 412. Costume Illustration.** (2) II, S. The current fashion figure, use of swipe files, fashion layout, and rendering for reproduction in line, wash, acid-tone. Pr.: Art 117.
- 415. Drawing III.** (2) II, S. Creative work in a variety of media. Individual needs of student given special attention. Pr.: Art 132.
- 417. Problems in Design.** Credit arranged. I, II, S. Problems in design planned to meet the particular needs of the student. Pr.: Ten credit hours in art or consent of instructor and senior standing.
- 430. Problems in Teaching Art.** Credit arranged. II, S. Lectures and class discussion of methods, consideration of suitable laboratory equipment, use of illustrative material, and preparation of courses of study. Pr.: Art 102, Educ. 276 or equiv.; twelve credit hours in Art.
- 431. Interior Decoration III.** (2) II. Designing interiors. Designer-client relationships in actual practice. Making of cost estimates. Job experience arranged when practicable. Pr.: Art 121.
- 432. Problems in Interior Decoration.** Credit arranged. I, II, S. Problems planned with the students to meet their particular needs. Pr.: Art 431 or consent of instructor.
- 434. Historic Fabric Design.** (3) I, S. Design employed in fabrics in each of the great art periods. Pr.: Art 100, C. & T. 255.
- 435. Problems in Costume Design.** Credit arranged. I, II, S. Problems planned with the students to meet their particular needs. Pr.: Art 117 or consent of instructor.
- 443. Arts of Mexico.** (3) I, II, S. A survey of the arts of pre-Spanish, colonial, and modern Mexico, their origins and developments. Pr.: Art 100.
- 448. Historic Furniture Design.** (3) II, S. Design expressed in furniture in each of the great art periods. Pr.: Art 100.

FOR GRADUATE CREDIT

- 900. Advanced Costume Design.** Credit arranged. I, II, S. Individual research problems which may form the basis for the master's thesis. Pr.: Consent of instructor.
- 904. Advanced Interior Decoration.** Credit arranged. I, II, S. Individual research problems which may form the basis for the master's thesis. Pr.: Consent of instructor.
- 906. Problems in Advanced Design.** Credit arranged. I, II, S. 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. Pr.: Consent of instructor.

CLOTHING AND TEXTILES

ALPHA C. LATZKE, *Head of Department*

The Department of Clothing and Textiles offers work in the following areas of study: clothing selection, clothing construction, textiles, clothing economics, and history of dress. Three options leading to a Bachelor of Science degree are provided for students interested in clothing: (1) retailing (page 229), (2) clothing and costume design (page 229), and (3) textiles research (page 229). Graduate students preparing to become teachers, extension specialists, textile analysts, and research workers find appropriate courses in this department.

FOR UNDERGRADUATE CREDIT

- 150. Selection of Clothing.** (2) I, II. Clothing needs and practices of individuals and social groups; wardrobe planning and buying procedures.
- 160. Simplified Clothing Construction.** (2) I, II. Basic techniques; garment construction using commercial patterns. Four hours lab. a week. Enrollment in this course based on the results of placement test. For students who have limited skills in clothing construction.
- 170. Pattern Study and Garment Construction.** (3) I, II. Selection and fitting of commercial patterns; development of construction techniques using various fabrics. Six hours lab. a week. Enrollment in this course based on the results of placement test.
- 255. Textiles.** (3) I, II, S. Fundamentals of textiles as related to the problems of the consumer. Two hours rec. and two hours lab. a week. Pr.: Chem. 330 or Gn. St. 120.
- 300. Tailoring.** (3) I, II, and alt. S. Tailoring techniques; construction of a coat or suit based on a commercial pattern using the "dressmaker method." Six hours lab. a week. Pr.: C. & T. 170 or consent of instructor.
- 350. Flat Pattern Designing.** (3) I, II, and alt. S. Application of design principles to dress; construction of foundation pattern; flat pattern designing; development of garments in suitable fabrics. Six hours lab. a week. Pr.: C. & T. 170 and Art 113. C. & T. 255 recommended.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 480. Demonstrating Construction Processes.** (3) I and alt. S. Clothing standards, demonstration techniques, and use of new equipment and processes. For student preparing for teaching and home demonstration work. Two hours rec. and two hours lab. a week. Pr.: Six credit hours clothing construction and junior standing.
- 525. Design by Draping.** (3) II and alt. S. Social significance of fashion; application of design principles to dress. Designs draped in muslin and then completed in suitable fabrics. Six hours lab. a week. Pr.: C. & T. 350.
- 555. Advanced Tailoring.** (3) II and alt. S. Development of a design for a coat or suit; techniques of custom tailoring; construction of a coat or suit. Six hours lab. a week. Pr.: C. & T. 300 and 525 or consult instructor.
- 625. Intermediate Textiles.** (3) I, S. Current developments in textiles. Two hours rec. and two hours lab. a week. Pr.: C. & T. 255.
- 650. Clothing.** (3) II, S. The organization of textile industries and markets; consumer problems in relation to market conditions. Pr.: Gn. St. 220 or equiv.
- 700. History of Costume.** (3) I, II, S. Aspects of the culture of various countries and periods of history as reflected in costume. Pr.: Gn. St. 250, H. G. P. 115, or equiv.
- 750. Problems in Clothing and Textiles.** Credit arranged. I, II, S. Work is offered in garment designing, textiles, history of costume, clothing economics. Pr.: Senior or graduate standing. Consult instructor.

755. Advanced Textiles. (3) I, S. Physical, chemical, and optical testing of textiles; emphasis placed on research techniques. One hour rec. and six hours lab. a week. Pr.: C. & T. 255, Chem. 330.

760. Experimental Textiles. Credit arranged. I, II, S. Pr.: C. & T. 755.

FOR GRADUATE CREDIT

800. Master's Report. (1 or 2) I, II, S. 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. Consent of department head.

850. Clothing and Textiles Seminar. (1) II, S. Discussion of current developments in the field. Pr.: Graduate standing.

900. Research in Clothing and Textiles. Credit arranged. I, II, S. Research in clothing or in textiles which may form the basis for the master's thesis. Consult instructor for time of meeting. Pr.: Graduate standing.

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 child 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 Pre-nursing Education, who is a member of the Department of Family and Child Development.

FOR UNDERGRADUATE CREDIT

105. The Pre-School Child. (2) 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) 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 lab. and class discussion.

210. Human Relations. (2) 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) I, II. The family and its relation to health and growth of the individual. Includes planned experiences with children.

FOR UNDERGRADUATE AND GRADUATE CREDIT

410. Child Guidance I. (3) I, II, S. Development characteristics of young children, adaptation of environment to meet their needs, and principles involved in the guidance of children at the pre-school age. Two hours rec. and three hours lab. a week. Pr.: Junior standing or consent of department head. Additional charge for luncheon.

- 450. Family Relationships.** (2) I, II, S. Effects of family interaction upon individual development; consideration of pre-marital, marital, and parent-child relationships. Pr.: Junior standing.
- 490. Family Health.** (3) I, II, S. Meaning of health. Factors conducive to maintaining a high level of health for family members throughout the life cycle, including the pre-natal and old-age periods. Home care of the ill and injured. Pr.: Junior standing or consent of instructor.
- 510. Child Guidance II.** (3) I, S. Growth sequence in relation to behavior and to the young child's process of adjustment. Two hours rec. and three hours lab. a week. Pr.: F. C. Dev. 410, 490, or conc., and consent of department head.
- 515. Development and Guidance of Youth.** (3) I, II, S. Study of the developmental characteristics of the school-age child through adolescence as a basis for guidance. Field work arranged. Pr.: F. C. Dev. 410.
- 520. Literature and Music for the Young Child.** (3) II. Children's creative experience with stories, songs, records and dramatized play. Two hours rec. and three hours lab. a week. Pr.: F. C. Dev. 410.
- 525. Play Activities and Materials.** (3) I. 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 rec. and three hours lab. a week. Pr.: F. C. Dev. 410.
- 550. The Family.** (3) I, II. Culture patterns as related to personality development. Changing trends in family structure, functions, roles, and values. Pr.: F. C. Dev. 450 or consent of instructor.
- 601. Nursery School Procedures.** (3) II. Supervised participation in the nursery school, with opportunity for planning and directing the program. Six hours lab. and one hour conference. Pr.: F. C. Dev. 510.
- 610. Seminar in Child Development.** (2) II, S. Interpretation and evaluation of research relating to child development. Pr.: F. C. Dev. 510.
- 620. Parent Education.** (2) II. 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. Pr.: F. C. Dev. 510 or 550.
- 650. Seminar in The Family.** (2) I, S. Interpretation and evaluation of research relating to interaction of family members. Pr.: F. C. Dev. 550.
- 711. Problems in Family and Child Development.** Credit arranged. I, II, S. Students writing a master's report enroll in this course. Pr.: Consent of department head.

FOR GRADUATE CREDIT

- 811. Research in Family and Child Development.** Credit arranged. I, II, S. Individual research problems which may form the basis for the master's thesis. Consult department head.
- 815. Nursery School Administration.** (2) I. 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. Pr.: F. C. Dev. 510 or conc.

FAMILY ECONOMICS

RICHARD L. D. MORSE, *Head of Department*

This department prepares students for professional work in the areas of housing, household equipment, home management, consumer education, family finance, and family economics. Opportunity is also provided the student to combine training for homemaking with training for employment outside the home.

Emphasis in the department is twofold: to study the effect of social and economic forces on family living in society; and to study family management, its resources in relation to its goals. Instruction in the depart-

ment leading to the degree B. S. in Home Economics is described under the curriculum **Home Economics with Options** (page 227), (1) Home-making, (2) Family Economics and Family Finance, and (3) Housing, Household Equipment, and Home Management.

Graduate study leading to the M. S. degree is provided.

FOR UNDERGRADUATE CREDIT

- 102. Family Finance.** (2) I, II, S. Financial problems involved in the effective management of the family's resources.
- 150. Homemaking for Moderns.** (3) I, II. Improvements in home living made possible through application of basic principles of home economics. Efficient use of time, energy, money, and equipment in relation to goals of family living. Not open for credit to home economics majors.
- 202. The House.** (3) I, II, S. A consideration of dwellings, their environments, plans, and space requirements, which promote effective utilization of family resources. Six hours rec. and lab. a week. Pr.: Sophomore standing.
- 352. Household Equipment.** (2) I, II, S. Selection, use, and care of certain furniture and equipment used in the home. Four hours rec. and lab. a week. Pr.: F. & N. 110.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 422. Housing Requirements of Families.** (2) I, S. 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 rec. and lab. a week. Field trips. Pr.: F. Ec. 202, 352; senior or graduate standing.
- 452. Advanced Household Equipment.** (3) II, S. Fundamental principles underlying the operation and construction of certain household equipment; demonstration of the practical use of equipment. Six hours rec. and lab. a week. Pr.: F. Ec. 352, Phys. 210; senior or graduate standing.
- 503. Home Management.** (2) I, II, S. Study of the use of family's resources toward maximum achievement of family's goals. Pr.: Junior standing.
- 504. Home Management Laboratory.** (2) I, II, S. Residence in home management houses for one-half semester, or equivalent experience with consent of department. Arrangements must be made in advance of registration for enrollment. Pr.: F. Ec. 503 or conc. enrollment.
- 505. Financial Problems of Families.** (2) II. Financial problems confronting families, primarily of the middle-income classes. Study of insurance, credit, savings, and estate planning as they relate to family living. Pr.: F. Ec. 102 or consent of instructor.
- 522. Time and Motion in Household Tasks.** (2) II, S. 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 rec. and two hours lab. a week. Pr.: Junior standing.
- 555. Families in the American Economy.** (3) I, S. Study of the interrelation of the national economy and the family, family incomes and expenditures, cost of living estimates, measures of family welfare, public policies affecting family welfare and standards of living. Pr. or parallel: Gn. St. 220 or consent of instructor.
- 572. Consumers and the Market.** (3) I, S. 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. Pr. or parallel: Gn. St. 220 and junior standing.
- 622. Seminar in Family Economics.** (1 to 3) I, II, S. A review of research literature; trends in the field of family economics; the contribution of the area to the family and community. Pr.: Senior or graduate standing.
- 702. Problems in Family Economics.** Credit arranged. I, II, S. Individual investigation in standards of living and family expenditures; housing and

household equipment; time and motion study; and use of family resources. Pr.: Consent of instructor.

FOR GRADUATE CREDIT

- 802. Research in Family Economics.** Credit arranged. I, II, S. Individual research problems which may form the basis for the master's thesis. Pr.: Consent of instructor.

FOODS AND NUTRITION

DOROTHY L. HARRISON, *Head of Department*

Basic courses in foods and nutrition are offered for all home economics students and for those whose major interest is outside the field of home economics. The department also provides specialized instruction for students who wish to become food demonstrators, nutritionists, research workers, dietitians, and teachers of foods and nutrition. Programs of study are set up through the selection of the option in foods demonstrating or the option in foods and nutrition research and in consultation with an assigned faculty adviser. Programs of graduate study are offered that lead to the M. S. and Ph. D. degrees in foods and nutrition.

FOR UNDERGRADUATE CREDIT

- 110. Foods I.** (5) I, II. Principles of food preparation and food economics. Experience in food preparation and meal service. One required meat demonstration during the semester. Three hours rec. and six hours lab. a week.
- 130. Applied Nutrition.** (2) I, II, S. Food requirements, food selection, and food habits.
- 175. Nutrition for Elementary Teachers.** (3) II, S. Methods of teaching nutrition to children, including use of visual aids and observation of learning situations. Four hours rec. and lab. a week. Not open to students having credit in F. & N. 130.
- 205. Meal Planning, Preparation, and Service.** (3) I. 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 F. & N. 110. Two hours rec. and three hours lab. a week. Pr.: Two hours credit in food preparation.
- 219. Meat Selection and Utilization, H. E.** (2) I, II. (See A. H. 219, Department of Animal Husbandry, School of Agriculture.)
- 240. Foods II.** (3) I, II, S. Chemical and physical properties of food related to preparation and preservation. One hour rec. and six hours lab. a week. Pr.: Chem. 330, 505, or Gn. St. 120; F. & N. 110 or 205.
- 250. Dietetics.** (3) I, II, S. Principles of normal nutrition and practice in planning, adjusting, and preparing dietaries for specific individuals. Energy, protein, mineral, and vitamin computation. Two hours rec. and three hours lab. a week. Pr.: F. & N. 130, 175, Chem. 330 or 505, or Gn. St. 120.
- 315. Food Demonstration Techniques.** (2) II. Objectives and techniques of demonstrations in foods as presented by the classroom teacher and commercial demonstrator. Six hours lab. a week. Pr.: F. & N. 240 and senior standing.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 412. Human Nutrition.** (3) I, S. Chemistry of foods and nutrition, emphasizing food nutrients, digestion, and metabolism. Pr.: Chem. 650, Zool. 420 or 465, or Gn. St. 160; for home economics majors, F. & N. 250.
- 417. Experimental Cookery.** (3) I, II, S. Food preparation from the experimental standpoint. One hour rec. and six hours lab. a week. Pr.: F. & N. 240, Chem. 330 or 505, and at least junior standing.

- 514. Dietetics for Abnormal Conditions.** (2) I, II, S. Food requirements in pathological conditions. Special diets, preparation of trays, computation of dietaries, consideration of costs. One hour rec. and three hours lab. a week. Pr.: F. & N. 412.
- 516. Nutrition of Development.** (2) II, S. Nutrition in pregnancy and lactation. Food requirements of fetus, infant, pre-school and school child through adolescence. Pr.: F. & N. 250.
- 553. Seminar in Foods.** (2) I, II, S. Individual reports and discussions of topics in fields of foods, food economics, and food research. Pr. or conc.: F. & N. 417.
- 554. Seminar in Nutrition.** (2) I, II, S. Individual reports and discussions of topics in field of nutrition. Pr.: F. & N. 412.
- 557. Problems in Foods.** Credit arranged. I, II, S. Preparation and preservation of food. Three hours lab. a week for each hour of credit. Pr.: Chem. 330 or 505; for home economics majors, F. & N. 417.
- 558. Problems in Nutrition.** Credit arranged. I, II, S. Nutritive value of foods, animal experimentation, dietary studies, practice in methods commonly used in simple experiments in nutrition. Three hours lab. a week for each hour of credit. Pr.: F. & N. 412.
- 761. Advanced Nutrition.** (3) I, S. A study of the more complex phases of the metabolism of foods within the body. Pr.: F. & N. 412.
- 770. Advanced Foods I.** (3) I. 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 rec. and three hours lab. a week. Pr.: F. & N. 240, Chem. 650.

FOR GRADUATE CREDIT

- 807. Advanced Foods II.** (3) II. A cont. of Advanced Foods I. Starches, protein cookery, fats, and oils will be considered. Two hours rec. and three hours lab. a week. Pr.: F. & N. 770.
- 808. Research Techniques in Nutrition.** (3) I. Fundamental techniques relating to energy, protein, mineral, and vitamin metabolism. One hour rec. and six hours lab. a week. F. & N. 761.
- 809. Graduate Seminar in Foods and Nutrition.** (1) I, II. Discussion of investigations in foods and nutrition. May be taken four semesters for credit. Pr.: F. & N. 412 and 417 or consent of instructor.
- 905. Research in Foods and Nutrition.** Credit arranged. I, II, S. Three hours a week for each hour of credit. Consent of instructor.

GENERAL HOME ECONOMICS

DORETTA SCHLAPHOFF HOFFMAN, *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.
- 900. Methods of Research in Home Economics.** (2) Study meanings of research, review of literature, organization of research from conception through publication, and research procedures. Offered when scheduled.

COURSES IN HOME ECONOMICS EDUCATION*

LUCILE O. RUST, *Professor of Home Economics Education
and Special Adviser*

FOR UNDERGRADUATE CREDIT

- 276. Methods of Teaching Home Economics.** I, II, S. Pr.: C. & T. 170, F. & N. 240; pr. or conc.: Educ. 105.

* 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.

285. Methods of Teaching for Dietetic Students. (3) I, II. Pr.: Ins. M. 212 or F. & N. 250 or conc. registration.

295. Teaching Participation in Home Economics. (4 to 5) I, II, S. Pr.: Completion of one home project and Educ. 276.

FOR UNDERGRADUATE AND GRADUATE CREDIT

575. The Vocational Home Economics Curriculum. (3) I, II, S. Pr.: Educ. 276 or conc. registration.

585. Methods in Adult Homemaking Classes. (1 to 3) S. Pr.: Educ. 276 or equiv.

795. Problems in Education. Credit arranged. I, II, S. Pr.: Educ. 120 and approval of instructor. Work is offered in Home Economics Education.

FOR GRADUATE CREDIT

930. Organization and Presentation of Home Economics. Credit arranged. I, II, S.

935. Research in Organization and Presentation of Home Economics. Credit arranged. I, II, S.

940. Supervision in Home Economics. (2) II, S. Pr.: Educ. 295 and experience in teaching home economics.

945. Seminar in Home Economics Education. (2 or 3) S. Pr.: Educ. 295 and experience in teaching home economics.

INSTITUTIONAL MANAGEMENT

_____, *Head of Department*

The Department of Institutional Management provides instruction for those preparing to become dietitians in hospitals, college food services, or directors of commercial or industrial food units. Courses leading to the degree Master of Science in Institutional Management are offered in this department.

FOR UNDERGRADUATE CREDIT

207. Quantity Food Preparation I. (2) II, S. 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 rec. and four hours lab. a week. Pr.: F. & N. 240.

212. Quantity Food Preparation II. (3) I. 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 rec. and six hours lab. a week. Pr.: Ins. M. 207.

220. Institutional Purchasing I. (3) I. Selection, arrangement, installation, and care of various types of equipment for institutional food service departments. Selection and methods of purchasing foods in large quantities. Pr. or conc.: Ins. M. 212.

250. Restaurant Management I. (2) II. An introduction to the field of restaurant management including the development of the industry and a survey of its opportunities and responsibilities. Pr.: Ins. M. 212.

FOR UNDERGRADUATE AND GRADUATE CREDIT

403. Organization and Management of Institutions. (3) II. 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. Pr. (or conc. for graduate students): Ins. M. 212.

404. Organization and Management of Institutions Laboratory. (2) II. Women's residence hall to be used as a laboratory. Six hours lab. a week. Pr. (or concurrent for graduate students): Ins. M. 212.

- 410. Problems in Institutional Management.** Credit arranged. I, II, S. Individual investigation of problems in institutional management. Conferences and reports at appointed hours. Pr. or conc.: Ins. M. 403, 404, or equiv. Consult instructor.
- 420. Institutional Purchasing II.** (3) II. Advanced studies of the principles of purchasing equipment and food for institutions. Two hours rec. and three hours lab. a week. Pr.: Ins. M. 220 or 430.
- 425. Restaurant Management II.** (5) II. 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 rec. and nine hours lab. a week. Pr.: Ins. M. 250.
- 430. School Food Service.** (3) I, II. 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 rec. and three hours lab. a week. Not open to students with credit in F. & N. 207 or 212. Pr.: Ins. M. 110.
- 460. Seminar in Institutional Management.** (2) I. A review of literature and trends in institutional management as applied to various types of institutions. Pr.: Senior or graduate standing.

FOR GRADUATE CREDIT

- 901. Research in Institutional Management.** Credit arranged. I, II, S. Pr.: Consult instructor.

