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KANSAS

STATE UNIVERSITY

Catalogue

1958/59-1961/62



KANSAS STATE COLLEGE
BULLETIN

General Catalogue Issue

1958-1959 AND 1959-1960

KANSAS STATE COLLEGE ♦ MANHATTAN

KANSAS STATE COLLEGE BULLETIN



GENERAL CATALOGUE

1958-1960

JULY 1, 1958

KANSAS STATE COLLEGE
OF AGRICULTURE AND APPLIED SCIENCE
MANHATTAN, KANSAS

KANSAS STATE COLLEGE BULLETIN

Vol. XLII

July 1, 1958

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THE BOARD OF REGENTS

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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, 1958-59

- Sept. 1, Mon. Beginning of pay period for 9-months staff.
Sept. 1, Mon. Holiday—Labor Day.
Sept. 7, 3:00 p.m., Sun. Convocation for new students and their parents.
Sept. 8-10, Mon.-Wed. Registration of all students including physical examinations, testing, and orientation for new students.
Sept. 11, Thurs. Classes begin. Late enrollment fee, \$2.50.
Sept. 13, Noon, Sat. Regular registration closes for college staff, elementary and secondary school teachers.
 End of first week. Late enrollment fee, \$5.00 for subsequent enrollment.
Oct. 4, Noon, Sat. Last day to enroll with full assignment (4th week).
Oct. 25, Noon, Sat. Deficiency reports due in deans' offices (7th week).
Nov. 8, Noon, Sat. Last day for dropping courses without a Wd or failure being recorded (9th week).
Nov. 25, 10:00 p.m., Tues. Thanksgiving student recess begins.
Nov. 27, Thurs. Holiday—Thanksgiving Day.
Dec. 1, Mon. Classes resume.
Dec. 20, Noon, Sat. Christmas student recess begins.
 Applications for degrees must be made on or before this date.
Dec. 25, Thurs. Holiday—Christmas Day.
Jan. 1, Thurs. Holiday—New Year's Day.
Jan. 5, Mon. Classes resume.
Jan. 10, Noon, Sat. Last day subject may be dropped before end of semester.
Jan. 17, Noon, Sat. Grades to registrar for candidates for degrees.
Jan. 17-24, 1:00 p.m., Sat.-Sat. Noon Semester examinations.
Jan. 21, 4:00 p.m., Wed. Senate meeting to approve candidates for degrees.
Jan. 24, 10:00 a.m., Sat. Commencement.
Jan. 26, 5:00 p.m., Mon. Grade reports to registrar.
Jan. 28, 8:00 a.m., Wed. Deficiency reports from registrar to deans' offices.

SECOND SEMESTER, 1958-59

- Jan. 29-31, Thurs.-Sat. Registration of all students including physical examinations, testing, and orientation for new students.
Feb. 2, Mon. Classes begin. Late enrollment fee, \$2.50.
Feb. 7, Noon, Sat. Regular registration closes for college staff, elementary and secondary school teachers.
 End of first week. Late enrollment fee, \$5.00 for subsequent enrollment.
Feb. 28, Sat. Last day to enroll with full assignment (4th week).
Mar. 21, Noon, Sat. Deficiency reports due in deans' offices (7th week).
Mar. 26, 10:00 p.m., Thurs. Easter student recess begins.
Mar. 31, Tues. Classes resume.
April 4, Noon, Sat. Last day for dropping courses without a Wd or failure being recorded (9th week).
May 1, 3:00 p.m., Fri. Applications for degrees must be made on or before this date.
May 16, Noon, Sat. Last day a subject may be dropped before end of semester.
May 23-30, 1:00 p.m., Sat.-Sat. Noon Semester examinations.
May 25, Noon, Mon. Grades to registrar for all candidates for degrees.
May 28, 11:00 a.m., Thurs. Senate meeting to approve candidates for degrees.
May 31, 3:00 p.m., Sun. Commencement, Fieldhouse.
June 1, 5:00 p.m., Mon. Grade reports to registrar.
June 4, 8:00 a.m., Thurs. Deficiency reports from registrar to deans' offices.