The School of Veterinary Medicine

ELDEN E. LEASURE, *Dean*

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 pre-veterinary 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 pre-veterinary 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 pre-veterinary 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 pre-veterinary 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 pre-veterinary years. The pre-veterinary 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 pre-veterinary 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 non-resident student is one who is required to pay non-resident 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 5,000 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 or staff members</i>	<i>Non-residents</i>
<i>Tuition</i>	None	None
<i>Assessments</i>		
Per semester (16 weeks or more if enrolled in more than 6 hours)		
1. Student Health	\$10.00	\$10.00
2. Student Union (building fund)	7.50	7.50
3. Student Activities (incl. Union operations)	16.50	16.50
4. Incidental		
All except Vet. Med. students	56.00	131.00
Vet. Med. Students	66.00	141.00
Totals—All except Vet. Med. students	<u>\$90.00</u>	<u>\$165.00</u>
Totals—Vet. Med. students	<u>\$100.00</u>	<u>\$175.00</u>

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 not 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 "Pre-veterinary Curriculum," page 116.

The two-year Pre-veterinary 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	
Anat.	425 Anatomy I	7		Virology	4
Path.	400 Histology I	3	Anat.	435 Anatomy II	6
Chem.	655 Physiol. Chemistry	5	Path.	402 Histology II	3
Engl.	090 English Proficiency	0	Physi.	435 Comp. Physiol. I	4
Gn. V. M.	140 Vet. Orientation	R			
Total	.....	18	Total	.....	17

SECOND YEAR

Bact.	370 Vet. Immunology	3	Physi.	450 Comp. Physiol. III	3
Physi.	445 Comp. Physiol. II	4	Path.	403 Pathology I	5
A. H.	162 Livestock Feeding	3	Physi.	455 Pharmacodynamics	3
Zool.	510 Ani. Parasitology	3	Path.	500 Ap. Vet. Parasit.	3
Surg.	555 Materia Medica	4	Surg.	565 Therapeutics	3
Total	.....	17	Total	.....	17

THIRD YEAR

Path.	420 Pathology II	4	Path.	430 Pathology III	3
Path.	475 Clinical Path. Lec.	1	Surg.	515 Lrg. Ani. Surg. I	2
Gn. V. M.	590 Vet. Toxicology	3	Surg.	570 Sm. Ani. Surg.	2
Surg.	505 Princ. of Surgery	3	Surg.	580 Obst. and Breed. Dis. ...	5
Surg.	600 Clinics I	1	Surg.	610 Clinics II	1
Surg.	530 Diagnosis	2	Anat.	450 Topographic Anat.	1
Surg.	550 Dis. of Lrg. Ani. I	4	Surg.	560 Dis. of Lrg. Ani. II	4
Gn. V. M.	101		Gn. V. M.	110 Jr.-Sr. Conf.	0
Total	.....	18	Total	.....	18

FOURTH YEAR

Surg.	545 Radiology and Clinical		Surg.	670 Inf. Dis. of Lrg. Ani.	5
	Techniques	1	Path.	457 Poultry Hyg. and Dis.	3
Ec. So.	Professional Econ.	2	Path.	453 Food Hygiene and	
Path.	451 Food, Hyg. and Pub.			Pub. Health II	4
	Health I	3	Surg.	630 Clinics IV	4
Path.	440 Pathology IV	3	Surg.	680 Dis. of Sm. Ani.	2
Surg.	525 Lrg. Ani. Surg. II	4	Path.	495 Autopsy and Clinical	
Surg.	620 Clinics III	4		Path. Lab. II	0
Path.	485 Autopsy and Clinical		Gn. V. M.	130 Jr.-Sr. Conf.	0
	Path. Lab. I	0			
Gn. V. M.	400 Vet. Ethics and Official				
	Lvstk. Regulations ..	1			
Gn. 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.	520	Applied Anatomy	1 semester hour
Anat.	500	Applied Anatomy	Credit to be arranged
Anat.	801	Avian Anatomy	2 to 4 semester hours
Anat.	810	Bovine Anatomy	2 to 4 semester hours
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
Path.	805	Pathology of Neoplasms	1 to 6 semester hours
Path.	810	Problems in Pathology	Credit to be arranged
Path.	815	Reproductive Organ Pathology	1 to 4 semester hours
Path.	820	Advanced Clinical Pathology	1 to 4 semester hours
Path.	830	Pathology Seminar	1 semester hour
Physi.	415	Problems in Physiology	Credit to be arranged
Physi.	465	Physiologic Constituents of Body Fluids	2 semester hours
Physi.	803	Seminar	1 semester hour
Physi.	815	Histophysiology of Nutritional Deficiencies	3 semester hours
Physi.	820	Research in Physiology	Credit to be arranged
Physi.	824	Physiology of Reproduction	3 semester hours
Surg.	640	Extra Clinics	1 semester hour
Surg.	801	Research in Surgery	Credit to be arranged
Surg.	810	Research in Medicine	Credit to be arranged
Surg.	815	Problems in Medicine	Credit to be arranged
Surg.	820	Breeding Diseases	1 to 5 semester hours
Surg.	825	Systemic Medicine I	3 semester hours
Surg.	827	Systemic Medicine II	3 semester hours
Surg.	830	Surgical Techniques	Credit to be arranged

ANATOMY

WILLIAM M. 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

- 425. Anatomy I.** (7) I. Dissections of the body cavities and genital organs of the ruminant. Three hours rec. and twelve hours lab. a week. Pr.: First-year standing in veterinary medicine. Staff.
- 435. Anatomy II.** (6) II. Dissections of the limbs, head, and neck of the ruminant. Two hours rec. and twelve hours lab. a week. Pr.: Anat. 425.
- 450. Topographic Anatomy.** (1) II. 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 lab. a week. Pr.: Third-year standing in veterinary medicine. Staff.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 500. Special Anatomy.** Credit arranged. I, II, S. The study of any part of the horse (as the digestive or reproductive system), ox, sheep, pig, dog, cat, or poultry. Pr.: Anat. 425, 435, Physi. 435, or equiv. Staff. Adapted to the work in which the student is specializing.
- 520. Applied Anatomy.** (1) I. 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 lab. a week. Pr.: Anat. 435.
- 801. Avian Anatomy.** (2 to 4) I, S. The study of gross anatomy of the digestive, respiratory, and circulatory systems of the ox. The urogenital

system, integument, and certain muscles are included as time permits. Pr.: Physi. 435 or consent of staff.

- 810. Bovine Anatomy.** (2 to 4) I, S. The study of the gross anatomy of birds, using the chicken as a type. The histology of certain organs is considered. Pr.: Physi. 435 or consent of staff.

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

- 400. Histology I.** (3) I. 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 rec. and six hours lab. a week. Pr.: First-year standing in veterinary medicine. Staff.
- 402. Histology II.** (3) II. Origin, development, structure, and microscopic appearance of the various organs and systems of the animal. Particular emphasis is laid on the correlation of tissue distribution and regional function. One hour rec. and six hours lab. a week. Pr.: Path. 400.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 510. Special Histology.** (3) I, II. Fundamental histological technics studied by means of problems. Nine hours lab. a week. Pr.: Path. 402.

COURSES IN PATHOLOGY

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 403. Pathology I.** (5) II. General pathology deals with the etiology, course, and termination of disease. Three hours rec. and six hours lab. a week. Pr.: Physi. 435, Path. 402, Chem. 655.
- 420. Pathology II.** (4) I. Special pathology, study of specific pathological processes occurring in the various organs of the body. Three hours rec. and three hours lab. a week. Pr.: Path. 403.
- 430. Pathology III.** (3) II. The pathology of infectious diseases. Two hours rec. and three hours lab. a week. Pr.: Path. 420.
- 440. Pathology IV.** (3) I. The epidemiology and differential diagnosis of infectious diseases. Three hours rec. and demonstration a week. Pr.: Path. 430.
- 451. Food Hygiene and Public Health I.** (3) I. The procedures and regulations pertaining to meat inspection, sanitation, and public health as recommended by the U.S. Department of Agriculture are followed in examination of food-producing animals. Three hours rec. a week. Pr.: Path. 420, 430.
- 453. Food Hygiene and Public Health II.** (4) II. Problems involved in public health as it pertains to transmission of disease from animal to man. Problems of control of micro-organisms in food processing, handling, and storage. Instruction in sanitary production, processing of milk and dairy products. Four hours rec. a week. Pr.: Path. 440, 451.

- 457. Poultry Hygiene and Diseases.** (3) II. The prevention, diagnosis, and treatment of poultry diseases. Three hours rec. a week. Pr.: Path. 440.
- 460, 470. Pathological Technic and Diagnosis I and II.** (2 to 5) I, II. Pathological technic, collecting, fixing, embedding in paraffin, and sectioning of tissues, methods of preserving gross specimens, practice in post-mortem and laboratory diagnosis. Pr.: For I, Path. 403; for II, Path. 440, 460.
- 475. Clinical Pathology.** (1) I. The application of various laboratory test procedures to the diagnosis of animal diseases. Interpretation of data obtained and the practical application in the diagnosis of disease. One hour lec. a week. Pr.: Path. 403, Bact. 370.
- 485. Autopsy and Clinical Pathology Lab. I.** I. Credit in Clinics III. The post-mortem and laboratory techniques applied to the diagnosis of animal diseases. Pathological examinations will include autopsies, biopsies, hematological, bacteriological, chemical and parasitological diagnosis. Pr.: Surg. 600, 610, Path. 475. Open only to fourth-year students in veterinary medicine and graduate students.
- 495. Autopsy and Clinical Pathology Lab. II.** II. Credit in Clinics IV. Pr.: Surg. 600, 610, Path. 475, 485. Open only to fourth-year students in veterinary medicine and graduate students.
- 500. Applied Veterinary Parasitology.** (3) II. The identification of parasites and the diagnosis of parasitosis. A consideration of the important parasitic diseases of livestock. Two hours rec. and three hours lab. a week. Pr.: Zool. 510. Limited to veterinary students.

FOR GRADUATE CREDIT

- 802. Research in Pathology.** Credit arranged. I, II. Individual research in the pathology of an animal disease problem. Pr.: Path. 440, 460. This work may form the basis for the master's thesis.
- 805. Pathology of Neoplasms.** (1 to 6) I, II, S. The study of the causation, histogenesis, and behavior of neoplasms. Pr.: D. V. M. degree or consent of staff.
- 810. Problems in Pathology.** Credit arranged. I, II, S. Work is offered in poultry diseases, parasitology, clinical pathology, food hygiene, public health, and pathology. Pr.: Path. 430, Phys. 445.
- 815. Reproductive Organ Pathology.** (1 to 4) I, II, S. Gross and histopathological studies of the reproductive organs, with special reference to the bovine. Pr.: Path. 440, Surg. 580.
- 820. Advanced Clinical Pathology.** (1 to 4) I, II, S. Further studies and application of the more detailed laboratory procedures and tests in hematologic, parasitologic, serologic, bacteriologic, chemic, and pathologic diagnosis. Pr.: Path. 460.
- 830. Pathology Seminar.** (1) I, II, S. Pr.: Consult department head.

PHYSIOLOGYGRAVERS 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) I. 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 exist-

ing among the various organs of the body. Two hours rec. and three hours lab. a week. Adapted to students majoring in animal husbandry.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 415. Problems in Physiology.** Credit arranged. I, II. Individual investigational problems in the physiology of digestion, reproduction, endocrine glands, etc. Pr.: Physi. 131 or 435 or 445.
- 435. Comparative Physiology I.** (4) II. 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 rec. and three hours lab. a week. Pr.: For veterinary students, Anat. 425, Chem. 330, 655; for others, an approved course in organic chemistry.
- 445. Comparative Physiology II.** (4) I. 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 rec. and three hours lab. a week. Pr.: Same as for Physi. 435.
- 450. Comparative Physiology III.** (3) II. This course deals with the nutrition, nutritional deficiencies, and nutritional requirements of farm animals; growth of animals; the autonomic nervous system as related to endocrine function; and endocrinology, with special emphasis on reproduction, milk secretion, water and mineral balances of farm animals. Three hours rec. a week. Pr.: Physi. 445.
- 455. Pharmacodynamics.** (3) II. 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 rec. and six hours lab. a week. Pr.: Physi. 445.
- 465. Physiologic Constituents of Body Fluids.** (2) I, II, S. Analysis of body fluids, with application to specific and fundamental problems in veterinary medicine. One hour rec. and three hours lab. a week. Pr.: Physi. 445 and consent of staff.
- 803. Seminar.** (1) I, II, S. 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. Pr.: Consent of staff.
- 815. Histophysiology of Nutritional Deficiencies.** (3) I, II, S. The study of changes occurring in tissues from nutritional deficiencies. Two hours rec. and three hours lab. a week. Open to graduate students and veterinary students earning graduate credit. Pr.: Consent of staff.
- 820. Research in Physiology.** Credit arranged. I, II, S. For graduate students working toward the M. S. and Ph. D. degrees. Pr.: Consent of staff.
- 824. Physiology of Reproduction.** (3) I. Study of reproduction of farm animals as related to the gross and microscopic anatomical structures and physiologic processes in regard to ova and spermatozoa, nutrition, and hormones. Pr.: Anat. 500, or equiv., Physi. 445, and consent of staff.

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

- 505. Principles of Surgery.** (3) I. Lectures on the fundamental principles of surgery; asepsis and antisepsis; anesthesia; tissue repair; surgical instruments and materials; primary surgical techniques. Three hours rec. a week. Pr.: Third-year standing in veterinary medicine.
- 515. Large Animal Surgery I.** (2) II. Lectures, recitations, and demonstrations on methods of restraint, neoplasms, dentistry, and surgical technique of large animals. Two hours rec. a week. Pr.: Surg. 505.
- 525. Large Animal Surgery II.** (4) I. Lectures, recitations, and demonstrations on the surgical diseases of large domestic animals. Four hours rec. a week. Pr.: Surg. 505, 515.
- 570. Small Animal Surgery.** (2) II. Description and application of practical surgery on small animals, including anesthesia. Two hours rec. a week. Pr.: Third- or fourth-year standing in veterinary medicine.

FOR GRADUATE CREDIT

- 801. Research in Surgery.** Credit arranged. I, II. The purpose of this course is to attempt to solve many of the surgical problems confronting the average veterinary practitioner. Pr.: Anat. 425, 435, 450, Surg. 505, 515, 525. Offered especially for graduates in veterinary medicine.
- 830. Surgical Techniques.** Credit arranged. I, II, S. The study and application of the developments in surgical techniques. Pr.: D. V. M. degree or consent of staff.

COURSES IN OBSTETRICS

FOR UNDERGRADUATE CREDIT

- 580. Obstetrics and Breeding Diseases.** (5) II. Physiology of reproduction; principles of normal and abnormal parturition; special attention given to handling of reduced fertility. Five hours rec. a week. Pr.: Third-year standing in veterinary medicine.
- 820. Breeding Diseases.** (1 to 5) I, II, S. Studies of the breeding diseases of domestic animals. Pr.: D. V. M. degree or consent of staff.

COURSES IN CLINIC

FOR UNDERGRADUATE CREDIT

- 600-610. Clinics I and II.** (1) I, II, 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 lab. a week. Pr.: Third- or fourth-year standing in veterinary medicine.

- 620-630. Clinics III and IV.** (4) I, II, 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 lab. a week. Pr.: Fourth-year standing in veterinary medicine.
- 640. Extra Clinics.** (1) I, II, S. A course in clinics intended for those undergraduate students desiring clinical training in addition to that offered in Veterinary Medicine. Three hours lab. a week. Pr.: Surg. 610 or 630.
- 545. Radiology and Clinical Techniques.** (1) I. Demonstrations and practice in techniques of clinical procedures. Lectures with demonstrations and student practice in radiology. Three hours lab. a week. Pr.: Surg. 505, 515, 570.

COURSES IN MATERIA MEDICA

FOR UNDERGRADUATE CREDIT

- 555. Materia Medica.** (4) I. 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. Four hours rec. a week. Pr.: Second-year standing in veterinary medicine.
- 565. Therapeutics.** (3) II. History of therapeutics; healing methods; types of therapy, including mechanical, chemical, electrical, biological, dietetic, and thermal; toxicology as encountered in veterinary practice. Three hours rec. a week. Pr.: Surg. 555.

COURSES IN MEDICINE

FOR UNDERGRADUATE CREDIT

- 530. Diagnosis.** (2) I. Differential diagnostic methods employed for the detection of disease. Two hours rec. a week. Pr.: Third-year standing in veterinary medicine.
- 550-560. Diseases of Large Animals I and II.** (4) II, I, respectively. I. Non-infectious diseases of the digestive, circulatory, and respiratory organs of the larger animals. II. Non-infectious diseases of the urinary organs, diseases of metabolism, of the nervous system, the organs and locomotion, the skin, and the eye. Four hours rec. a week each semester. Pr.: Surg. 555, third- or fourth-year standing in veterinary medicine.
- 670. Infectious Diseases of Large Animals.** (5) II. Five hours rec. a week. Pr.: Surg. 560, fourth-year standing in veterinary medicine.
- 680. Diseases of Small Animals.** (2) II. Infectious and non-infectious 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 rec. a week. Pr.: Surg. 555, 565, fourth-year standing in veterinary medicine.
- 400. Diseases of Wildlife.** (3) I. Infectious and non-infectious diseases of birds, fur-bearing animals, zoological animals, and fish, with reference to methods of prevention and control. Pr.: Zool. 110, Bact. 110.

FOR GRADUATE CREDIT

- 810. Research in Medicine.** Credit arranged. I, II, S. An attempted solution of some of the medical and parasitological problems confronting the practitioner of veterinary medicine. Pr.: Surg. 550, 555, 560, 670. Offered especially for graduates in veterinary medicine.
- 815. Problems in Medicine.** Credit arranged. I, II, S. Studies in some of the clinical problems met within the field of medicine. Pr.: D. V. M. degree or consent of staff.
- 825. Systemic Medicine I.** (3) I, II, S. Study of the medical aspects of diseases of the digestive, circulatory, or respiratory systems. Pr.: D. V. M. degree or consent of staff.

827. Systemic Medicine II. (3) I, II, S. Study of the medical aspects of diseases of the urinary, nervous, integumentary systems and special senses. Pr.: D. V. M. degree or consent of staff.

General Veterinary Medicine

FOR UNDERGRADUATE CREDIT

101, 110, 120, 130. Junior-Senior Conference. Required. I, II. A faculty-junior-senior conference for the purpose of reviewing all factors concerned in the diagnosis of animal ailments. One hour a week. Pr.: Third- or fourth-year standing in veterinary medicine.

140. Veterinary Orientation. Required. I. Lectures on introduction to veterinary medicine. One hour lec. a week. Pr.: First-year standing in veterinary medicine.

400. Veterinary Ethics and Official Livestock Regulations. (1) I. Lectures on the ethics of the veterinary profession; national and state livestock laws; quarantine regulations; Harrison Narcotic Act. One hour rec. a week. Pr.: Fourth-year standing in veterinary medicine.

590. Veterinary Toxicology. (3) I. Identification and habitat of plants poisonous to animals, their toxic principles, symptoms, and treatment. Also the more common chemical poisonings occurring in domestic animals, their symptoms and treatment. Three hours rec. a week. Pr.: Physi. 455, Surg. 555.

The Division of College Extension

ARTHUR D. WEBER, *Dean*

H. E. JONES, *Director*

PAUL GRIFFITH, *Associate Director*

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 and to encourage the adoption and use of such information.

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 through eight departments which are:

1. Extension Information
2. County Extension Program Administration
3. Home Economics Extension
4. Boys' and Girls' Club Work
5. Agricultural Specialists and Programs
6. Engineering Extension
7. Radio and Television Extension
8. Continuing Education

THE COOPERATIVE EXTENSION SERVICE PROGRAM

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 Department 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 county club agents are cooperatively employed by the College, the United States Department of Agriculture, and the county agricultural extension 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 the research by the experiment station 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.

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.

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.

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 Kansas legislature in 1951 amended the county farm bureau law which had been in effect since 1915, to provide for county agricultural extension councils with whom the Extension program of Kansas State College is conducted in the counties. The sole purpose of the county extension council is to plan and conduct an extension program in agriculture, home economics, and 4-H Club work among the people of each county.

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 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 includes 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 councils and Kansas State College.

HOME ECONOMICS EXTENSION

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, 1956, 103 counties had appropriations for home demonstration work, and in addition 11 counties had appropriations for associate home demonstration agents.

BOYS' AND GIRLS' 4-H 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. 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 wildlife 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.

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.

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 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.

RADIO AND TELEVISION EXTENSION

KENNETH E. THOMAS, *Head of Department*

Radio is divided into two phases: (a) Broadcasting of programs over KSAC, an institution-owned, non-commercial, 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.

Television programs showing results of research work and demonstrations are prepared, directed and presented on the several cooperating T. V. stations in the state. Special television training is provided for extension and college staff members who participate from time to time on educational television shows.

CONTINUING EDUCATION

CARL TJERANDSEN, *Head of Department*

The Department of Continuing Education provides opportunities for continuing education to the people of Kansas, wherever they may be. It is concerned with extending, wherever practicable, credit and non-credit 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.

HOME STUDY AND COMMUNITY SERVICES

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.

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 eight assignments for each hour of college credit; thus, for example, a three-hour college credit course has twenty-four lessons.

High School Credit: There are twenty 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 five to seven hours and in a high school credit course about four to five 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 eight 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 syllabus for 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 ample time to devote to his studies.

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 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 student.
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.

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 Continuing Education 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 twenty-three 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) An introductory course in agronomic problems of Kansas. Equivalent: Agron. 106, minus one hour lab. credit. Pr.: Bot. 110 or Gn. St. 160.

Animal Husbandry CL 2. History of Breeds. (2) 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) An introductory course in the general principles of plant growing, with emphasis on plants of horticultural interest. Equivalent: Hort. 110, minus one hour lab. credit. Pr.: Bot. 110 or Gn. St. 150.

Horticulture CH 2. Vegetable Gardening. (2) A study of vegetable growing from standpoint of home production, especially Kansas gardening. Equivalent: Hort. 189, minus one hour lab. credit.

Horticulture CH 3. Floriculture. (2) A study of garden flowers and house plants, propagation, soils, arrangement, and general horticultural practices. Equivalent: Hort. 196, minus one hour lab. credit.

Horticulture CH 7. Landscape Gardening. (2) A general study of the principles of landscape design; a study in planning and planting home grounds. Equivalent: Hort. 153, minus one hour lab. credit.

Poultry Husbandry 104. Farm Poultry Production. (2) An introductory course in poultry management.

School of Arts and Sciences

ECONOMICS AND SOCIOLOGY

110. Economics I. (3) Introductory study of the fundamental principles of production, distribution, and consumption of goods.

250. Sociology. (3) A study of the development and functioning of human groups; social and cultural patterns and processes; group interpretation.

290. Rural Sociology. (3) 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.

CS 4. Community Leadership. (2) Principles and techniques of leadership; personal qualities of leaders; practical applications of these elements to community organizations. No exact equivalent in residence. Pr.: Soc. 250 or 290.

EDUCATION

105. Educational Psychology II. (3) The learning process, with special emphasis on the school environment, the teacher, and the evaluation of school learning. Pr.: Educ. 100 or Psych. 100.

135. Methods of Teaching in the Secondary School. (3) General principles of teaching applied to high school instruction; selection and organization of materials; methods and techniques; individual adaptation; organization and management of classroom. Pr.: Educ. 120.

195. General Methods for Elementary Teachers. (3) Fundamentals of teaching all subjects commonly taught in the elementary grades; lesson planning and teaching procedures. Pr.: Psych. 310.

415. Educational Sociology. (3) Development of meaning of American democracy; social problems of the public schools; development of plans for practicing democracy in the public schools. Pr.: Educ. 120.

CP 4. History of Education. (3) (Not available 1956-1957.) 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.

CP 5. Classroom Management. (2) 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.

CP 7. Educational Administration. (3) 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.

CP 19. Essentials of Reading. (3) 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

125. Written Communications I. (3) Beginning English for college credit; fundamentals of composition and rhetoric; analyses of thought, content, and style; practice in composition.

- 135. Written Communications II.** (2) Cont. of analyses and practice in composition; types of reasoning; emphasis on an investigative theme. Pr.: Engl. 115 or 125.
- CCE 2a. Written Communications IIa.** (1) 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 Engl. 135 is equivalent to Engl. 140. Pr.: Engl. 125 and 135.
- 155. Commercial Correspondence.** (3) Writing of adjustment, collection, credit, and sales letters; principles of effective commercial writing. Pr.: Engl. 135.
- 215. English Literature I.** (3) From the early Britons through the end of the 17th century. Pr.: Engl. 135.
- 225. English Literature II.** (3) Through the 18th, 19th, and 20th centuries. Pr.: Engl. 135.
- 245. American Literature I.** (3) Through Colonial, Revolutionary, and Romantic periods to the Civil War. Pr.: Engl. 135.
- 255. American Literature II.** (3) From Whitman to the present. Pr.: Engl. 135.
- 470. Literature for Children.** (3) For children of various grades and ages; planned especially to meet the needs of mothers and of teachers of rural and of grade schools. Pr.: Engl. 135.
- 480. American Short Story.** (3) (Not available 1956-1957.) A critical study of the short story. Not a course in creative story writing. Pr.: Engl. 225 or 255.

GEOLOGY AND GEOGRAPHY

- 110. General Geology.** (3) Structural and dynamic features of the earth; the rock-forming minerals; the rocks and their decay; a short history of the earth.
- 210. Principles of Geography.** (3) A general course in college geography; the influence of geography on man and his activities.

HISTORY, GOVERNMENT, AND PHILOSOPHY

- 115. Civilization I.** (3) Ancient civilizations, their rise and fall, and contributions to world civilization; to about 1650.
- 130. Civilization II.** (3) Civilization since 1650; showing shift from agricultural to industrial and commercial, and approaching scientific and atomic age.
- 175. United States Before 1865.** (3) A study of the beginnings of our country, its settlement, and its development to the end of the war between the States.
- 190. United States Since 1865.** (3) The significant forces, movements, and personalities in the development of American life since 1865. International developments.
- 485. Latin American Nations.** (3) Economic, political, social, and cultural development in Latin American republics; growth of democratic processes. Pr.: Three hours of American history.
- 255. American Government.** (3) Origin and development of our governmental form; basic structure, principles, and interpretations of our constitution.
- CHC 1. Community Civics.** (2) Study and problems of local, county, and state governments. No exact equivalent in residence.

LIBRARY ECONOMICS

- CLE 1. Book Selection in the Public Library.** (3) Basic principles of selection; standard aids and book-reviewing publications; writing and

evaluating book reviews and annotations. No exact equivalent in residence.

CLE 2. Book Selection in the School Library. (3) 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.

CLE 4. Reference. (3) 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

110. Solid Geometry. (2) Pr.: Plane geometry and one unit of high school algebra.

175. College Algebra. (3) Pr.: Plane geometry and one and one-half units of high school algebra.

190. Plane Trigonometry. (3) Pr.: Plane geometry and one and one-half units of high school algebra.

PHYSICAL EDUCATION

CPE 1. Personal Hygiene. (2) 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.

CPE 2. Community Health. (1) 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.

CPE 3. Playground Activities. (2) Organization and administration of playground activities; games suitable for different ages. Equivalent: Ph. Ed. 280, minus one hour lab. credit.

PSYCHOLOGY

105. Educational Psychology II. (3) The learning process, with special emphasis on the school environment, the teacher, and the evaluation of school learning. Same course as Education 105. Pr.: Educ. 100 or Psych. 100.

310. General Psychology. (3) Human behavior; methods, research, principles. A basic course for teachers and others interested in social science.

615. Psychology of Childhood and Adolescence. (3) 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. Pr.: Psych. 310.

School of Engineering

Agricultural Engineering CE 3. Gas Engines and Tractors. (2) Principles of the internal combustion engine, carburetion, valve timing, ignition, cooling, lubrication, and fuels; servicing and repair of farm engines and selection of power for agriculture. Equivalent: Ag. E. 136, minus one hour lab. credit.

Industrial Engineering and Industrial Arts 175. Metals and Alloys. (2) The manufacture and use of iron, steel, copper, aluminum, and their alloys. Pr. or conc.: Chem. 170.

Mechanical Engineering 210. Engineering Drawing. (2) The selection and use of drawing instruments; construction of geometrical figures; lettering; orthographic projections and sections; pictorial methods of representation.

Mechanical Engineering 215. Descriptive Geometry. (2) 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. Pr.: M. E. 210, Math. 110, or equiv.

Mechanical Engineering 220. Machine Drawing I. (2) Conventional representation; working drawings; dimensioning; reproduction of drawing; checking for errors; arrangement of title and notes; sheet and metal drafting; single perspective. Pr. or conc.: M. E. 215.

Mechanical Engineering 230. Mechanism. (3) 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. Pr.: Math. 190, M. E. 215.

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 the State Board of Education. Each high school course listed below carries a $\frac{1}{2}$ unit of high school credit.

AGRICULTURE

		<i>Unit H. S. Credit</i>
PCA	1. Elementary Agriculture I	$\frac{1}{2}$
PCA	2. Elementary Agriculture II	$\frac{1}{2}$

COMMERCE

PCM	7. Bookkeeping	$\frac{1}{2}$
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DRAWING

PCD	3. Shop Mechanical Drawing I	$\frac{1}{2}$
PCD.	4. Shop Mechanical Drawing II	$\frac{1}{2}$

ENGLISH

PCE	1C. Grammar and Composition (first semester, first year)	$\frac{1}{2}$
PCE	2L. Literature (second semester, first year)	$\frac{1}{2}$
PCE	3C. Composition (first semester, second year)	$\frac{1}{2}$
PCE	4L. Literature (second semester, second year)	$\frac{1}{2}$
PCE	5C. Composition (first semester, third year)	$\frac{1}{2}$
PCE	6L. Literature (second semester, third year)	$\frac{1}{2}$

HISTORY AND CIVICS

PCH	5. American History I	$\frac{1}{2}$
PCH	6. American History II	$\frac{1}{2}$
PCH	7. Community Civics	$\frac{1}{2}$
PCH	8. Constitution of United States	$\frac{1}{2}$
PCH	9. World History I	$\frac{1}{2}$
PCH	10. World History II	$\frac{1}{2}$

MATHEMATICS

		Unit H. S. Credit
PCM	1. Algebra I	1½
PCM	2. Algebra II	1½
PCM	3. Algebra III	1½
PCM	4. Plane Geometry I	1½
PCM	5. Plane Geometry II	1½
PCM	6. Solid Geometry	1½

SCIENCE

PCS	1. Physical Geography	1½
PCS	4. Physiology	1½
PCS	5. General Science	1½

SOCIAL SCIENCE

PCC	2. Elementary Economics	1½
PCC	3. Elementary Sociology	1½
PCC	4. Elementary Psychology	1½

EXTENSION CLASSES

Extension Classes, an Evening College, and off-campus service of Kansas State College are organized for groups of adults who wish to continue their education through the study of vocational, avocational, or cultural subjects. Through extension, many are raising the level of their professional training, qualifying for professional certification, or pursuing programs of in-service improvement.

To organize extension classes. If any group of fourteen or more people is interested in a particular subject or course, they should contact the Head of the Department of Continuing Education at Kansas State College, Manhattan, for the scheduling of the class. Sometimes more enrollees may be needed, since the class may be so located that it may be necessary to cover substantial travel expenses on the part of the instructor.

Thirty semester hours of the work required for a bachelor's degree in the School of Arts and Sciences may be obtained by the completion of extension and/or correspondence courses. Extension and/or correspondence credit in curricula offered by other schools at Kansas State College is limited only by the general requirement that thirty semester hours be taken in residence, twenty of which must be taken in the last thirty hours of degree work.

FEE POLICY

	Kansas residents or staff members	Non- residents
1. Fee per semester hour (for credit or non-credit).....	\$7.50	\$7.50
2. Extension class fees are not refundable unles, subsequent to acceptance of the fees, the service, at the option of the College, is not provided.		

Extension Course Offerings. In addition to many courses listed by the subject matter departments of the College, the Department of General Extension also offers the following courses on an extension class basis:

- CAR 1. Drawing and Appreciation I. 2 semester hours.
One hour of lecture on appreciation and two hours of laboratory instruction.
- CAR 2. Drawing and Appreciation II. 2 semester hours.
One hour of lecture on appreciation and two hours of laboratory instruction.
- CAR 5. Painting and Appreciation I. 2 semester hours.
One hour of lecture on appreciation and two hours of laboratory instruction.
- CAR 6. Painting and Appreciation II. 2 semester hours.
One hour of lecture on appreciation and two hours of laboratory instruction.

CBA 610a. Microbiology of Human Diseases. 3 semester hours.

Lecture and demonstration. For students who have had adequate practical laboratory experience and/or a basic course in Bacteriology or Microbiology. A condensed survey of the microbiology of human diseases.

CONFERENCES, INSTITUTES, AND SEMINARS

Conferences, institutes, seminars, short courses, and forums represent a rapidly expanding part of the program of the Department of General Extension. Such activities are developed on a short term, non-credit basis to meet the needs of particular institutions, agencies, or voluntary associations.

Any group interested in having the Department of Continuing Education sponsor or co-sponsor this type of activity is welcome to discuss their proposal with the Head of the Department of Continuing Education.

Officers of Administration, Instruction, and Research

(As of February 1, 1956)

Administrative and Service Offices

- ROBERT A. ALEXANDER, Program Director, K-State Union (1955). B. A., University of Illinois.
- ROBERT ARTHUR ANDERSON, Assistant Director, Office of Admissions and Registrar (1949, 1953). B. S., M. S., Kansas State College.
- WILLIAM FREDERICK BAEHR, Professor; College Librarian (1943). B. S. in L. S., M. A., University of Illinois.
- MABEL GERTRUDE BAXTER, Instructor, College Library (1916, 1947).
- DANIEL D. BEATTY, Business Manager (1956). A. B., Hope College; M. B. A., University of Michigan.
- MILDRED CAMP, Assistant Professor, Emeritus, College Library (1927, 1955). A. B., Eureka College; B. L. S., University of Illinois.
- TIEH CHENG CHIN, Instructor, College Library (1955). B. A., National Northeastern University; M. A., University of Washington; Master of Librarianship, University of Washington.
- VIRGINIA J. COMBS, Residence Hall Director; Instructor (1955). B. S., University of Minnesota, M. A., Northwestern University.
- ROBERT OREN CORKILL, JR., Instructor, College Library (1955). A. B., Kansas State Teachers College, Emporia; M. S., University of Illinois Library School.
- SULEYMAN CULLU, Physician, Student Health Service (1952). M. D., University of Istanbul.
- ELIZABETH HAMILTON DAVIS, Associate Professor, College Library (1920, 1947). A. B., MacMurray College for Women; B. L. S., University of Illinois.
- 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.
- KENNEY LEE FORD, Alumni Secretary (1928). B. S., M. S., Kansas State College.
- 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.
- CHARLES FRANCIS HAUGHEY, Physician, Student Health Service (1955). B. S., M. S., M. D., University of Kansas.
- KENNETH M. HEYWOOD, Director of Development (1956). B. S., Kansas State College, M. A., University of Wyoming.
- HAROLD HOWE, Dean of Graduate School; Professor of Agricultural Economics; Agricultural Economist, Agr. Exp. Sta. (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.
- CHARLES A. JACOT, Assistant Dean of Students (1955). B. A., Cornell College; M. A., State University of Iowa.
- HAROLD E. JONES, Director of Extension (1956). B. S., Kansas State College; M. S., Ph. D., Purdue University.
- RAYMOND ORVILLE KELTNER, Physician, Student Health Service (1955). B. S., Kansas State College; M. D., Northwestern University.
- 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.
- JANE ROCKWELL KOEFOD, Executive Director YWCA (1955). A. B., Florida State College; 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.
- CARLETON H. LEE, Physician, Student Health Service (1955). B. A., University of Wichita; M. D., University of Kansas.
- FRED Y. M. MA, Instructor, College Library (1953). 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).

- MAX W. MILBOURN, Director of Public Service, Associate Professor of Journalism (1949). A. B., University of Wichita.
- HELEN MOORE, Dean of Women (1940). A. B., University of Kansas; M. A., Columbia University.
- 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.
- 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.
- DELORES R. SAND, Assistant Residence Hall Director; Assistant Instructor (1955). B. S., University of Arizona.
- ELEANOR S. SIEMERS, Assistant Residence Hall Director; Assistant Instructor (1955).
- VIRGINIA ELLEN SMITH, Residence Hall Director; Instructor (1954). Ph. B., University of Chicago; M. A., University of Minnesota.
- MARTHA STUCKY, Instructor, College Library (1953). B. A., Bethel College; M. A., University of Denver.
- ARLOA M. SUMMERS, Assistant Residence Hall Director; Assistant Instructor (1955). A. B., Washburn University.
- CLARENCE W. THOMAS, JR., Residence Hall Director; Instructor (1955). B. S., M. S., Kansas State College.
- MABEL LOUISE THOMAS, Instructor, College Library (1952). B. S., East Tennessee State College; M. A. L. S., George Peabody College.
- HALLIE THOMPSON, Instructor, College Library (1955). B. A., Furman University; M. A., George Peabody College for Teachers.
- 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.
- HERBERT JOHN WUNDERLICH, Dean of Students (1955). B. A., University of Idaho; M. A., Harvard University; Ed. D., Stanford University.

School of Agriculture

- ERWIN ABMEYER, Assistant Professor of Horticulture; Assistant Pomologist, Northeast Kansas Experiment Fields (1934, 1935). B. S., Kansas State College.
- CURTIS LAVERNE AHRENS, Temporary Instructor in Agricultural Economics; Assistant Agricultural Economist, Agr. Exp. Sta. (1955). B. S., Kansas State College.
- LOUIS CORNELIUS AICHER, Professor of Animal Husbandry; Animal Husbandman, Agr. Exp. Sta. (1921, 1952). B. S., Kansas State College.
- KLING LEROY ANDERSON, Professor of Agronomy; Agronomist, Agr. Exp. Sta. (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, 1954). B. S., M. S., University of Minnesota.
- FLOYD WARNICK ATKESON, Professor, Head of Department of Dairy Husbandry; Dairy Husbandman, in charge, Agr. Exp. Sta. (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., Agr. Exp. Sta. (1949). B. S., M. S., Pennsylvania State College.
- CLIFF ERRETT AUBEL, Professor of Animal Husbandry; Animal Husbandman, Agr. Exp. Sta. (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, Agr. Exp. Sta. (1937, 1954). B. S., M. S., Kansas State College.

- MILBURN CLINTON AXELTON, Instructor in Agronomy; Assistant Agronomist, Southwest Kansas Experiment Fields (1929, 1951). B. S., Kansas State College.
- EVANS E. BANBURY, Associate Professor; Superintendent, in charge, Colby Branch Agr. Exp. Sta. (1946, 1955). B. S., Kansas State College.
- ERLE EDWIN BARTLEY, Associate Professor of Dairy Husbandry; Associate Dairy Nutritionist, Agr. Exp. Sta. (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 Agr. Exp. Sta. (1949, 1952). B. S., Kansas State College.
- SAMUEL S. BEHNER, Instructor in Dairy Husbandry; Assistant Dairy Husbandman, Agr. Exp. Sta. (1955). B. S., Ohio State University.
- FLOYD WAYNE BELL, Professor of Animal Husbandry; Animal Husbandman, Agr. Exp. Sta. (1918, 1921). B. S., Cornell University.
- THOMAS DONALD BELL, Professor of Animal Husbandry; Animal Husbandman, Agr. Exp. Sta. (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 Agr. Exp. Sta. (1952). M. S., University of Nebraska.
- MAHENDRA S. BILANGOO, Instructor in Agronomy; Assistant Agronomist, Agr. Exp. Sta. (1953, 1955). B. Sc., A. S. College of LaKhauti Buland Shaler, U. P. University of Agriculture, India; M. S., University of California.
- ORVILLE WILLARD BIDWELL, Associate Professor of Agronomy; Assistant Agronomist, Agr. Exp. Sta. (1950, 1954). A. B., Oberlin College; B. S., Ph. D., Ohio State University.
- CHARLES FREDERICK BORTFELD, Associate Professor of Agricultural Economics; Associate Economist, Agr. Exp. Sta. (1948). B. S., M. A., University of Nebraska.
- BETTE STEPHENS BOWEN, Temporary Assistant Instructor in Flour and Feed Milling Industries; Agr. Exp. Sta. (1956). B. A., University of Texas.
- 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 (1951, 1952). B. S., Kansas State College.
- JAMES OSCAR BRAY, Associate Professor of Agricultural Economics; Assistant Economist, Agr. Exp. Sta. (1951, 1955). 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 Agr. Exp. Sta. (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, Associate Professor of Entomology; Assistant Entomologist (1951, 1955). B. S., M. S., Kansas State College.
- LORENA M. BURNETTE, Assistant Instructor in Agricultural Economics (1954). B. S., Kansas State Teachers College.
- EDWARD P. CALL, Assistant Professor of Dairy Husbandry (1952). B. S., Ohio State University.
- LELAND EVERETT CALL, Professor of Agronomy, Emeritus; Dean and Director, Emeritus (1907, 1946). B. S., M. S., Ohio State University.
- RONALD WAYNE CAMPBELL, Associate Professor of Horticulture; Associate Pomologist, Agr. Exp. Sta. (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.
- ALFRED J. CASADY, Instructor in Agronomy; Assistant Agronomist, Agr. Exp. Sta. (1949, 1955). B. S., M. S., Kansas State College.
- WILLIAM E. CATHCART, Temporary Instructor in Agricultural Economics (1954). B. S., Kansas State College.
- WILLIAM STEVEN CHEPIL, Professor of Agronomy; Agronomist, Agr. Exp. Sta. (1948). B. S., M. S., University of Saskatchewan (Canada); Ph. D., University of Minnesota.
- ALFRED LESTER CLAPP, Professor of Agronomy; Agronomist, Agr. Exp. Sta. (1915, 1939). B. S., M. S., Kansas State College.
- THOMAS JOSEPH CLAYDON, Associate Professor of Dairy Husbandry; Associate Dairy Husbandman, Agr. Exp. Sta. (1946). B. S. A., University of Saskatchewan (Canada); M. S., Ph. D., Iowa State College.
- RUTH ELLA CLIFTON, Assistant Instructor in Agricultural Economics, Agr. Exp. Sta. (1947, 1952). B. S., M. S., Kansas State College.
- NORMAN R. COLLINS, Assistant Professor of Agricultural Economics; Assistant Agricultural Economist, Agr. Exp. Sta. (1954). B. S., Kansas State College; M. A., Harvard University.
- HARRY H. CONVERSE, Agricultural Engineer, U. S. D. A., Off Farm Conditioning, Handling and Storage of Grain; Agr. Exp. Sta. (1954). B. S., M. S., Kansas State College.
- RUFUS FRANCIS COX, Professor and Head of Department of Animal Husbandry; Animal Husbandman, in charge, Agr. Exp. Sta. (1930, 1950). B. S., Oklahoma Agricultural and Mechanical College; M. S., Iowa State College; Ph. D., Cornell University.
- JAMES V. CRAIG, Associate Professor of Poultry Husbandry; Associate Poultry Husbandman, Agr. Exp. Sta. (1955). B. S., M. S., University of Illinois; Ph. D., University of Wisconsin.
- FLOYD EWING DAVIDSON, Professor and Superintendent, in charge, Mound Valley Branch Agr. Exp. Sta. (1934, 1952). B. S., M. S., Kansas State College.

- CHESTER P. DAVIS, Associate Agricultural Engineer, U. S. D. A., Heat Pulp Experiments; Agr. Exp. Sta. (1954). B. S., Oklahoma Agricultural and Mechanical College; M. S., Purdue University.
- VADEN E. DAVIS, Assistant Instructor in Agricultural Economics; Assistant Agricultural Economist, Agr. Exp. Sta. (1956). B. S., Kansas State College.
- CHARLES DeFOREST DAVIS, Professor of Agronomy, Emeritus (1921, 1949). B. S., M. S., Kansas State College.
- LESTER J. DePEW, Instructor in Entomology; Assistant Entomologist, Agr. Exp. Sta. (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 Agr. Exp. Sta. (1941, 1952). B. S., Kansas State College.
- ROSCOE ELLIS, JR., Associate Professor of Agronomy; Assistant Agronomist, Agr. Exp. Sta. (1948, 1955). B. S., M. S., Kansas State College; Ph. D., University of Wisconsin.
- ANDREW BRIAN ERHART, Professor and Superintendent, in charge, Garden City Branch Agr. Exp. Sta. (1931, 1952). B. S., Kansas State College.
- 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, Agr. Exp. Sta. (1951). B. S., University of Missouri.
- EARL LeROY FARMER, Assistant Professor of Dairy Husbandry; Assistant in Dairy Improvement, Agr. Exp. Sta. (1949). B. S., University of Missouri.
- EUGENE PATRICK FARRELL, Associate Professor of Flour and Feed Milling Industries; Milling Technologist, Agr. Exp. Sta. (1949, 1954). B. S., M. S., Kansas State College.
- FRANCIS DAVID FARRELL, President, Emeritus (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, Agr. Exp. Sta. (1925, 1945). B. S., Oregon State College; M. S., Ph. D., University of Wisconsin.
- GEORGE ALBERT FILINGER, Professor of Horticulture; Pomologist, Agr. Exp. Sta. (1931, 1946). B. S., M. S., Kansas State College; Ph. D., Ohio State University.
- WILLIAM RAY FINDLEY, Associate Agronomist, Agr. Exp. Sta. (1956). M. S., Kansas State College.
- KARL FREDERICK FINNEY, Professor of Flour and Feed Milling Industries; Chemist, U. S. D. A., Agr. Exp. Sta. (1938, 1948). A. B., Kansas Wesleyan University; B. S., M. S., Kansas State College.
- JAMES R. FLEMING, Temporary Instructor; Assistant in Flour and Feed Milling Industries; Agr. Exp. Sta. (1956). B. S., University of Nebraska.
- GLEN RICHARD FORD, Assistant Instructor in Agronomy; Assistant Agronomist, Agr. Exp. Sta. (1955). B. S., Kansas State College.
- FORREST CHARLES FOUNTAINE, Professor of Dairy Husbandry; Dairy Nutritionist, Agr. Exp. Sta. (1947). B. S., University of Wisconsin; M. S., Ph. D., University of Minnesota.
- WAYNE L. FOWLER, Secretary, Kansas Crop Improvement Association. M. S., Kansas State College.
- DON LADOYT GOOD, Associate Professor of Animal Husbandry; Assistant Animal Husbandman, Agr. Exp. Sta. (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, Agr. Exp. Sta. (1952). B. S., M. S., University of Arkansas.
- DONALD W. GRIMES, Instructor; Assistant in Irrigation, Garden City Branch Agr. Exp. Sta. (1956). B. S., M. S., Oklahoma Agricultural and Mechanical College.
- GORDON M. GROSH, Temporary Instructor; Assistant in Flour and Feed Milling Industries; Agr. Exp. Sta. (1954, 1956). B. Sc. A., University of Manitoba.
- HAROLD LEROY HACKEROTT, Assistant Professor; Assistant Agronomist, Fort Hays Branch Agr. Exp. Sta. (1954). B. S., M. S., Kansas State College.
- FRED BENTON HADLE, Instructor in Horticulture; Assistant Pomologist, Agr. Exp. Sta. (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.
- WALLACE W. HARRIS, Instructor; Assistant Agronomist, Colby Branch Agr. Exp. Sta. (1954, 1955). B. S., M. S., Kansas State College.
- T. L. HARVEY, Temporary Instructor in Entomology (1954). B. S., M. S., Kansas State College.
- WILLIAM C. HASKETT, Associate Pathologist, U. S. D. A., Agr. Exp. Sta. (1952, 1953). B. S., Kansas State College; M. S., Ph. D., Iowa State College.
- WALDON H. HASTINGS, Associate Professor of Flour and Feed Milling Industries; Associate Feed Technologist, Agr. Exp. Sta. (1955). B. S., University of Maine; M. S., University of Minnesota; Ph. D., University of Massachusetts.
- CARLTON H. HERBEL, Graduate Assistant, Agronomy. B. S., Kansas State College.
- ROY BARRETT HERRING, Assistant Professor; Assistant Agronomist, Garden City Branch Agr. Exp. Sta. (1951, 1952). B. S., M. S., Oklahoma A. & M. College.

- GEORGE M. HERRON, Instructor; Assistant in Soils, Garden City Branch Agr. Exp. Sta. (1956). B. S., M. S., Oklahoma A. & M. College.
- LEONARD B. HERTZ, Instructor in Agronomy; Assistant Agronomist, Agr. Exp. Sta. (1955). B. S., M. S., Ph. D., University of Wisconsin.
- ELMER GEORGE HEYNE, Professor of Agronomy; Agronomist, Agr. Exp. Sta. (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, Agr. Exp. Sta. (1950, 1952). B. S., M. S., University of Manitoba (Winnipeg); Ph. D., Purdue University.
- JULIAN ADAIR HODGES, Professor of Agricultural Economics; Economist, Agr. Exp. Sta. (1923, 1941). B. S., M. S., University of Kentucky; A. M., Ph. D., Harvard University.
- LEWIS A. HOLLAND, Assistant Professor of Animal Husbandry; Assistant Animal Husbandman, Agr. Exp. Sta. (1951, 1956). B. S., New Mexico A. & M. College; M. S., Colorado A. & M. College; Ph. D., Iowa State College.
- LEO MICHAEL HOOVER, Associate Professor of Agricultural Economics; Associate Economist; Agr. Exp. Sta. (1947, 1954). B. S., Kansas State College; M. S., Iowa State College; Ph. D., Harvard University.
- MARION D. HUFFMAN, Agent, U. S. D. A., Wheat Stem Rust; Agr. Exp. Sta. (1955). B. S., Kansas State Teachers College at Pittsburg; M. S., Kansas State College; Ph. D., Iowa State College.
- KEITH HUSTON, Associate Professor of Dairy Husbandry (1954). B. S., M. S., Ph. D., University of Wisconsin.
- JOHN ALEXANDER JOHNSON, Professor of Flour and Feed Milling Industries; Associate in Milling and Baking Research, Agr. Exp. Sta. (1940, 1955). 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, Agr. Exp. Sta. (1919, 1941). B. S., M. S., Kansas State College.
- LLOYD CHARLES JONES, Assistant Professor; Assistant Agronomist, Mound Valley Branch Agr. Exp. Sta. (1947, 1952). B. S., Kansas State College.
- RAY ALBERT KEEN, Assistant Professor of Horticulture; Assistant Ornamental Horticulturist, Agr. Exp. Sta. (1947). B. S., Kansas State College; M. S., Ohio State University.
- PAUL LEO KELLEY, Assistant Professor of Agricultural Economics; Assistant Economist, Agr. Exp. Sta. (1943, 1947). B. S., M. S., Kansas State College.
- FRANK BOONE KESSLER, Assistant Professor; Assistant Animal Husbandman, Fort Hays Branch Agr. Exp. Sta. (1946, 1952). B. S., Kansas State College.
- EMILE F. KIENZ, Temporary Assistant Professor of Horticulture; Assistant Pomologist, Agr. Exp. Sta. (1945, 1955). B. S., Kansas State College.
- GERALD L. KLINE, Agricultural Engineer, U. S. D. A., Off Farm Conditioning, Handling and Storage of Grain; Agr. Exp. Sta. (1954). B. S., M. S., Iowa State College.
- DALE ALPHEUS KNIGHT, Assistant Professor of Agricultural Economics; Assistant Economist, Agr. Exp. Sta. (1948). B. S., Kansas State College; M. S., Cornell University; A. M., Ph. D., University of Chicago.
- JAMES ELWOOD KNOX, Assistant Professor; Assistant Dairy Husbandman, Mound Valley Branch Agr. Exp. Sta. (1949, 1952). B. S., Mississippi State College.
- HERBERT KNUTSON, Professor; Head, Department of Entomology (1953). A. B., Iowa Wesleyan College; M. S., Southern Methodist University; Ph. D., University of Minnesota.
- BERL A. KOCH, Assistant Professor of Animal Husbandry; Assistant Animal Husbandman, Agr. Exp. Sta. (1956). B. S., Iowa State College; M. S., Cornell University; Ph. D., University of California.
- JOHN FRANK KONECNY, Cereal Technologist, Hard Winter Wheat Quality Laboratory, U. S. D. A., Agr. Exp. Sta. (1953). B. S., Kansas State College.
- JOSEPH WENDELL KOUDELE, Assistant Professor of Agricultural Economics; Assistant Economist, Agr. Exp. Sta. (1947, 1949). B. S., University of Nebraska; M. S., University of Minnesota.
- HILMER HENRY LAUDE, Professor of Agronomy; Agronomist, Agr. Exp. Sta. (1911, 1931). B. S., Kansas State College; M. S., Texas Agricultural and Mechanical College; Ph. D., University of Chicago.
- JOHN L. LAUNCHBAUGH, JR., Associate Professor; Associate Agronomist, Fort Hays Branch Agr. Exp. Sta. (1955). A. B., M. S., Fort Hays Kansas State College; Ph. D., Texas A. & M. College.
- 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; Associate Agronomist, Garden City Branch Agr. Exp. Sta. (1937, 1952). B. S., M. S., Kansas State College.
- MARVIN CARL LUNDQUIST, Instructor in Agronomy; Assistant Agronomist, Agr. Exp. Sta. (1951, 1956). B. S., M. S., Kansas State College.
- CHARLES WILBUR McCAMPBELL, Professor, Emeritus; Head, 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, Agr. Exp. Sta. (1940, 1948). B. S., M. S., Kansas State College; Ph. D., University of Wisconsin.
- DAVID LESLIE MACKINTOSH, Professor of Animal Husbandry; Animal Husbandman, Agr. Exp. Sta. (1921, 1947). B. S., University of Minnesota; M. S., Kansas State College.

- ERNEST LEE MADER, Associate Professor of Agronomy; Associate Agronomist, Agr. Exp. Sta. (1948). B. S., M. S., Oklahoma A. & M. College.
- MILTON LLOYD MANUEL, Associate Professor of Agricultural Economics; Associate Economist (Agricultural Cooperatives), Agr. Exp. Sta. (1945, 1949). B. S., M. S., Kansas State College; Ph. D., University of Minnesota.
- GERMAIN BERNARD MARION, Associate Professor of Dairy Husbandry (1952). B. S., Cornell University; M. S., Ph. D., University of Wisconsin.
- CHARLES FREDERICK MARSH, Instructor in Agricultural Economics; Assistant Agricultural Economist, Agr. Exp. Sta. (1954). B. S., M. S., Kansas State College.
- WILLARD HUNGATE MARTIN, Professor of Dairy Husbandry; Dairy Husbandman, Agr. Exp. Sta. (1925, 1928). B. S., Purdue University; M. S., Pennsylvania State College.
- CARL STEPHEN MENZIES, Instructor in Animal Husbandry (1954, 1955). B. S., Texas Technological College.
- CHARLES C. MICHEL, 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., Agr. Exp. Sta. (1946, 1948). B. S., University of Nebraska; M. S., Purdue University; Ph. D., Kansas State College.
- DONALD MILLER, Temporary Instructor in Flour and Feed Milling Industries (1953).
- GERALD DALE MILLER, Assistant Professor of Flour and Feed Milling Industries; Assistant Cereal Chemist; Agr. Exp. Sta. (1946, 1947). B. S., University of Nebraska; M. S., Kansas State College.
- JOHN DAVID MILLER, Assistant Professor; Assistant Agronomist, Fort Hays Branch Exp. Sta. (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, Agr. Exp. Sta. (1947). B. S., University of Saskatchewan (Canada); M. S., Ph. D., University of Minnesota.
- GEORGE MONTGOMERY, Professor; Head, Department of Economics and Sociology (1925, 1947). 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 WILLIAM MULLEN, Assistant Dean; Associate Professor of Agronomy (1937). B. S., Oklahoma A. & M. College; M. S., Kansas State College.
- HAROLD EDWIN MYERS, Assistant Dean; Associate Director, Agr. Exp. Sta.; 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). B. S., M. S., Kansas State College.
- 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; Head, Department of Agronomy; Agronomist, in charge, Agr. Exp. Sta. (1947, 1952). B. S., North Dakota School of Forestry; B. S., North Dakota State College; M. S., Ph. D., University of Wisconsin.
- CARL BENJAMIN OVERLEY, Assistant Professor of Agronomy; Assistant Agronomist, Kansas Hybrids Association, Agr. Exp. Sta. (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, Agr. Exp. Sta. (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, Agr. Exp. Sta. (1951, 1952). B. S., University of Missouri; M. S., Kansas State College.
- LOYAL FREDERICK PAYNE, Professor of Poultry Husbandry; Head, Department of Poultry Husbandry, Emeritus (1921, 1954). B. S., Oklahoma A. & M. College; M. S., Kansas State College.
- DOYLE E. PEASLEE, Temporary Assistant Instructor in Agronomy; Assistant Agronomist, Agr. Exp. Sta. (1954, 1956). B. S., M. S., Kansas State College.
- ROYCE OWEN PENCE, Associate Professor of Flour and Feed Milling Industries; Associate Milling Technologist, Agr. Exp. Sta. (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; Associate Agronomist, Weed Investigations, Field Crops Research Branch, ARS, U. S. D. A., Fort Hays Branch Agr. Exp. Sta. (1952). B. S., M. S., Kansas State College.
- WILLIAM FRANCIS PICKETT, Professor; Head, Department of Horticulture; Horticulturist, in charge, Agr. Exp. Sta. (1918, 1936). B. S., M. S., Kansas State College; Ph. D., Michigan State College.
- WILFRED HAROLD PINE, Professor of Agricultural Economics; Economist, Agr. Exp. Sta. (1934, 1949). B. S., M. S., Kansas State College; Ph. D., University of Minnesota.
- MARY EMMA PRICE, Assistant Instructor in Horticulture, Agr. Exp. Sta. (1954, 1956). A. B., University of Illinois; M. S., Kansas State College.
- RALPH E. PYKE, Temporary Assistant Instructor, Mound Valley Branch Agr. Exp. Sta. (1956). B. A., Baker University; M. S., Kansas State College.

- LEON REED QUINLAN, Professor of Horticulture; Ornamental Horticulturist, Agr. Exp. Sta. (1927, 1931). B. S., Colorado A. & M. College; M. L. A., Harvard University.
- R. J. RANEY, Instructor, in charge, Irrigation Experiment Field (1953, 1955). B. S., Kansas State College.
- CHARLES E. REED, Temporary Instructor in Agricultural Economics; Assistant Agricultural Economist, Agr. Exp. Sta. (1955). B. S., Kansas State College; M. S., University of Kansas.
- DRAYTFORD RICHARDSON, Professor of Animal Husbandry; Animal Nutritionist, Agr. Exp. Sta. (1951). B. S., Clemson Agricultural College; M. S., Ph. D., Iowa State College.
- CLIFFORD C. ROAN, Associate Professor of Entomology (1954). B. S., M. S., Ph. D., University of Illinois.
- WILLIAM MAX ROSS, Associate Professor; Associate Agronomist, Cereal Crops, Field Crops Research Branch, ARS, U. S. D. A., Fort Hays Agr. Exp. Sta. (1951, 1954). B. S., M. S., Ph. D., University of Illinois.
- PAUL L. ROTH, Instructor in Horticulture; Assistant Pomologist, Agr. Exp. Sta. (1955). B. S., M. S., Purdue University.
- OLIVER GEORGE RUSS, Instructor in Agronomy; Assistant Agronomist, Agr. Exp. Fields (1949, 1952). B. S., M. S., Kansas State College.
- WILLIAM DEAN RUTZ, Associate Professor of Dairy Husbandry; Associate Dairy Husbandman, Agr. Exp. Sta. (1952). B. S., Oklahoma A. & M. College; M. S., Kansas State College; Ph. D., University of Wisconsin.
- PAUL EVERETT SANFORD, Associate Professor of Poultry Husbandry; Poultry Nutritionist, Agr. Exp. Sta. (1949). B. S., Kansas State College; M. S., Ph. D., Iowa State College.
- IVAN W. SCHMIDEMANN, Temporary Instructor in Agricultural Economics; Assistant Agricultural Economist, Agr. Exp. Sta. (1953, 1956). B. S., M. S., Kansas State College.
- LEONARD WILLIAM SCHRUBEN, Professor of Agricultural Economics; Economist, Agr. Exp. Sta. (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., M. S., Kansas State College.
- JOHN ALFRED SHELLJENBERGER, Professor; Head, Department of Flour and Feed Milling Industries; Cereal Chemist, in charge, Agr. Exp. Sta. (1944, 1945). B. S., University of Washington; M. S., Kansas State College; Ph. D., University of Minnesota.
- MERLE DENNIS SHOEGREN, Cereal Technologist, Hard Winter Wheat Quality Laboratory, U. S. D. A., Agr. Exp. Sta. (1954). B. S., Bethany College; 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, Agr. Exp. Sta. (1946, 1954). B. S., Texas A. & M. College System; M. S., Kansas State College.
- FLOYD WILLIAM SMITH, Professor of Agronomy; Agronomist, Agr. Exp. Sta. (1946, 1950). B. S., Kansas State College; M. S., Ph. D., Michigan State College.
- ROGER CLETUS SMITH, Professor of Entomology; Head, Department of Entomology, Emeritus; Entomologist, Agr. Exp. Sta. (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, Agr. Exp. Sta. (1948, 1950). B. S., M. S., Kansas State College.
- JACK WILLARD SNYDER, Instructor in Dairy Husbandry; Assistant in Dairy Improvement, Agr. Exp. Sta. (1952). B. S., West Virginia University; M. S., Michigan State College.
- EDGAR LAVELL SORENSON, Research Agronomist, U. S. D. A., Ph. D., University of Wisconsin, 1955.
- LEONARD ORLO SORENSON, Assistant Professor of Agricultural Economics (1955). B. A., M. S., University of Minnesota.
- RALPH POLLISTER SOULE, JR., Assistant Professor of Animal Husbandry; Assistant Animal Husbandman, Agr. Exp. Sta. (1951). B. S., M. S., Michigan State College.
- THOMAS BRUCE STINSON, Assistant Professor; Superintendent in charge, Tribune Branch Agr. Exp. Sta. (1924, 1952). B. S., Kansas State College.
- CLARENCE W. SWALLOW, Instructor in Agronomy; Assistant in Agronomy, Agr. Exp. Sta. (1954). B. S., M. S., Kansas State College.
- JAMES W. TAYLOR, Temporary Instructor in Agricultural Economics; Assistant Agricultural Economist, Agr. Exp. Sta. (1955). B. S., M. S., Kansas 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, Agr. Exp. Sta. (1911, 1952). B. S., Pennsylvania State College; M. S., Kansas State College.
- LAWRENCE W. VAN MEIR, Assistant Professor of Economics and Sociology (1947, 1949). B. S., University of Illinois; M. S., Kansas State College.
- TED LOWELL WALTER, Assistant Professor; Assistant Agronomist, Colby Branch Agr. Exp. Sta. (1951). B. S., University of Nebraska; M. S., Colorado A. & M. College.
- GEORGE M. WARD, Associate Professor of Dairy Husbandry; Associate Dairy Husbandman, Agr. Exp. Sta. (1955). B. S., University of Vermont; M. S., Rutgers University; Ph. D., Michigan State University.
- CLYDE E. WASSOM, Assistant Professor of Agronomy (1954). B. S., M. S., Ph. D., Iowa State College.
- ARTHUR D. WEBER, Dean of Agriculture; Professor of Animal Husbandry (1923, 1955). B. S., M. S., Kansas State College; Ph. D., D. Sc., Purdue University.

- CARROLL M. WEBSTER, Assistant Instructor in Agronomy (1952). B. S., Kansas State College.
- JOHN D. WHEAT, Assistant Professor of Animal Husbandry (1954). B. S., M. S., Texas A. & M. College; Ph. D., Iowa State College.
- DONALD A. WILBUR, Professor of Entomology; Entomologist, Agr. Exp. Sta. (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.
- WILLIAM WAYNE WILLIS, Assistant Professor of Horticulture; Assistant Floriculturist, Agr. Exp. Sta. (1944, 1946). A. B., College of Emporia.
- CHARLES PEAIRS WILSON, Associate Director, Agr. Exp. Sta.; Associate Professor of Agricultural Economics (1938, 1952)). B. S., M. S., Kansas State College.
- LAURETSON VAN WITHEE, Assistant Professor of Agronomy; Assistant Agronomist, Agr. Exp. Sta. (1947, 1952, 1955). B. S., Kansas State 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 (1955). B. S., Utah State College; M. S., Kansas State College; Ph. D., Cornell University.
- 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.
- 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; Head, Department of Zoology; Zoologist, in charge, Agr. Exp. Sta. (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.
- ARTHUR CLINTON ANDREWS, Professor of Chemistry; Physical Chemist, Agr. Exp. Sta. (1926, 1952). B. S., University of Wisconsin; M. S., Kansas State College; Ph. D., University of Wisconsin.
- MADALYN AVERY, Associate Professor of Physics (1924, 1946). B. S., M. S., Kansas State College.
- RODNEY WHITTEMORE BABCOCK, Professor of Mathematics; Dean, Emeritus (1930, 1955). B. A., University of Missouri; M. A., Ph. D., University of Wisconsin.
- EDGAR SIDNEY BAGLEY, Professor of Economics (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.
- LAURENCE DEAN BARK, Associate Professor of Physics; Meteorologist, Agr. Exp. Sta. (1956). B. S., M. S., University of Chicago; Ph. D., Rutgers University.
- WERNER H. BARTH, Assistant Professor of History (1953). B. A., Baylor University; Ph. D., University of Texas.
- JAMES C. BATES, Professor of Botany, Emeritus (1935, 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; Ph. D., University of Kansas.
- ALICE MAY BECKER, Instructor in Physical Education (1954). B. S., Kansas State College.
- ALWYN BERLAND, Assistant Professor of English (1953). M. A., University of Chicago; M. Litt. (Cantab), University of Cambridge (England).
- WILLIAM RAYMOND BRACKETT, Associate Professor of Physics, Emeritus (1919, 1955). B. A., University of Colorado.
- DOROTHY MARY BRADLEY, Temporary Instructor in Economics (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; Head, Department of Psychology (1951). B. S., Ph. D., University of Minnesota.
- 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, Agr. Exp. Sta. (1950, 1952). A. B., Arizona State College; Ph. D., Northwestern University.

- MILDRED E. BUZENBERG, Instructor in Economics (1949, 1952). B. A., Michigan State College; M. S., Kansas State College.
- JAMES PHILLIP CALLAHAN, Professor of English (1924, 1946). B. S., Fort Hays Kansas State College; M. A., University of Kansas.
- ALVIN BOYD CARDWELL, Director, Bureau of General Research; Professor of Physics (1936, 1955). 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, Instructor in Speech (1954). B. S., Northwestern University; M. A., University of Oklahoma.
- EDWARD M. CAVANAUGH, Assistant Professor of Athletics; Assistant Football Coach (1955). A. B., Duke University.
- ERNEST KNIGHT CHAPIN, Associate Professor of Physics (1923, 1932). A. B., M. S., University of Michigan.
- JOSEPH RUDOLPH CHELIKOWSKY, Professor; Head, Department of Geology and Geography (1937, 1955). 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, Agr. Exp. Sta. (1948, 1954). B. S., University of Rhode Island; M. S., University of North Carolina; Ph. D., Iowa State College.
- LEO COHEN, Assistant Professor of Economics (1954). B. S., M. A., University of California at Los Angeles.
- CHARLES WILLIAM COLVER, Professor of Chemistry, Emeritus (1919, 1955). 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.
- HERBERT P. CORMACK, Assistant Professor of Athletics; Assistant Football Coach (1955). B. S., Pittsburg State Teachers College; M. A., University of Iowa.
- CHARLES MECLAIN CORRELL, College Historian; Professor of History, Emeritus (1922, 1950). B. S., Kansas State College; Ph. B., Ph. M., University of Chicago.
- 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.
- BASIL CURNUTTE, JR., Associate Professor of Physics (1954, 1955). B. S., U. S. Naval Academy; Ph. D., Ohio State University.
- RALPH EUGENE DAKIN, Assistant Professor of 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; Head, 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, Emeritus; Head, Department of English, Emeritus (1913, 1955). A. B., Indiana University; A. M., Columbia University.
- DONALD FRANK DeCOU, Associate Professor of Economics (1947). B. S., Kansas State Teachers College (Pittsburg); M. B. A., Northwestern University.
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- 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.
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- THEODORE ORICE DODGE, Assistant Professor of Business Administration (1946, 1948). B. S., Kansas State College; C. P. A., Kansas.
- 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, Agr. Exp. Sta. (1948, 1951). S. B., Ph. D., Massachusetts Institute of Technology.
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- EARL EUGENE EDGAR, Professor; Head, Department of General Studies (1946, 1953). B. A., DePauw University; M. A., University of Nebraska; Ph. D., University of Cincinnati.
- ABRAHAM EISENSTARK, Associate Professor of Bacteriology; Associate Poultry Bacteriologist and Virologist, Agr. Exp. Sta. (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.
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- 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; Plant Pathologist, Agr. Exp. Sta. (1927, 1952). B. S., M. S., Oregon State College; Ph. D., Iowa State College.
- ALFRED THEODORE ERICSON, Assistant Instructor in Chemistry, Agr. Exp. Sta. (1951, 1953). B. S., Kansas State Teachers College (Emporia); M. S., Kansas State College.
- CONRAD JOHN KERULF ERIKSEN, Associate Professor of Business Administration (1946, 1947). B. A., University of Kansas; M. B. A., Harvard University.
- LESTER EDGAR ERWIN, Associate Professor of Bacteriology; Associate Poultry Bacteriologist, Agr. Exp. Sta. (1946, 1950). B. S., Kansas State College; M. S., Ph. D., Iowa State College.
- THOMAS MARION EVANS, Professor; Head, Department of Physical Education (1942, 1950). B. S., Kansas State College; M. S., University of Michigan.
- JACOB OLIN FAULKNER, Professor of English, Emeritus (1922, 1955). B. A., Washington and Lee University; M. A., Pennsylvania State University.
- HURLEY FELLOWS, Assistant Professor of Botany; Assistant Plant Pathologist, Agr. Exp. Sta.; Pathologist, U. S. D. A. (1925, 1955). B. S., Oregon State College; Ph. D., University of Wisconsin.
- ARLIN M. FEYERHERM, Assistant Professor of Mathematics (1953). B. S., University of Minnesota; M. S., University of Iowa; Ph. D., Iowa State College.
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- JACK NORMAN FINCH, Temporary Instructor in Chemistry (1955). B. S., M. S., Fort Hays Kansas State College.
- WILLIAM R. FISCHER, Associate Professor of Music (1948). B. M., M. M., Northwestern University.
- WALTER DUMMER FISHER, Associate Professor of Economics (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; Acting Head, Department of Bacteriology; Bacteriologist, in charge, Agr. Exp. Sta. (1927, 1952). B. S., M. S., Kansas State College.
- FRANK J. FORNOFF, Associate Professor of Chemistry (1953). A. B., University of Illinois; M. S., Ph. D., Ohio State University.
- CLARENCE MAXWELL FOWLER, Associate Professor of Physics (1949, 1951). B. S., University of Illinois; M. S., Ph. D., University of Michigan.
- JOHN CARROLL FRAZIER, Professor of Botany; Plant Physiologist, Agr. Exp. Sta. (1926, 1947). A. B., DePauw University; M. A., University of Nebraska; Ph. D., University of Chicago.
- NORMAN DUGARD FRENCH, Assistant Professor of Economics (1951). B. S., M. S., University of Illinois.
- HOLLY CLAIRE FRYER, Professor of Mathematics; Statistician, in charge, Statistical Laboratory, Agr. Exp. Sta. (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 GAINES, Professor of Bacteriology; Soil Bacteriologist, Agr. Exp. Sta. (1914, 1952). B. S., M. S., University of North Carolina; Ph. D., Washington University.
- KATHERINE GEYER, Professor of Physical Education (1927, 1945). B. S., Ohio State University; M. A., Columbia University.
- HERSCHEL THOMAS GIER, Associate Professor of Zoology; Associate Embryologist, Agr. Exp. Sta. (1947). A. B., Kansas State Teachers College (Pittsburg); Ph. D., Indiana University.
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- CHARLES STEVEN GOETZINGER, JR., Assistant Professor of Speech (1954). B. S., Kent State University; M. S., Ph. D., Purdue University.

- ROMAN GOLIK, Temporary Assistant Professor of Business Administration (1955). M. S., University of Cracow (Poland); Ph. D., University of Heidelberg (Germany).
- ARTHUR LEONARD GOODRICH, Professor of Zoology (1929, 1947). B. S., College of Idaho; M. S., University of Idaho; Ph. D., Cornell University.
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- HILDA ROSINE GROSSMANN, Assistant Professor of Music (1927, 1932). B. M., Chicago Musical College; B. S., Kansas State College; M. A., Stanford University.
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- EARL DAHL HANSING, Professor of Botany; Plant Pathologist, Agr. Exp. Sta. (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.
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- S. T. KEIM, JR., Professor; Head, Department of Business Administration (1955). B. A., M. S., Texas A. & M.; I. A., Harvard; Ph. D., University of California.
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- PAUL E. KOEFOD, Associate Professor of Economics (1950, 1954). B. Ed., Minnesota State Teachers College; M. A., University of Minnesota; Dr. Sci. Pol., University of Geneva (Switzerland).
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- JACK LEEPER LAMBERT, Assistant Professor of Chemistry; Assistant Chemist, Agr. Exp. Sta. (1950, 1952). A. B., M. S., Kansas State Teachers College (Pittsburg); Ph. D., Oklahoma A. & M. College.
- ROY CLINTON LANGFORD, Professor of Psychology (1925, 1941). B. S., M. S., Kansas State College; Ph. D., Leland Stanford Junior University.
- ARTHUR LeROY LANGVARDT, Assistant Professor of English (1947). A. B., Kansas State Teachers College (Emporia); M. A., University of Colorado.
- FRANCIS CHOWING LANNING, Assistant Professor of Chemistry (1942, 1946). B. S., M. S., University of Denver; Ph. D., University of Minnesota.
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- MENDEL ELMER LASH, Professor of Chemistry (1922, 1947). A. B., M. S., Ph. D., Ohio State University.

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- BORIS LEAF, Professor of Physics (1946, 1954). B. S., University of Washington; Ph. D., University of Illinois.
- LUTHER OMAR LEAVENGOOD, Professor; Head, Department of Music (1945). B. M., 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, Agr. Exp. Sta. (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.
- J. HARVEY LITTRELL, Assistant Professor of Education (1954). B. A., 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 Sociology (1938, 1945). A. B., Baker University; M. S., Kansas State College.
- THOMAS HENRY LORD, Professor of Bacteriology; Bacteriologist, Agr. Exp. Sta. (1941, 1952). B. S., University of Massachusetts; M. S., Ph. D., University of Illinois.
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- GEORGE WILLARD MAXWELL, Assistant Professor of Physics (1927, 1928). A. B., M. S., University of Michigan.
- ELIZABETH UNGER McCracken, Associate Professor of Botany; Associate Cytogeneticist, Agr. Exp. Sta. (1938, 1950). B. A., M. A., Wellesley College; Ph. D., University of California.
- 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, Agr. Exp. Sta. (1946, 1954). A. B., B. S., Kansas State Teachers College (Emporia); Ph. M., Ph. D., University of Wisconsin.
- KATHERYN ANN McKINNEY, Assistant Professor of Physical Education (1946). B. S., Kansas State College; M. A., George Peabody College for Teachers.
- KENNETH JAMES McMAHON, Assistant Professor of Bacteriology (1949, 1954). B. S., South Dakota State College of Agriculture and Mechanic Arts; M. S., Oklahoma A. & M. College; Ph. D., Kansas State College.
- CALVIN MEDLIN, Professor of Technical Journalism (1934, 1949). B. S., M. S., Kansas State College.
- LEO EDWARD MELCHERS, Professor of Botany; Plant Pathologist, Agr. Exp. Sta. (1913, 1952). B. S., M. S., Ohio State University.
- JOSEPH FARRINGTON MERRILL, Assistant Instructor, Emeritus, Agr. Exp. Sta. (1921, 1955). B. S., University of Maine.
- BERNARD J. MERTES, Head Football Coach; 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, Agr. Exp. Sta. (1947, 1952). B. S., Ph. D., University of Illinois; M. S., University of Pennsylvania.
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- GEORGE MONTGOMERY, Professor; Head, Department of Economics and Sociology (1925, 1947). B. S., M. S., Kansas State College; Ph. D., University of Minnesota.

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- FRITZ MOORE, Professor; Head, Department of Modern Languages (1934). A. B., University of Akron; A. M., Ph. D., University of Illinois.
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- MARGARET ALICE NEWCOMB, Associate Professor of Botany (1925, 1941). B. S., M. S., Kansas State College.
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- THOMAS D. O'BRIEN, Professor; Head, Department of Chemistry; Chemist in charge, Agr. and Eng. Exp. Sta. (1955). B. S., M. S., George Washington University; Ph. D., University of Illinois.
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- STUART MCGREGOR PADY, Professor; Head, Department of Botany and Plant Pathology; Mycologist, Agr. Exp. Sta. (1952). B. A., M. A., McMaster University (Canada); Ph. D., University of Toronto (Canada).
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- LUCILE OSBORN RUST, Professor of Education (1924, 1929). B. S., Kansas State Teachers College (Pittsburg); M. S., Kansas State College.
- ADELBERT BOWER SAGESER, Professor of History (1938, 1941). A. B., Nebraska State Teachers College (Wayne); M. A., Ph. D., University of Nebraska.
- MERRILL ERNEST SAMUELSON, Assistant Professor of Technical Journalism (1950, 1952). B. S., Oklahoma City University; M. S., University of Oregon.
- RALPH GRAFTON SANGER, Professor; Head, Department of Mathematics (1946). B. S., M. S., Ph. D., University of Chicago.
- PAUL STEWARD SCHMIDT, Assistant Professor of English (1951, 1952). B. A., State University of Iowa; M. A., University of Chicago; Ph. D., University of Minnesota.
- WILLIAM GEORGE SCHRENK, Professor of Chemistry; Physical Chemist, Agr. Exp. Sta. (1938, 1951). A. B., Westmar College; M. S., Ph. D., Kansas State College.
- SCOTT SEARLES, JR., Associate Professor of Chemistry; Associate Chemist, Agr. Exp. Sta. (1952). B. A., M. A., University of California; Ph. D., University of Minnesota.
- HUBER SELF, Assistant Professor of Geography (1947, 1953). B. S., Central Oklahoma State College; M. S., Oklahoma A. & M. College.
- EUNICE LOUISE SEVERNS, Assistant Professor of Education (1953). B. S., Kansas State Teachers College (Emporia); M. A., Colorado State College.
- HOWARD P. SHANNON, Assistant Professor of Athletics; Assistant Basketball Coach (1954). B. S., Kansas State College.
- THOMAS EUGENE SHELLENBERGER, Assistant Instructor in Chemistry (1955). B. S., M. S., Montana State College.
- CLAUDE WESLEY SHENKEL, JR., Associate Professor of Geology (1949, 1954). B. S., Kansas State College; M. S., Ph. D., University of Colorado.
- DONALD FOX SHOWALTER, Associate Professor of Psychology (1928, 1950). A. B., M. A., University of Nebraska; Ph. D., University of Kansas.
- RALPH E. SILKER, Professor of Chemistry; Chemist, Agr. Exp. Sta. (1941, 1948). B. A., University of Dubuque; M. S., Ph. D., State University of Iowa.
- WEBSTER HARRISON SILL, JR., Assistant Professor of Botany; Assistant Plant Pathologist, Agr. Exp. Sta. (1952). B. S., West Virginia Wesleyan College; M. A., Boston University; Ph. D., University of Wisconsin.
- CHARLES MERVYN SLAGG, Assistant Professor of Botany (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, Temporary Instructor in Chemistry (1953, 1956). B. S., M. S., University of Arizona.
- MARGARET H. SMITH, Instructor in 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.
- VERYLE E. SNYDER, Assistant Professor of Physical Education (1954). B. S., M. S., Kansas State College.
- HOMER E. SOCOLOFSKY, Assistant Professor of History (1946, 1952). B. S., M. S., Kansas State College; Ph. D., University of Missouri.

- 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; Ph. D., Clark University.
- 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.
- STEVE SUCIC, Assistant Professor of Athletics; Assistant Football Coach (1955). B. S., M. S., University of Illinois.
- 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.
- WILLIAM SYLVESTER, Assistant Professor of English (1952). B. A., Columbia University; M. A., University of Chicago; Ph. D., University of Minnesota.
- MARILYN D. TAVARES, Instructor in Physical Education (1953). B. S., Boston University.
- FRANK JAMES THOMPSON, Assistant Professor of Physical Education (1937, 1949). B. Ed., Minnesota State Teachers College (Mankato); B. S., 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, Agr. Exp. Sta. (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, Agr. Exp. Sta. (1951). B. S., New Mexico College of Agriculture and Mechanic Arts; M. A., State College of Washington; Ph. D., North Carolina State College.
- LOIS BELLE TURNER, Assistant Professor of History (1946, 1955). B. S., M. S., Kansas State College.
- 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.
- JOHN C. WEAVER, Dean; Professor of Geography (1955). B. A., M. A., Ph. D., University of Wisconsin.
- FOREST L. WHAN, Professor of Speech (1953). B. S., Kansas State College; M. A., University of Illinois; Ph. D., State University of Iowa.
- STUART ESTES WHITCOMB, Professor; Head, Department of Physics; Physicist, Agr. Exp. Sta. (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; Ph. D., Denver University.
- CARRELL HENRY WHITNAH, Associate Professor of Chemistry; Associate Chemist, Agr. Exp. Sta. (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.
- EDWARD JOSEPH WIMMER, Professor of Zoology (1928, 1941). B. A., M. A., Ph. D., University of Wisconsin.
- MORICE FREDERICK WINTER, Professor of Athletics and Head Basketball Coach (1953). B. S., University of Southern California.
- DALE E. WOERNER, Assistant Instructor in Chemistry (1955). B. S., Kansas State College; M. S., Ph. D., University of Illinois.

- GRACE S. WOLDT, Temporary Instructor in Mathematics (1946). 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.
- PAUL McCLURE YOUNG, Associate Dean; Director of Summer School; Professor of Mathematics (1947, 1956). A. B., Miami University; M. A., Ph. D., Ohio State University.
- 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; Personnel Management School.
- EDWARD STANLEY DOYLE, Assistant Instructor in Air Science (1952). Personnel Management School; Assistant Air Command and Staff College.
- JAMES ALLAN GRIFFITH, Assistant Professor of Air Science (1952). B. A., Bluffton College; A. F. Cryptographic School.
- DWIGHT LEROY HARLEY, Associate Professor of Air Science (1952). B. A., Coe College; M. A., State University of Iowa; Logistics Staff Officers School.
- JAMES BRYMER HART, Assistant Instructor in Air Science (1954). Personnel Management School.
- DALE ALVIN JERMAN, Assistant Instructor in Air Science (1953). Personnel Management School; Telephone and Telegraph Repairmen School; Radio Repairmen School.
- DUDLEY GORDON KAVANAUGH, Assistant Professor of Air Science (1955). B. A., Sacramento State College; Pilot Supervisors School.
- HOWARD LEROY MALCHOW, Assistant Professor of Air Science (1954). B. S., Indiana University; MATS Heavy Transport School.
- RALPH DALE OAKLEY, Assistant Professor of Air Science (1954). B. A., University of Oklahoma.
- WALTER EDWIN POINDEXTER, Assistant Professor of Air Science (1954). B. A., University of Omaha.
- LAURENCE HOWARD ROBINSON, Assistant Instructor in Air Science (1953). Graduate, Personnel Management School, Administrative Inspectors School; Administrative Supervisors School.
- GERALD DUANE SCHEUFLER, Assistant Professor of Air Science (1955). B. S., Colorado A. & M. College; Squadron Officers School.
- CARLTON MYLES SMITH, Assistant Professor of Air Science (1955). B. A., University of California; Air Force Intelligence School; Strategic Intelligence School.
- OLIVER MARTIN SMITH, Assistant Instructor in Air Science (1954). Supply School.
- BAYRED ODELL VERMILLION, Associate Professor of Air Science (1954). B. S., Southwestern Missouri State College.
- DALE BERTON WARD, Associate Professor of Air Science (1952). B. S., University of Illinois; Air Force Instrument School.
- CHARLES HOWARD WILKINS, Professor and Head of Department of Air Science (1955). B. S., University of Southern California; Air Command and Staff College.
- ALOYSIUS JOSEPH ZOELLER, Assistant Instructor in Air Science (1955).

DEPARTMENT OF MILITARY SCIENCE

- GLENN E. BARTON, Assistant Instructor in Military Science (1954).
- ROBERT C. BLAIR, Assistant Professor of Military Science (1954). B. S., Clemson Agricultural College.
- 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 W. HARVEY, JR., Professor and Head of Department of Military Science (1955). B. S., University of Missouri; Command & General Staff College; The Infantry School.
- WILLIAM H. HASTINGS, Associate Professor of Military Science (1954). B. S., Virginia Military Institute; Command & General Staff College; The Artillery School.
- VIRGIL A. HOHL, Assistant Instructor in Military Science (1954).
- CHARLES M. HUGHES, Assistant Professor of Military Science (1955). A. B., Harvard University.
- HARRISON M. MURPHY, Assistant Instructor in Military Science (1954).
- WILLIAM F. SHEPARD, Assistant Instructor in Military Science (1954).
- JAMES L. SMITH, JR., Assistant Professor of Military Science (1953). B. S., Kansas State College.

- WOODROW W. STEWART, Assistant Instructor in Military Science (1955).
ROBERT B. TOBIAS, JR., Assistant Professor of Military Science (1954). B. S., United States Military Academy; The Infantry School.
GORDON W. VACURA, Associate Professor of Military Science (1953). D. V. M., M. S., Kansas State College.

School of Engineering and Architecture

- CORLISS J. BALLOU, Instructor in Industrial Arts (1954). B. S., Kansas State College.
BOYD BERTRAND BRAINARD, Professor of Mechanical Engineering (1923, 1938). B. S., University of Colorado; S. M., Massachusetts Institute of Technology. Professional Engineer.
JOHN HENRY BRENNEMAN, Assistant Professor of Architecture (1950, 1955). B. Arch., Iowa State College; M. Arch., Rice Institute. Registered Architect.
EARLE CONRAD BYERS, Instructor in 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, 1953). B. S., M. S., Kansas State College.
ROBERT WYNANDUS CLACK, Instructor in Machine Design (1955). B. S., U. S. Naval Academy.
JOHN PAUL CLIFTON, Assistant Professor of Industrial Engineering (1947). B. S., University of Kansas; M. S., Kansas State College.
LOWELL EDWIN CONRAD, Professor of Civil Engineering, Emeritus (1908, 1949). B. S., C. E., Cornell College; M. S., Lehigh University. Professional Engineer.
MELVIN CLYDE COTTOM, Assistant Professor of Electrical Engineering (1955). B. S., M. S., University of Kansas. 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.
HENRY D'ANGELO, Instructor in Electrical Engineering (1955). B. E. E., City College, New York.
EARL GILBERT DARBY, Professor of Industrial Arts (1941, 1952). B. S., M. S., Kansas State College.
MARTIN DECKER, Instructor in Agricultural Engineering; Assistant Agricultural Engineer, Agr. Exp. Sta. (1951). B. S., Kansas State College. Professional Engineer.
HARVEY FREDERICK DIETRICH, Instructor in Industrial Arts (1948).
MERLE RILEY DODGE, Instructor in 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 (1954). B. Arch., Oklahoma Agricultural and Mechanical College. Registered Architect.
MERRILL AUGUSTUS DURLAND, Dean; Professor of Machine Design; Director, Eng. Exp. Sta. (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; Head, Department of Agricultural Engineering; Agricultural Engineer, Eng. Exp. Sta., Agr. Exp. Sta. (1928). B. S., M. S., Iowa State College. Professional Engineer.
EMIL CARL FISCHER, Professor; Head, Department of Architecture and Allied Arts; Architect, Eng. Exp. Sta. (1955). A. B., Columbia College; B. S. in Arch., M. S., Columbia University. Registered Architect.
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, Assistant Professor of Architecture (1949, 1955). 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 Missouri.
CHARLES LOUIS HAFTERMEHL, Assistant Professor of Drawing and Painting (1946, 1954). B. F. A., Bethany College; M. F. A., Cranbrook Academy of Arts.
JOAN LILLY HAHN, Instructor in Drawing and Painting (1955). B. A., Bethany College; M. S., Kansas State College.

- 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.
- JOHN CRANSTON HEINTZELMAN, Professor of Architecture (1947, 1954). B. Arch., Massachusetts Institute of Technology; M. Arch., Columbia University. Registered Architect.
- LINN HELANDER, Professor; Head, Department of Mechanical Engineering; Mechanical Engineer, Eng. Exp. Sta. (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; Associate Director, Eng. Exp. Sta. (1946, 1953). B. S., Kansas State College. Professional Engineer.
- WILLIAM HENRY HONSTEAD, Associate Professor of Chemical Engineering; Associate Chemical Engineer, Agr. Exp. Sta. (1943, 1947). 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, Assistant Professor of Farm Mechanics (1949, 1955). 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; Head, Department of Electrical Engineering; Electrical Engineer, Eng. Exp. Sta. (1922, 1955). B. S., University of Illinois; M. S., Kansas State College. Professional Engineer.
- WILLIAM ROBERT KIMEL, Associate Professor of Machine Design (1946, 1955). 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.
- ALDEN KRIDER, Associate Professor of Architecture (1949, 1955). 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).
- GEORGE HERBERT LARSON, Professor of Agricultural Engineering (1946, 1950). B. S., M. S., Kansas State College; Ph. D., Michigan State University. Professional Engineer.
- SHANG WU LIN, Instructor in Applied Mechanics (1949, 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 A. & M. 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, Instructor in Applied Mechanics (1954). B. S., University of Alabama.
- WILLIS HAYDEN MELGREN, Instructor in Chemical Engineering (1955). B. S., Kansas State College.
- ENRICO PAUL MERCANTI, Instructor in Machine Design (1949, 1956). B. S., New York University; M. S., Kansas State College.
- ALVA ERNEST MESSENHEIMER, Assistant Professor of Machine Design (1942, 1946). B. S., Kansas State College. Professional Engineer.
- REED FRANKLIN MORSE, Professor; Head, Department of Civil Engineering; Civil Engineer, Eng. Exp. Sta. (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 HAWLEY MUNGER, Associate Professor of Applied Mechanics (1942, 1954). B. S., M. S., Kansas State College. Professional Engineer.
- CLARENCE LESLIE NELSON, Instructor in Industrial Arts (1943).
- DWIGHT ALVIN NESMITH, Assistant Professor of Engineering, Eng. Exp. Sta. (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 Arts (1947, 1954). B. A., Westmar College; M. S., Kansas State Teachers College (Pittsburg).
- CLINTON ELLICOTT PEARCE, Professor; Head, Department of Machine Design (1917, 1923). S. B., Massachusetts Institute of Technology; M. S., Cornell University. Professional Engineer.

- RICHARD CARTER POTTER, Associate Dean; Professor of Mechanical Engineering (1949, 1955). B. S., M. S., Ph. D., Purdue University. Professional Engineer.
- MILTON EDWARD RAVILLE, Associate Professor of Applied Mechanics (1946, 1955). B. S., Norwich University; M. S., Kansas State College; Ph. D., University of Wisconsin.
- CARROLL KENT REECE, Instructor in Civil Engineering (1955). B. S., Kansas State College.
- KERMIT WILLIAM REISTER, JR., Instructor in Electrical Engineering (1955). B. S., University of Nevada.
- EDWARD JAMES RISING, Assistant Professor of Mechanical Engineering (1954). B. M. E., Rensselaer Polytechnic Institute; M. M. E., Syracuse University.
- WALTER FREDERICK ROBOHN, Assistant Professor of Civil Engineering (1949, 1952). B. S., M. S., Kansas State College. Professional Engineer.
- HARVE DEWEY ROSE, Assistant Instructor in Mechanical Engineering (1947).
- 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; Head, Department of Applied Mechanics; Materials Testing Engineer, Eng. Exp. Sta. (1919, 1923). B. S., Kansas State College. Professional Engineer.
- ROY ANDREW SEATON, Dean and Director, Emeritus; 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, Eng. Exp. Sta. (1919, 1946). B. S., M. S., Kansas State College.
- RAYMOND NEWELL SHAW, Instructor in Civil Engineering (1955). B. S., University of Arkansas.
- 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 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.
- 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 Drawing and Painting (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., Instructor in Farm Mechanics (1955). B. S., Kansas State College.
- ISAAC WAKABAYASHI, Instructor in Electrical Engineering (1955). B. S., University of California.
- SHU-LUNG WANG, Associate Professor of Chemical Engineering; Assistant Chemical Engineer, Agr. Exp. Sta. (1952, 1955). B. S., M. S., D. Sc., Washington University.
- HENRY TIBBELS WARD, Professor; Head, Department of Chemical Engineering; Chemical Engineer, Eng. Exp. Sta., Agr. Exp. Sta. (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 of Architecture (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.
- JOE NATE WOOD, Professor of Machine Design (1936, 1947). B. S., University of Iowa. Professional Engineer.
- CLAUDE LOWELL WOODARD, Assistant Professor of 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 Arts (1947).
- DALE EDWIN ZABEL, Assistant Professor of Industrial Engineering and Industrial Arts (1946, 1951). B. S., M. S., Kansas State College.
- GERALD LeROY ZACHARIAH, Instructor in Agricultural Engineering (1955). B. S., Kansas State College.

School of Home Economics

- ANNA TESSIE AGAN, Associate Professor of Family Economics; Associate Family Economist, Agr. Exp. Sta. (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.
- CONSTANCE CRYDER ALEXANDER, Assistant Instructor in Institutional Management (1955). B. S., University of Illinois.
- LOIS L. ANDERSON, Assistant Instructor in Foods and Nutrition, Agr. Exp. Sta. (1953). B. S., Kansas State College.
- LEAH ASCHAM, Professor of Foods and Nutrition, Emeritus (1927, 1951). A. B., Ohio Northern University; B. S., Ohio State University; Ph. D., Yale University.
- EUNICE MILLER AYE, Assistant Instructor in Family Economics, Agr. Exp. Sta. (1955). B. S., Kansas State College.
- DOROTHY BARFOOT, Professor; Head, Department of Art (1930, 1935). B. A., State University of Iowa; M. A., Columbia University.
- JANE WILSON BARNES, Assistant Professor of Family Economics; Assistant Household Economist, Agr. Exp. Sta. (1939, 1954). B. S., M. S., Kansas State College.
- CHARLOTTE FRANCES BARTELS, Instructor in Institutional Management (1955). B. S., M. S., Ohio State University.
- 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, Agr. Exp. Sta. (1936, 1941). B. S., M. S., Kansas State College.
- MYRTLE GUNSELMAN CORRELL, Associate Professor of Family Economics; Associate Family Economist, Agr. Exp. Sta. (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, 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.
- BARBARA EDITH DENSMORE, Instructor in Clothing and Textiles; Assistant Textile Economist, Agr. Exp. Sta. (1950). B. S., Michigan State College; M. S., Iowa State College.
- NINA EDELBLUTE, Associate Professor of Institutional Management; Associate Food Economist, Agr. Exp. Sta. (1940, 1952). B. S., M. S., Kansas State College.
- 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; Assistant Food Economist, Agr. Exp. Sta. (1953). B. S., University of Rhode Island; M. S., Kansas State College.
- GRAYCE E. GOERTZ, Associate Professor of Foods and Nutrition; Associate Food Economist, Agr. Exp. Sta. (1946, 1955). B. S., M. S., Ph. D., Kansas State College.
- FRANCES MARIE HAUFERMEHL, 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; Head, Foods and Nutrition; in charge, Home Economics Research, Agr. Exp. Sta. (1947, 1955). 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, Agr. Exp. Sta. (1952, 1953). B. S., Kansas State College.
- MIRIAM HILL HOUSTON, Assistant Instructor in Clothing and Textiles, Agr. Exp. Sta. (1955). B. S., University of Wisconsin; M. S., Kansas State College.
- HAZEL DELL HOWE, Associate Professor of Clothing and Textiles (1936, 1947). B. S., M. S., Kansas State College.
- ALBERTA BUIS JOHNSTON, Assistant Instructor in Family Economics (1955). B. S., University of Nebraska.
- MARGARET M. JUSTIN, Professor of Home Economics; Dean Emeritus (1923, 1954). B. S., Kansas State College; B. Ed., Columbia University; Ph. D., Yale University.
- JOAN HARDING KANNARR, Assistant Instructor in Foods and Nutrition, Agr. Exp. Sta. (1955). B. S., Kansas State College.
- ROSAMOND HARRIET KEDZIE, Associate Professor of Art, Emeritus (1938, 1955). B. S., Michigan State College; M. A., University of California.
- LEONE BOWER KELL, Professor of Family and Child Development; Family Economist, Agr. Exp. Sta. (1927, 1953). B. S., M. S., Kansas State College.

- MARTHA MORRISON KRAMER, Assistant Dean; Professor of Foods and Nutrition (1922, 1945). B. S., University of Chicago; M. S., Ph. D., Columbia University.
- PIL NYI KWAK, Assistant Instructor in Institutional Management (1955). B. S., University of Omaha.
- LOUISE MORGAN LANGFORD, Temporary Assistant Professor of Family and Child Development (1954). A. B., University of Kansas; M. S., Kansas State College.
- SUSAN SPEARIE LARSON, Assistant Instructor in Clothing and Textiles, Agr. Exp. Sta. (1950, 1955). B. A., State University of Iowa; M. S., University of Wisconsin.
- ALPHA CORINNE LATZKE, Professor; Head, Department of Clothing and Textiles; Textile Economist, Agr. Exp. Sta. (1927, 1935). B. S., M. S., Kansas State College.
- GERTRUDE ELISE LIENKAEMPER, Associate Professor of Clothing and Textiles (1941, 1948). B. S., Oregon State College; M. A., University of Washington.
- 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, Agr. Exp. Sta. (1945, 1952). B. S., Kansas State College; Ph. D., University of California.
- KURT HEINZ J. MATZDORF, Instructor in Art (1955). Diploma in Fine Arts, London University (England); M. F. A., State University of Iowa.
- MARIA MORRIS, Associate Professor of Art (1925, 1941). B. S., M. S., Kansas State College.
- RICHARD L. D. MORSE, Professor; Head, Department of Family Economics; Family Economist, Agr. Exp. Sta. (1955). B. A., University of Wisconsin; Ph. D., Iowa State College.
- IVA MANILLA MULLEN, Assistant Professor of Foods and Nutrition (1936, 1947). B. S., Kansas State College; M. S., Iowa State College.
- MARGARET ELIZABETH RAFFINGTON, Assistant to the Dean; Assistant Professor of Family and Child Development (1938, 1939). B. S., M. S., Kansas State College; Professional Diploma, Columbia University.
- PHYLLIS McDANDEL REESMAN, Assistant Instructor in Family Economics, Agr. Exp. Sta. (1955). A. B., University of Missouri.
- LOIS MAXINE ROHRBOUGH, Assistant Instructor in Foods and Nutrition, Agr. Exp. Sta. (1955). B. S., Kansas State College.
- HILDA JOAN RYE, Instructor in Family Economics (1955). B. S., Mississippi State College for Women; M. S., University of Tennessee.
- DORETTA SCHLAPHOFF HOFFMAN, Dean; Professor of Home Economics (1954). B. S., University of Nebraska; M. S., Michigan State College; Ph. D., Cornell University.
- BERNICE BROWN SCHONEWEIS, Temporary Instructor in Foods and Nutrition (1954, 1955). B. S., Kansas State College.
- 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 Family Economics, Agr. Exp. Sta. (1954). B. S., Kansas State College.
- MARGUERITE MARIE TAYLOR, Instructor in Institutional Management (1952). B. S., M. S., Michigan State College.
- GWENDOLYN LaVERNE TINKLIN, Assistant Professor, Department of Foods and Nutrition; Assistant Food Economist, Agr. Exp. Sta. (1943, 1949). B. S., M. S., Kansas State College.
- MARGUERITE HARPER UMBERGER, Temporary Instructor in Family 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.
- MARGARET JOAN WATKINS, Temporary Instructor in Family and Child Development (1954). B. A., Friends University.
- BESSIE BROOKS WEST, Professor; Head, 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, Agr. Exp. Sta. (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.
- JANET MARIE WILSON, Assistant Professor in Family Economics (1955). B. S., Northwest Missouri State College; M. Ed., University of Missouri.
- MERNA BEATRICE ZEIGLER, Associate Professor of Institutional Management (1939, 1947). B. S., M. S., Kansas State College.

School of Veterinary Medicine

- HARRY D. ANTHONY, Instructor in Pathology; Assistant Pathologist, Agr. Exp. Sta. (1955). D. V. M., Kansas State College.
- ELAINE JOSEPHINE BERNDT, Instructor in Pathology; Assistant Pathologist, Agr. Exp. Sta. (1955). B. S., University of North Dakota.
- 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 (1954). D. V. M., Kansas State College; M. S., Iowa State College.
- RALPH R. DYKSTRA, Dean, Emeritus; Professor of Surgery, Emeritus (1911, 1948). D. V. M., Iowa State College.

- GEORGE WASHINGTON EBERHART, Assistant Professor of Surgery and Medicine (1955). B. S., D. V. M., Kansas State College.
- JOHN McKINLEY ERIKSSON, Instructor in Surgery and Medicine (1955). B. S., D. V. M., University of California.
- DEAN SYDNEY FOLSE, Associate Professor of Pathology; Associate Pathologist, Agr. Exp. Sta. (1952). B. S., D. V. M., Texas A. & M. 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; Head, Department of Surgery and Medicine (1919, 1935). D. V. M., Cornell University.
- DENNIS DONALD GOETSCH, Assistant Professor of Physiology; Assistant Physiologist, Agr. Exp. Sta. (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.
- DONALD FRANKLIN JOHNSON, JR., Associate Professor of Pathology; Associate Pathologist, Agr. Exp. Sta. (1955). D. V. M., M. S., Texas A. & M. College.
- ALICE DAY KIMBALL, Instructor in Pathology, Emeritus (1934, 1955). B. S., Kansas State College.
- WAYNE WOLPERT KIRKHAM, Assistant Professor of Pathology; Assistant Pathologist, Agr. Exp. Sta. (1955). D. V. M., M. S., Texas A. & M. College.
- CHARLES HOWARD KITSELMAN, Professor of Pathology; Pathologist, Agr. Exp. Sta. (1919, 1933). V. M. D., University of Pennsylvania; M. S., Kansas State College.
- ELDEN EMANUEL LEASURE, Dean; Professor of Physiology; Veterinarian, in charge, Agr. Exp. Sta. (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; Head, 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; M. S., Cornell University.
- LEE MILES RODERICK, Professor of Pathology; Pathologist, Agr. Exp. Sta. (1938). D. V. M., Ohio State University; B. S., M. S., North Dakota Agricultural College; Ph. D., University of Chicago.
- JEAN CLARKE SMITH, Assistant Professor of Surgery and Medicine (1955). D. V. M., Kansas State College; M. S., University of Illinois.
- EARL JOHN SPLITTER, Associate Professor of Pathology; Assistant Pathologist, Agr. Exp. Sta. (1946, 1954). D. V. M., M. S., Kansas State College.
- MELVIN JOHN SWENSON, Associate Professor of Physiology; Associate Physiologist, Agr. Exp. Sta. (1950, 1952). D. V. M., Kansas State College; M. S., Ph. D., Iowa State College.
- DONALD McLEAN TROTTER, Instructor in Anatomy (1956). D. V. M., Kansas State College.
- MARVIN JOHN TWIEHAUS, Professor; Head, Department of Pathology; Pathologist, Agr. Exp. Sta. (1937, 1953). D. V. M., M. S., Kansas State College.
- GRAVERS K. L. UNDERBJERG, Professor; Head, Department of Physiology; Physiologist, Agr. Exp. Sta. (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, Extension Specialist in Foods and Nutrition (1929, 1947). B. S., University of Minnesota; M. S., Kansas State College.
- WILLIAM GERALD AMSTEIN, Professor of Horticulture; Head, Department of Agricultural Specialists (1929, 1952). B. S., University of Massachusetts; M. S., Kansas State College.
- HARRY CHARLES BAIRD, Professor of Extension Education, District Agent (1919, 1952). B. S., Kansas State College.
- MAE BAIRD, Professor; Department Head; 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; Extension Specialist in Home Crafts (1917, 1953). B. S., Kansas State College.
- SHIRLEY MARGENE BESSEY, Instructor; Extension Specialist in Recreation (1952). B. S., Colby College.
- FRANK GEARHART BIEBERLY, Associate Professor; Extension Specialist in Agronomy (1941, 1949). B. S., M. S., Kansas State College.
- ADA GRACE BILLINGS, Professor of History and Government; Continuing Education (1921, 1946). B. S., M. S., Kansas State College.

- ELMER WALFORD BLANKENHAGEN, Instructor; District Supervisor (1950, 1955). B. S., Kansas State College.
- FRANK OTTO BLECHA, Professor of Extension Education; District Agent (1917, 1948). B. S., M. S., Kansas State College.
- EDWIN RALPH BONEWITZ, Assistant Professor; Extension Specialist in Dairy Husbandry (1943, 1949). B. S., M. 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; Extension Specialist in Family Life (1946, 1951). B. S., University of Nebraska; M. S., Kansas State College.
- MARTHA ESTHER BRILL, Assistant Professor; Extension Specialist in Health (1946, 1948). B. S., Kansas State College; R. N., University of Kansas.
- EVERETT WILLIAM BROWNING, Instructor; Assistant Extension Editor (1955). B. S., Kansas State College.
- GLENN MORTON BUSSET, Assistant Professor of Junior Extension; Assistant State Club Leader (1941, 1948). B. S., Kansas State College.
- MOODY DALE CANNON, Assistant Professor; Extension Agricultural Engineer (1953). B. S., Oklahoma A. & M. College; M. S., University of Missouri.
- EUGENE ARTHUR CLEAVINGER, Professor; Extension Specialist in Agronomy (1926, 1947). B. S., Kansas State College.
- JOHN HERBERT COOLIDGE, Professor of Agricultural Economics; Extension Economist in Farm Management (1926, 1949). B. S., M. S., Kansas State College.
- MIRIAM LENORE DEXTER, Assistant Professor of Technical Journalism; Assistant Extension Editor (1944, 1947). B. S., M. S., Kansas State College.
- ANNABELLE JEANETTE DICKINSON, Instructor in Extension Education; District Home Demonstration Agent (1940, 1953). B. S., Fort Hays Kansas State College.
- ISABEL NAOMI DODRILL, Instructor; District Home Demonstration Agent (1941, 1954). B. A., Fort Hays Kansas State College; B. S., Kansas State College.
- DALE HENRY EDELBLUTE, Instructor; Area Extension Agriculturist (1947, 1955). Garden City. B. S., Kansas State College.
- CARL GEORGE ELLING, Professor, Emeritus; Extension Specialist in Animal Husbandry (1907, 1951). B. S., Kansas State College.
- VERA MAY ELLITHORPE, Associate Professor; Extension Specialist in Home Management (1938, 1947). B. S., M. S., Kansas State College.
- JOHN MOSES FERGUSON, Professor; Head, Department of Engineering Extension (1937, 1945). B. S., Kansas State College.
- MARY GENEVIEVE FLETCHER, Associate Professor; Extension Specialist in Foods and Nutrition (1936, 1947). B. S., M. S., Kansas State College.
- RICHARD C. FRANKLIN, Assistant Professor, Continuing Education (1954). A. B., Ohio Wesleyan; M. A., Ohio State University; Ed. D., Columbia University.
- LOUELLA NAN FRANKS, Instructor; Extension Specialist in Foods and Nutrition (1953). B. S., Drury College.
- HAROLD GREEN GALLAHER, Assistant Professor; Extension Specialist in Farm Forestry (1951). B. S., University of Missouri.
- DELL EDWARD GATES, Assistant Professor; Extension Specialist in Entomology (1948, 1950). B. S., M. S., Kansas State College.
- OTIS BENTON GLOVER, Associate Professor of Extension Education; District Supervisor (1929, 1947). B. S., Kansas State College.
- PAUL WILSON GRIFFITH, Professor, Acting Director (1935, 1955). B. S., M. 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; 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; Extension Specialist in Predator and Rodent 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., M. S., Kansas State College.
- GLENN WALTER HARDY, Temporary Instructor; Extension Specialist in Soil Testing (1955). A. B., M. S., Kansas State Teachers College, Pittsburg.
- HAROLD BYRON HARPER, Assistant Professor; Extension Soil Conservationist (1932, 1946). B. S., Kansas State College.
- H. MARIE HENDERSHOT, Instructor; District Home Demonstration Agent (1944, 1955). B. S., Kansas State College.
- RUSSELL LOUIS HERPICH, Assistant Professor; 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; Extension Economist in Livestock 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; Extension Economist in Agricultural Planning (1922, 1947). B. S., Kansas State College.
- MARION EVERT JACKSON, Assistant Professor; Extension Specialist in Poultry and Egg Marketing (1945). B. S., Purdue University; M. S., Kansas State College.
- JOHN HAROLD JOHNSON, Professor of Junior Extension; Head, Department of Boys' and Girls' Club Work; State Club Leader (1927, 1945). B. S., Kansas State College; M. S., George Washington University.
- NAOMI MARIE JOHNSON, Associate Professor; Extension Specialist in Clothing and Textiles (1938, 1950). B. S., M. S., Kansas State College.
- CLAUDE LEWIS KING, Associate Professor; Extension Specialist in Plant Pathology (1934, 1954). B. S., M. S., Kansas State College.
- RICHARD FRANKLIN KING, JR., Assistant Professor; Extension Specialist in Dairy Husbandry (1938, 1953). B. S., Kansas State College.
- MARGARET A. KOENIG, Instructor; District Home Demonstration Agent (1929, 1955). B. S., Kansas State College.
- ARTHUR S. KRIVAL, Instructor in English, Continuing Education (1954). B. A., M. A., University of Missouri.
- GUSTAV EMANUEL LANDEN, Instructor; Extension Specialist in Radio and Television (1955). B. A., Oklahoma University.
- REUBEN CARL LIND, Professor of Agronomy; Extension Specialist in Soil Conservation (1933, 1950). B. S., Kansas State College.
- JAMES WALTON LINN, Professor, Emeritus; Extension Specialist in Dairy Husbandry (1924, 1944). B. S., Kansas State College.
- LISLE LESLIE LONGSDORF, Professor of Technical Journalism; Head, Department of Extension Information; Extension Editor (1927, 1946). B. S., M. S., University of Wisconsin.
- HAROLD CLYDE LOVE, Assistant Professor of Agricultural Economics; Extension Economist in Farm Management (1935, 1948). B. S., M. S., Kansas State College.
- VERL EPHRAIM McADAMS, Assistant Professor; 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.
- RAYMOND DWIGHT McKINNEY, Assistant Professor; Extension Economist in Farm Management (1954). B. S., Nebraska University; M. P. A., Harvard University.
- HERBERT HENRY MACCOBY, Associate Professor of Sociology, Continuing Education (1950, 1954). A. B., Western Reserve University; M. A., Ph. D., Columbia University.
- EARL THOMAS MEANS, Extension Economist in Farm Management (1935, 1945). Everest. B. S., Kansas State College.
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- WENDELL AUSTIN MOYER, Assistant Professor; Extension Specialist in Animal Husbandry (1941, 1952). B. S., M. S., Kansas State College.
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- MELVIN WILLIAM OSBURN, Associate Professor; Extension Specialist in Veterinary Medicine (1952, 1954). D. V. M., Iowa State College.
- CHARLES ELWOOD PARKS, Assistant Professor; Extension Specialist in Landscape Architecture (1949, 1950). B. S., University of Illinois.
- FLOYD HOLMES PATTISON, Professor of Mechanical Engineering, Continuing Education (1919, 1927). B. S., Kansas State College; M. S., Massachusetts Institute of Technology.
- ROGER E. REGNIER, Assistant Professor of Junior Extension; Assistant State Club Leader (1934, 1947). B. S., Kansas State College.
- CLARENCE RICHARD ROBERTS, Instructor; Extension Specialist in Horticulture (1954). B. S., M. S., Oklahoma A. & M. College.
- RAYMOND WAYNE ROBINSON, Assistant Professor; Extension Economist in Marketing Information (1954). B. S., M. S., Oklahoma A. & M. College.
- DALE EUGENE SCHINDLER, Instructor; Extension Architect (1955). B. Arch., Kansas State College.
- MARTINE AUGUSTA SEATON, Professor; Extension Specialist in Poultry Husbandry (1928, 1946). B. S., University of Missouri.
- WALTER ELSWORTH SELBY, Assistant Professor of Engineering Extension; Extension Agricultural Engineer (1944, 1947). B. S., Kansas State College.
- ETHEL WATSON SELF, Assistant Professor; Extension Specialist in Home Management (1929, 1953). B. S., M. S., Kansas State College.
- HAROLD GLEASON SHANKLAND, Associate Professor of Technical Journalism; Associate Extension Editor (1943, 1949). 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; Extension Specialist in Home Economics Program Development (1924, 1954). B. S., Utah State College; M. S., Kansas State College.
- WINONA McNEIGHT STARKEY, Instructor; Extension Specialist in Home Furnishings (1944, 1952). B. S., M. S., Kansas State College.
- HAROLD EARL STOVER, Professor of Engineering Extension; Extension Agricultural Engineer (1936, 1954). B. S., Kansas State College.
- LOT FORMAN TAYLOR, Professor; Extension Specialist in Animal Husbandry (1935, 1953). B. S., M. S., Kansas State College.
- EARL HICKS TEAGARDEN, Professor of Extension Education; District Agent (1929, 1952). B. S., Kansas State College.
- MARJORIE ANN TENNANT, Instructor in Technical Journalism; Assistant Extension Editor (1947, 1952). B. S., Kansas State College.
- KENNETH EUGENE THOMAS, Assistant Professor; Director, Radio Station KSAC (1951, 1954). A. B., Southwestern College; M. S., Kansas State College.
- CARL TJERANDSEN, Professor; Head, Department of Continuing Education (1945, 1953). B. A., State College of Washington; M. B. A., University of Washington.
- MARY RUTH VANSKIKE, Assistant Professor of Extension Education; District Home Demonstration Agent (1943, 1954). B. S., Kansas State College; M. S., University of Maryland.
- ROMAN J. VERHAALLEN, Associate Professor of Adult Education, Continuing Education (1954). B. A., M. A., Ph. D., Wyoming University.
- MILDRED LUCILLE WALKER, Instructor; Extension Specialist in Consumer Education (1952). B. S., Kansas State College.
- EUGENE DECATUR WARNER, Associate Professor of Technical Journalism; Associate Extension Editor (1935, 1947). B. S., Kansas State College.
- LEO THEODORE WENDLING, Assistant Professor of Engineering Extension; Extension Agricultural Engineer (1947, 1949). B. S., Kansas State College.
- NORMAN VINCENT WHITEHAIR, Associate Professor of Agricultural Economics; Extension Economist in Grain Marketing (1946, 1954). B. S., M. S., Kansas State College.
- MARY CHRISTINE WIGGINS, Associate Professor; Extension Specialist in Clothing and Textiles (1930, 1947). B. S., Kansas State College; M. A., Columbia University.
- LUTHER EARL WILLOUGHBY, Professor; Extension Specialist in Agronomy (1918, 1944). B. S., Kansas State College.

COUNTY CLUB AGENTS

- 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 ENGLIS, 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.
- JOHN K. FERRELL, Ellsworth County (1955). Ellsworth.
- 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.
- 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.
- CLIFFORD L. MEIREIS, Pratt County (1955). Pratt.
- THOMAS W. ORWIG, Dickinson County (1955). Abilene.
- DONALD K. PETERSON, Osborne County (1955). Osborne.
- JOHN F. ROBERTSON, Cherokee County (1956). Columbus.
- EUGENE ROSS, Saline County (1955). Salina.
- ARMIN OTTO SAMUELSON, Harvey County (1946, 1952). Newton.
- FORREST LeROY SMITH, Barton County (1950, 1952). Great Bend.

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.
 THURMAN S. WREN, Sedgwick County (1949, 1955). Wichita.

COUNTY HOME DEMONSTRATION AGENTS

CLEDA PACE ADAMS, Ellis County (1953). Hays.
 MAHALA MARY ARGANBRIGHT, Norton County (1949, 1951). Norton.
 DELORES BAAS, McPherson County (1955). McPherson.
 VIRGINIA LEE BALTHROP, Saline County (1956). Salina.
 MARION BARNES, Sedgwick County (1955). Wichita.
 JOAN BEAL, Chautauqua County (1955). Sedan.
 FRANCES NORIENE BENDER, Johnson County (1954). Olathe.
 CORA ALICE BLACKWELL, Kearny County (1948, 1950). Lakin.
 BLANCHE BROOKS, Clay County (1941, 1951). Clay Center.
 JEAN K. CARLSON, Lyon County (1950, 1954). Emporia.
 ANNA GRACE CAUGHRON, Coffey County (1944, 1952). Burlington.
 DONNA LEE CHILDS, Thomas County (1955). Colby.
 NELLIE W. CLINE, Greeley and Wallace Counties (1955). Sharon Springs.
 JOSEPHINE M. CONLEY, Johnson County (1955). Olathe.
 ROSEMARY CRIST, Mitchell County (1950, 1954). Beloit.
 TRELLA CURRIE, Cloud County (1955). Concordia.
 ANITA MAE DALQUIST, Edwards County (1954). Kinsley.
 BARBARA B. DONELSON, Anderson County (1954). Garnett.
 ELIZABETH ANN ELLIOTT, Republic County (1956). Belleville.
 JOAN VERLENE ENGLE, Marion County (1954). Marion.
 MARY OLIVE EVANS, Lincoln County (1953, 1954). Lincoln.
 VIVIAN T. EWY, Graham County (1955). Hill City.
 NEOSHO LOUISE FREDENBERG, Morris County (1953). Council Grove.
 ALICE LETTIE FREY, Bourbon County (1955). Fort Scott.
 ALMA H. GILES, Linn County (1949, 1954). Mound City.
 GLADYS L. GILKISON, Sherman County (1955). Goodland.
 PAULA ROSE GLOVER, Douglas County (1949, 1952). Lawrence.
 MARGUERITE GRANNEMANN, Neosho County (1956). Erie.
 CHRISTINA MAE GROTH, Grant County (1954). Ulysses.
 LILLIE D. HAMMONS, Kingman County (1955). Kingman.
 MARY E. HARROUFF, Clark County (1955). Ashland.
 DONICE A. HAWES, Osage County (1955). Lyndon.
 MAY BETH HERNDON, Rush County (1953). La Crosse.
 MARIAN V. HESTER, Barton County (1953). Great Bend.
 VIRGINIA SUE HIGGINS, Reno County (1953, 1954). Hutchinson.
 MARY DEAN HOLLE, Franklin County (1953, 1955). Ottawa.
 ARLISS EVELYN HONSTEAD, Jackson County (1946, 1949). Holton.
 GERTRUDE HOVE, Montgomery County (1949). Independence.
 MARY NADINE HOWARD, Wilson County (1954, 1955). Fredonia.
 LAUVERA P. HOWER, Trego County (1955). Wakeeney.
 DOROTHY LOUISE HOYT, Pratt County (1953, 1955). Pratt.
 RUTH K. HUFF, Pawnee County (1931, 1952). Larned.
 JoANN HUNT, Rice County (1955). Lyons.
 DOROTHY MAXINE JOHNSON, Wichita County (1954). Leoti.
 FAYE ANN JOHNSON, Haskell County (1955). Sublette.
 HELEN ESTHER JOHNSON, Miami County (1954). Paola.
 JUANITA BILLINGTON JOHNSON, Crawford County (1948). Girard.
 MARIELLEN JONES, Dickinson County (1955). Abilene.
 MARY MILDRED KALB, Osborne County (1954). Osborne.
 SUSIE JANE KELLEY, Wabaunsee County (1955). Alma.
 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.

ANNABELLE B. LONG, Shawnee County (1955). Topeka.
 BETTY GRACE McBEE, Atchison County (1952, 1954). Effingham.
 MILDRED MARIE McCALVEY, Ellsworth County (1950, 1953). Ellsworth.
 BARBARA JEANNE McCANDLESS, Meade County (1952, 1953). Meade.
 MARTHA McREYNOLDS, Jewell County (1955). Mankato.
 MARGARET JEAN MALIR, Smith County (1955). Smith Center.
 PATRICIA JEAN MALLUM, Pottawatomie County (1953). Westmoreland.
 EVA PEARL MANSFIELD, Leavenworth County (1953). Leavenworth.
 MARGARET NETTLETON MAUK, Saline County (1944, 1947). Salina.
 MARY E. MEEK, Dickinson County (1953, 1955). Abilene.
 ALICE L. MILLER, Ford County (1953, 1955). Dodge City.
 DIXIE IRENE MOLZ, Stafford County (1953). St. John.
 ALVERDA MOORE, Riley County (1955). Manhattan.
 RACHEL S. MORELAND, Geary County (1955). Junction City.
 ERMA M. NEELLY, Ness County (1950). Ness City.
 ELSIE PAINTER, Stevens County (1955). Hugoton.
 RACHEL FEATHERINGILL 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.
 VELDA FRANCES RANKIN, Sumner County (1952). Wellington.
 CLAYRE DONNELLY RATZLAFF, Cherokee County (1948). Columbus.
 IRLENE MARIE RAWLINGS, Allen County (1954). Iola.
 PHYLLIS ROGGENBORFF, Doniphan County (1955). Troy.
 OLGA SAFFRY, Comanche County (1955). Coldwater.
 MARY JOAN SAGE, Phillips County (1953). Phillipsburg.
 DORTHEA ANN SCHROEDER, Wyandotte County (1942, 1950). Kansas City.
 WANDA JUNE SCOVEL, Hodgeman County (1953). Jetmore.
 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.
 MARY ANN SMITH, Woodson County (1955). Yates Center.
 VIRGINIA M. SMITH, Brown County (1951, 1954). Hiawatha.
 FRANCES B. STANTON, Rooks County (1955). Stockton.
 LUCILLE STUBBS, Reno County (1955). Hutchinson.
 KATHRYN SUGHRUE, Finney County (1937, 1954). Garden City.
 MARY A. TODD, Chase County (1955). Cottonwood Falls.
 FRED A. VIETOR, Wyandotte County (1955). Kansas City.
 MAE K. WEAVER, Barton County (1952). Great Bend.
 MILDRED E. WEBB, Lane County (1955). Dighton.
 RUTH IRENE WELLS, Jefferson County (1952, 1954). Oskaloosa.
 MARY EILEEN WENDLAND, Greenwood County (1953). Eureka.
 NANCY ANN WEST, Rawlins County (1955). Atwood.
 FAYE EVELYN VICE, Labette County (1946, 1947). Altamont.
 LUCILLE ROSENBERGER WHIPPS, Shawnee County (1943, 1955). Topeka.
 ELIZABETH WONER, Harper County (1948, 1950). Anthony.
 MARY D. ZIEGLER, Sedgwick County (1928, 1955). Wichita.

COUNTY AGRICULTURAL AGENTS

KENNETH B. ALBRIGHT, Mitchell County (1955). Beloit.
 JOHN ORLO ALLMAN, JR., Stanton County (1949, 1951). Johnson.
 CHARLES JACK BAIRD, Chautauqua County (1953, 1954). Sedan.
 E. KIRK BAKER, Russell County (1955). Russell.
 ARNOLD BARBER, Atchison County (1955). Effingham.
 FREEMAN E. BIERY, Jewell County (1953). Mankato.
 WILLIS LEE BLUME, Haskell County (1948). Sublette.
 LEE JUSTIN BREWER, Chase County (1936, 1952). Cottonwood Falls.
 HAROLD E. BROADIE, Stevens County (1955). Hugoton.
 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 (1946). Lyndon.

JOHNNY V. CAREY, Cherokee County (1955). Columbus.
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.
M. LESTER COX, Riley County (1945, 1955). Manhattan.
VERNON S. CRIPPEN, Seward County (1920, 1947). Liberal.
JOHN F. DeMOTT, Crawford County (1953, 1955). Girard.
ORVILLE F. DENTON, Montgomery County (1949, 1955). Independence.
DARRELL DEAN DICKEN, Scott County (1942, 1953). Scott City.
HARRY G. DUCKERS, JR., Wyandotte County (1943, 1948). Kansas City.
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.
KENNETH W. FROMM, Lane County (1953, 1956). Dighton.
RAYMOND GLENN FRYE, Sumner County (1943, 1953). Wellington.
FRANK N. FULTON, Norton County (1955). Norton.
R. L. GASKILL, Chase County (1955). Cottonwood Falls.
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.
WARREN G. HARDING, Rawlins County (1955). Atwood.
ALFRED EUGENE HARRIS, Meade County (1938, 1940). Meade.
EDWIN HEDSTROM, Marshall County (1935, 1951). Marysville.
ROGER LYMAN HENDERSHOT, Harper County (1946, 1951). Anthony.
CLARENCE ATHEL HOLLINGSWORTH, Greenwood County (1937, 1953). Eureka.
JERRY CLIFTON HOPE, Woodson County (1955). Yates Center.
CHARLES MORITZ HUND, Ellis County (1954). Hays.
GERALD LEE HUNTINGTON, Saline County (1955). Salina.
CLARENCE IMEL, Kingman County (1950). Kingman.
DONALD WALTER INGLE, Sedgwick County (1930, 1947). Wichita.
ARTHUR O. JACOBS, JR., Saline County (1945, 1955). Salina.
KENNETH RALPH JAMESON, Comanche County (1953, 1954). Coldwater.
RICHARD LOUIS JEPSON, Sheridan County (1953). Hoxie.
LEONARD BEN JOHNSON, JR., Rush County (1950). La Crosse.
GLENN H. KELLER, Edwards County (1955). Kinsley.
RUSSELL KLOTZ, Labette County (1943, 1950). Altamont.
JOHN W. KNOX, Pawnee County (1955). Larned.
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.
DONALD E. LOVE, Cloud County (1955). Concordia.
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., Harvey County (1954, 1955). Newton.
E. CLIFFORD MANRY, Pawnee County (1940, 1947). Larned.
DAROLD DEAN MARLOW, Wabaunsee County (1950). Alma.
JOHN VIRGIL MAXWELL, Elk County (1951). Howard.
BYRON F. MILLER, Smith County (1955). Smith Center.
WILLIAM A. MONTGOMERY, JR., Jackson County (1955). Holton.
MAHLON C. MORLEY, Neosho County (1954). Erie.

DOUGLAS H. MORRIS, Osborne County (1954, 1955). Osborne.
 H. W. MUDGE, JR., Brown County (1956). Hiawatha.
 WESLEY GALE MULLEN, Russell County (1950, 1952). Russell.
 LEE EDWARD NELSON, Sherman County (1954, 1955). Goodland.
 KENNETH DALE NEWELL, Barber County (1952, 1953). Medicine Lodge.
 B. W. NEWSOME, McPherson County (1955). McPherson.
 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.
 JOHN R. PARKS, Pratt County (1955). Pratt.
 RALPH STANLEY PARSONS, Lyon County (1952). Emporia.
 VICTOR EUGENE PAYER, Butler County (1939, 1943). El Dorado.
 THOMAS M. POTTER, Marion County (1955). Marion.
 CHARLES WILLIAM POTUCEK, JR., Greeley County (1953). Tribune.
 LEON G. RANDOLPH, Sedgwick County (1949, 1951). Wichita.
 ROBERT O. RETHORST, Clark County (1954, 1955). Ashland.
 CLIFTON ALLAN RISINGER, Anderson County (1939, 1953). Garnett.
 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.
 CHARLES W. SMITH, Cowley County (1955). Winfield.
 BEVERLY DAVID STAGG, Norton County (1946). Norton.
 NELSON E. STROUD, Jefferson County (1952). Oskaloosa.
 JAMES W. STURDEVANT, Crawford County (1948, 1952). Girard.
 BYRON E. TAYLOR, Shawnee County (1955). Topeka.
 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 H. TYLER, Bourbon County (1955). Fort Scott.
 KENNETH EMIL URBAN, Dickinson County (1954). Abilene.
 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.
 BOBBIE DEAN WILLIAMS, Cherokee County (1955). Columbus.
 JACK H. WILSON, Wichita County (1946, 1950). Leoti.
 PAUL HENRY WILSON, Barton County (1946, 1947). Great Bend.
 LLOYD L. WISEMAN, Riley County and Clay County (1947, 1955). Manhattan.
 GAYLE L. WOLF, Ness County (1955). Ness City.
 GARNETT A. ZIMMERLY, Republic County (1953, 1955). Belleville.

Statistical Summary for 1954-1955

Students by States, Foreign Countries, and Kansas Counties

States					
Alabama	3	Louisiana	3	Oklahoma	21
Arizona	5	Maine	1	Oregon	2
Arkansas	11	Maryland	4	Pennsylvania	18
California	26	Massachusetts	7	Rhode Island	1
Colorado	13	Michigan	2	South Carolina	4
Connecticut	8	Minnesota	11	South Dakota	19
District of Columbia	1	Mississippi	1	Tennessee	8
Florida	4	Missouri	164	Texas	32
Georgia	5	Nebraska	94	Utah	7
Idaho	10	Nevada	1	Virginia	6
Illinois	49	New Jersey	36	Washington	4
Indiana	16	New Mexico	5	West Virginia	2
Iowa	21	New York	52	Wisconsin	20
Kansas	5536	North Dakota	7	Wyoming	1
Kentucky	2	Ohio	11	Total	6254

Foreign Countries and Territories Outside the Continental United States

South America	2	Israel	1	Sweden	1
Argentina	1	Istanbul	1	Syria	2
Bafra	1	Jordan	8	Thailand	4
Br. Guiana	1	Korea	2	Turkey	16
Canada	6	Liberia	4	Venezuela	4
China	15	Nederland	2	W. Africa	2
Egypt	4	N. Nigeria	2	W. Indies	1
Ethiopia	1	Pakistan	3	W. Jordan	1
Finland	1	Peru	1	Total	155
Hawaii	20	Philippines	5	Grand Total:	
India	16	Puerto Rico	9	States	6254
Iran	7	San Salvadore	1	Countries	155
Iraq	9	S. India	1		6409

Kansas Counties

Allen	18	Greeley	4	Osborne	44
Anderson	28	Greenwood	23	Ottawa	49
Atchison	41	Hamilton	6	Pawnee	29
Barber	37	Harper	37	Phillips	25
Barton	105	Harvey	49	Pottawatomie	108
Bourbon	15	Haskell	14	Pratt	37
Brown	54	Hodgeman	19	Rawlins	25
Butler	69	Jackson	55	Reno	112
Chase	21	Jefferson	40	Republic	60
Chautauqua	10	Jewell	45	Rice	51
Cherokee	12	Johnson	135	Riley	924
Cheyenne	19	Kearny	8	Rooks	20
Clark	23	Kingman	23	Rush	17
Clay	109	Kiowa	14	Russell	38
Cloud	70	Labette	29	Saline	147
Coffey	29	Lane	9	Scott	19
Comanche	17	Leavenworth	36	Sedgwick	243
Cowley	76	Lincoln	41	Seward	17
Crawford	30	Linn	21	Shawnee	224
Decatur	21	Logan	21	Sheridan	15
Dickinson	109	Lyon	39	Sherman	36
Doniphan	18	McPherson	90	Smith	21
Douglas	22	Marion	48	Stafford	59
Edwards	21	Marshall	130	Stanton	6
Elk	17	Meade	13	Stevens	6
Ellis	26	Miami	21	Sumner	57
Ellsworth	49	Mitchell	57	Thomas	37
Finney	42	Montgomery	49	Trego	11
Ford	35	Morris	63	Wabaunsee	41
Franklin	47	Morton	3	Wallace	9
Geary	137	Nemaha	42	Washington	87
Gove	15	Neosho	42	Wichita	8
Graham	17	Ness	17	Wilson	21
Grant	5	Norton	58	Woodson	11
Gray	15	Osage	43	Wyandotte	199
				Total	5536

Degrees Conferred in the Year 1955

SCHOOL	Men	Women	Total
SCHOOL OF AGRICULTURE (B. S.)	182	.....	182
Agriculture	157	.....	157
Agricultural Journalism	4	.....	4
Feed Technology	9	.....	9
Landscape Design	2	.....	2
Milling Industry	10	.....	10
SCHOOL OF ARTS AND SCIENCES (B. S.)	296	140	436
Bachelor of Science	170	56	226
Business Administration	85	4	89
(Industrial) Chemistry	5	1	6
Elementary Education	5	59	64
Bachelor of Music	1	.....	1
Bachelor of Music Education	6	1	7
Physical Education	15	12	27
Technical Journalism	9	7	16
SCHOOL OF ENGINEERING AND ARCHITECTURE (B. S.)	141	2	143
Agricultural Engineering	8	.....	8
Architectural Engineering	8	.....	8
Architecture	12	2	14
Chemical Engineering	8	.....	8
Civil Engineering	22	.....	22
Electrical Engineering	31	.....	31
Industrial Arts	11	.....	11
Mechanical Engineering	36	.....	36
Industrial Engineering	5	.....	5
SCHOOL OF HOME ECONOMICS (B. S.) .....	.....	110	110
Home Economics .....	.....	96	96
Home Economics and Journalism .....	.....	7	7
Home Economics and Nursing .....	.....	7	7
SCHOOL OF VETERINARY MEDICINE (D. V. M.)	57	.....	57
Veterinary Medicine	57	.....	57
Total undergraduate degrees	676	252	928
GRADUATE SCHOOL (M. S.)	115	27	142
Agricultural Economics	6	.....	6
Agricultural Education	4	.....	4
Agricultural Engineering	1	.....	1
Agronomy	7	1	8
Animal Husbandry	3	.....	3
Architectural Engineering .....	.....	.....	.....
Architecture	2	.....	2
Art	1	.....	1
Bacteriology	2	1	3
Botany and Plant Pathology	3	.....	3
Chemical Engineering	2	.....	2
Chemistry	12	1	13
Clothing and Textiles .....	.....	5	5
Dairy Husbandry	5	.....	5
Economics .....	.....	.....	.....
Education	15	3	18
Electrical Engineering	1	.....	1
English	1	.....	1
Entomology	6	.....	6
Family and Child Development .....	.....	1	1
Flour Milling	2	.....	2
Foods and Nutrition .....	.....	2	2
Geology	3	.....	3
History	2	2	4
Household Economics .....	.....	6	6
Institutional Management .....	.....	3	3
Mathematics	5	.....	5
Mechanical Engineering	3	.....	3
Music	3	1	4
Physical Education	1	.....	1
Physics	5	.....	5
Physiology	1	.....	1
Poultry Husbandry	2	.....	2
Psychology	4	.....	4
Speech	1	1	2
Zoology	3	.....	3

Degrees Conferred in the Year 1955—Concluded

	Men	Women	Total
Technical Journalism	2	.....	2
Applied Mechanics	2	.....	2
Industrial Arts	2	.....	2
Pathology	1	.....	1
Surgery and Medicine	2	.....	2
GRADUATE SCHOOL (Ph. D.)	18	1	19
Agronomy	1	.....	1
Animal Nutrition	2	.....	2
Bacteriology	2	.....	2
Botany	3	.....	3
Chemistry	6	.....	6
Entomology	3	.....	3
Foods and Nutrition .....	.....	1	1
Milling Industry	1	.....	1
Total degrees conferred in 1955	809	280	1089

Tabulation for First, Second and Summer Semester 1954-1955

(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	190	2	97	.....	60	.....	103	1	.....	.....	450	3	453
Agriculture (Two-Year)	1	.....	5	.....	.....	.....	.....	.....	.....	.....	6	.....	6
Agric. Administration	32	.....	32	.....	14	.....	47	.....	.....	.....	125	.....	125
Agric. Education	63	.....	45	.....	18	.....	28	.....	.....	.....	154	.....	154
Agric. Journalism	5	.....	3	.....	2	.....	7	.....	.....	.....	17	.....	17
Dairy Manufacturing	10	.....	9	.....	3	.....	9	.....	.....	.....	31	.....	31
Feed Technology	10	.....	6	.....	8	.....	15	.....	.....	.....	39	.....	39
Horticulture (Spec.)	3	.....	3	.....	.....	.....	4	.....	.....	.....	10	.....	10
Landscape Design	7	.....	3	1	1	.....	3	.....	.....	.....	14	1	15
Milling Technology	8	.....	13	.....	2	.....	13	.....	.....	.....	36	.....	36
Technical Agronomy	11	1	10	.....	5	.....	11	.....	.....	.....	37	1	38
Soil Conservation .....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	2	.....	2
Special Students .....	.....	.....	.....	.....	.....	.....	.....	.....	10	.....	10	.....	10
TOTAL	340	3	226	1	113	.....	242	1	10	.....	931	5	936

SCHOOL OF ARTS AND SCIENCES

Humanities	37	55	22	40	11	22	16	27	.....	.....	86	144	230
Social Science	62	28	35	28	36	22	50	24	.....	.....	183	102	285
Biological Science	36	27	30	29	19	9	30	12	.....	.....	115	77	192
Business Administration	183	31	122	24	88	9	108	8	.....	.....	501	72	573
Chemistry (Prof.)	6	1	3	.....	4	.....	4	1	.....	.....	17	2	19
Elementary Education	8	149	11	135	8	101	10	89	.....	.....	37	474	511
Music Applied	2	4	.....	.....	1	.....	1	1	.....	.....	4	5	9
Music Education	6	14	6	11	2	3	2	8	.....	.....	16	36	52
Physical Education	59	9	22	9	9	4	20	14	.....	.....	110	36	146
Physical Science	54	7	53	.....	25	4	44	1	.....	.....	176	12	188
Physics (Prof.)	4	.....	2	.....	.....	.....	8	.....	.....	.....	14	.....	14
Pre-veterinary	87	1	94	.....	7	.....	2	.....	.....	.....	190	1	191
Technical Journalism	19	12	16	6	9	5	11	8	.....	.....	55	31	86
Special Students .....	.....	.....	.....	.....	.....	.....	.....	.....	44	59	44	59	103
TOTAL	563	338	416	282	219	179	306	193	44	59	1548	1051	2599

SCHOOL OF ENGINEERING AND ARCHITECTURE

Agricultural Engg.	25	.....	25	.....	4	.....	14	.....	.....	.....	68	.....	68
Architectural Engg.	18	.....	12	.....	9	.....	12	.....	1	.....	52	.....	52
Architecture	37	4	39	.....	17	1	43	3	1	.....	137	8	145
Chemical Engg.	34	.....	28	.....	12	.....	14	.....	1	.....	89	.....	89
Civil Engg.	80	1	40	.....	17	.....	44	.....	2	.....	183	1	184
Electrical Engg.	100	.....	82	.....	55	.....	52	1	5	.....	294	1	295
Industrial Arts	10	.....	16	.....	5	.....	20	.....	1	.....	52	.....	52
Industrial Engg.	4	.....	10	.....	3	.....	8	.....	.....	.....	25	.....	25
Mechanical Engg.	135	.....	91	.....	34	.....	58	.....	9	.....	327	.....	327
Nuclear Engg.	17	1	5	.....	2	.....	1	.....	.....	.....	25	1	26
Special Students .....	.....	.....	.....	.....	.....	.....	.....	.....	37	.....	37	.....	37
TOTAL	460	6	348	.....	158	1	266	4	57	.....	1289	11	1300

SCHOOL OF HOME ECONOMICS

Home Economics	1	127	.....	124	.....	72	.....	111	.....	.....	1	434	435
Diet. and Inst. Mngt.	1	10	1	8	.....	8	1	11	.....	.....	3	37	40
Home Econ. and Journ. ....	.....	11	.....	6	.....	6	.....	8	.....	.....	.....	31	31
Home Econ. and Nursing .....	.....	21	.....	26	.....	16	.....	.....	.....	.....	.....	63	63
Restaurant Management	2	.....	2	1	.....	.....	.....	.....	.....	.....	4	1	5
Special Students .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	.....	5	5
TOTAL	4	169	3	165	.....	102	1	130	.....	5	8	571	579

SCHOOL OF VETERINARY MEDICINE

Veterinary Medicine	67	1	62	62	1	56	247	2	249
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SUMMARY

Total Undergraduate	1434	517	1055	448	552	283	871	328	111	64	4023	1640	5663
Dual Assignment	1	.....	2	.....	10	.....	21	.....	.....	.....	34	.....	34
Net Total Undergraduate	1433	517	1053	448	542	283	850	328	111	64	3989	1640	5629
Graduate School .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	598	214	812
Total .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4587	1854	6441
Undergraduate Students Taking Graduate Work .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	51	14	65
GRAND TOTAL .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4536	1840	6376

Tabulation for Summer Session 1955

SCHOOL OF AGRICULTURE

	Freshmen		Sopho- mores		Juniors		Seniors		Specials		Totals		Total
	M	W	M	W	M	W	M	W	M	W	M	W	
Agriculture	9		8		5		13				35		35
Agriculture (Two-Year)			1								1		1
Agric. Administration	4		3		1		8				16		16
Agric. Education	5		6		4		7				22		22
Agric. Journalism			2								2		2
Dairy Manufacturing	1		2		1		2				6		6
Feed Technology			1		1		1				3		3
Landscape Design	1		1				1				3		3
Milling Technology	1		2				3				6		6
Technical Agronomy	2				1						3		3
Special Students									1		1		1
TOTAL	23		26		13		35		1		98		98

SCHOOL OF ARTS AND SCIENCES

Humanities	3	6	4	11	3	9	3	2			13	28	41
Social Science	5	5	9	3	5	12	12	4			31	24	55
Biological Science	6		6	5	6		8	2			26	7	33
Business Administration	25	4	20	3	16	1	25	1			86	9	95
Chemistry	1							1			1	1	2
Elementary Education	1	38	8	57	6	55	9	33			24	183	207
Music, Applied		1					1				1	1	2
Music Education		2	1	5		2	1	4			2	13	15
Physical Education	4		1	3	1	1	4	1			10	5	15
Physical Science	11		9		7		13				40		40
Physics (Prof.)	1						2				3		3
Pre-veterinary	10		13				1				24		24
Technical Journalism	2	1	5		4	1	4	1			15	3	18
Special Students									21	36	21	36	57
TOTAL	69	57	76	87	48	81	83	49	21	36	297	310	607

SCHOOL OF ENGINEERING AND ARCHITECTURE

Agricultural Engg.			2		1		2				5		5
Architectural Engg.	1		3		1		3				8		8
Architecture	3		7		5		14		1		30		30
Chemical Engg.	5		3		2						10		10
Civil Engg.	12		6		1		10				29		29
Electrical Engg.	21		23		17		7	1	2		70	1	71
Industrial Engg.			3				5				8		8
Industrial Arts			5		3		3		1		12		12
Mechanical Engg.	9		14		7		5				35		35
Nuclear Engg.	1		3								4		4
Special Students									8		8		8
TOTAL	52		69		37		49	1	12		219	1	220

SCHOOL OF HOME ECONOMICS

Home Economics		11		27		19		17				74	74
Diet. and Inst. Mngt.			1	3		1		2			1	6	7
Home Econ. and Journ.				2				1				3	3
Home Econ. and Nursing		4		17		2						23	23
Special Students										4		4	4
TOTAL		15	1	49		22		20		4	1	110	111

SCHOOL OF VETERINARY MEDICINE

Veterinary Medicine	13		1								14		14
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SUMMARY

Total Undergraduate	157	72	173	136	98	103	167	70	34	40	629	421	1050
Dual Assignment					2		2				4		4
Net Total Undergraduate	157	72	173	136	100	103	169	70	34	40	633	421	1054
Graduate School											322	141	464
Total											955	562	1518
Undergraduate Students Taking Graduate Work											3	2	5
GRAND TOTAL											952	560	1513

Tabulation for First and Second Semester 1954-1955

(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	188	2	96	.....	59	.....	104	1	.....	.....	447	3	450
Agriculture (Two-Year)	1	.....	5	.....	.....	.....	.....	.....	.....	.....	6	.....	6
Agric. Administration	30	.....	31	.....	14	.....	45	.....	.....	.....	120	.....	120
Agric. Education	65	.....	46	.....	18	.....	28	.....	.....	.....	157	.....	157
Agric. Journalism	5	.....	2	.....	2	.....	7	.....	.....	.....	16	.....	16
Dairy Manufacturing	7	.....	7	.....	3	.....	9	.....	.....	.....	26	.....	26
Feed Technology	11	.....	7	.....	8	.....	15	.....	.....	.....	41	.....	41
Horticulture (Spec.)	3	.....	3	.....	.....	.....	4	.....	.....	.....	10	.....	10
Landscape Design	6	.....	3	1	1	.....	2	.....	.....	.....	12	1	13
Milling Technology	7	.....	10	.....	2	.....	13	.....	.....	.....	32	.....	32
Technical Agronomy	10	1	8	.....	4	.....	12	.....	.....	.....	34	1	35
Soil Conservation .....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	2	.....	2
Special Students .....	.....	.....	.....	.....	.....	.....	.....	.....	6	.....	6	.....	6
TOTAL	333	3	218	1	111	.....	241	1	6	.....	909	5	914

SCHOOL OF ARTS AND SCIENCES

Humanities	39	57	23	40	11	21	18	28	.....	.....	91	146	237
Social Science	60	25	32	26	38	19	47	24	.....	.....	177	94	271
Biological Science	36	25	26	28	21	9	31	12	.....	.....	114	74	188
Business Administration	181	27	120	25	86	9	117	8	.....	.....	504	69	573
Chemistry	6	7	4	.....	4	.....	5	1	.....	.....	19	2	21
Elementary Education	7	130	9	105	5	59	8	71	.....	.....	29	365	394
Music, Applied	2	4	.....	2	1	.....	1	1	.....	.....	4	7	11
Music Education	5	12	6	12	2	1	3	8	.....	.....	16	33	49
Physical Education	57	9	21	9	9	3	20	16	.....	.....	107	37	144
Physical Science	47	7	50	.....	24	4	47	1	2	.....	170	12	182
Physics	4	.....	2	.....	.....	.....	9	.....	.....	.....	15	.....	15
Pre-veterinary	86	1	99	.....	6	.....	1	.....	.....	.....	192	1	193
Technical Journalism	19	12	14	8	9	5	10	8	.....	.....	52	33	85
Special Students .....	.....	.....	.....	.....	.....	.....	.....	.....	11	11	11	11	22
TOTAL	549	310	406	255	216	130	317	178	13	11	1501	884	2385

SCHOOL OF ENGINEERING AND ARCHITECTURE

Agricultural Engg.	26	.....	28	.....	5	.....	15	.....	.....	.....	74	.....	74
Architectural Engg.	19	.....	11	.....	9	.....	15	.....	.....	.....	54	.....	54
Architecture	40	4	40	1	17	.....	42	3	.....	.....	139	8	147
Chemical Engg.	35	.....	29	.....	11	.....	14	.....	.....	.....	89	.....	89
Civil Engg.	81	1	41	.....	16	.....	44	.....	.....	.....	182	1	183
Electrical Engg.	100	.....	84	.....	49	.....	51	1	.....	.....	284	1	285
Industrial Arts	11	.....	13	.....	4	.....	18	.....	.....	.....	46	.....	46
Mechanical Engg.	141	.....	91	.....	34	.....	58	.....	.....	.....	324	.....	324
Nuclear Engg.	16	1	5	.....	2	.....	1	.....	.....	.....	24	1	25
Industrial Engg.	6	.....	11	.....	4	.....	8	.....	.....	.....	29	.....	29
Special Students .....	.....	.....	.....	.....	.....	.....	.....	.....	35	1	35	1	36
TOTAL	475	6	353	1	151	.....	266	4	35	1	1280	12	1292

SCHOOL OF HOME ECONOMICS

Home Economics	1	127	.....	121	.....	68	.....	113	.....	.....	1	429	430
Diet. and Inst. Mngt.	1	12	.....	10	.....	8	1	11	.....	.....	2	41	43
Home Econ. and Journ. ....	.....	13	.....	6	.....	6	.....	8	.....	.....	.....	33	33
Home Econ. and Nursing .....	.....	22	.....	28	.....	15	.....	.....	.....	.....	.....	65	65
Restaurant Management	2	.....	2	1	.....	.....	.....	.....	.....	.....	4	1	5
Special Students .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	2	2
TOTAL	4	174	2	166	.....	97	1	132	.....	2	7	571	578

SCHOOL OF VETERINARY MEDICINE

Veterinary Medicine	67	1	61	64	1	57	249	2	251
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SUMMARY

Total Undergraduate	1428	494	1040	423	542	228	882	315	54	14	3946	1474	5420
Dual Assignment	1	.....	1	.....	4	.....	12	.....	.....	.....	18	.....	18
Net Total Undergraduate	1427	494	1039	423	538	228	870	315	54	14	3928	1474	5402
Graduate School .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	442	95	537
Total .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4370	1569	5939
Undergraduate Students Taking Graduate Work .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	45	10	55
GRAND TOTAL .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4325	1559	5884

Record of Enrollment and Degrees Conferred, 1863-1955

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	1				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	29		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	67			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				306	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	149	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	8		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	5		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	
1930-'31	995		24		52		50		7	1077	790	605	528	506	589	4045	424	91	

RECORD OF ENROLLMENT AND DEGREES CONFERRED, 1863-1955—CONCLUDED

YEAR	Summer school	Housekeepers' short course	Dairy Mfr. 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 ..
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
1954-'55....	1513	.....	.....	.....	.....	.....	113	.....	.....	.....	1950	1501	825	1165	812	65	6376	928	167

* 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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