9-WEEK SUMMER SESSION, 1959

- June 8, 8:00 a.m., Mon. Registration of all students including physical examinations, testing, and orientation for new students.
June 9, 7:30 a.m., Tues. Classes begin. Late enrollment fee, \$2.50.
June 13, Noon, Sat. Regular registration closes for college staff, elementary and secondary teachers.
 End of first week. Late enrollment fee, \$5.00 for subsequent enrollment.
June 20, Noon, Sat. Last day to enroll with full assignment (2nd week).
July 3, 5:00 p.m., Fri. Deficiency reports due in deans' offices (4th week).
July 4, Sat. Holiday—Independence Day.
July 9, 3:00 p.m., Thurs. Applications for degrees must be made on or before this date.
July 10, 5:00 p.m., Fri. Last day for dropping courses without a Wd or failure being recorded (5th week).
Aug. 1, Noon, Sat. Grades to registrar for all candidates for degrees.
Aug. 4, 4:00 p.m., Tues. Last day subject may be dropped before end of session.
Aug. 5, 4:00 p.m., Wed. Senate meeting to approve candidates for degrees.
Aug. 7, 5:00 p.m., Fri. Last day for examinations.
Aug. 7, 7:30 p.m., Fri. Commencement.
Aug. 8, Noon, Sat. Grade reports 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.

CALENDAR (Continued)

FIRST SEMESTER, 1959-60

- Sept. 1, Tues. Beginning of pay period for 9-months staff.
 Sept. 7, Mon. Holiday—Labor Day.
 Sept. 13, 3:00 p.m., Sun. Convocation for new students and their parents.
 Sept. 14-16, Mon.-Wed. Registration of all students including physical examinations, testing, and orientation for new students.
 Sept. 17, Thurs. Classes begin. Late enrollment fee, \$2.50.
 Sept. 19, Noon, Sat. Regular registration closes for college staff, elementary and secondary school teachers.
 End of first week. Late enrollment fee, \$5.00 for subsequent enrollment.
 Oct. 10, Noon, Sat. Last day to enroll with full assignment (4th week).
 Oct. 31, Noon, Sat. Deficiency reports due in deans' offices (7th week).
 Nov. 14, Noon, Sat. Last day for dropping courses without a Wd or failure being recorded (9th week).
 Nov. 24, 10:00 p.m., Tues. Thanksgiving student recess begins.
 Nov. 26, Thurs. Holiday—Thanksgiving Day.
 Nov. 30, Mon. Classes resume.
 Dec. 19, Noon, Sat. Christmas student recess begins.
 Dec. 25, Fri. Holiday—Christmas Day.
 Applications for degrees must be made on or before this date.
 Jan. 1, Fri. Holiday—New Year's Day.
 Jan. 4, Mon. Classes resume.
 Jan. 16, Noon, Sat. Last day subject may be dropped before end of semester.
 Jan. 23, Noon, Sat. Grades to registrar for candidates for degrees.
 Jan. 23-30, 1:00 p.m., Sat.-Sat. Noon Semester examinations.
 Jan. 27, 4:00 p.m., Wed. Senate meeting to approve candidates for degrees.
 Jan. 30, 10:00 a.m., Sat. Commencement.
 Feb. 1, 5:00 p.m., Mon. Grade reports to registrar.
 Feb. 3, 8:00 a.m., Wed. Deficiency reports from registrar to deans' offices.

SECOND SEMESTER, 1959-60

- Feb. 4-6, Thurs.-Sat. Registration of all students including physical examinations, testing, and orientation for new students.
 Feb. 8, Mon. Classes begin. Late enrollment fee, \$2.50.
 Feb. 13, Noon, Sat. Regular registration closes for college staff, elementary and secondary school teachers.
 End of first week. Late enrollment fee, \$5.00 for subsequent enrollment.
 Mar. 5, Sat. Last day to enroll with full assignment (4th week).
 Mar. 26, Noon, Sat. Deficiency reports due in deans' offices (7th week).
 April 9, Noon, Sat. Last day for dropping courses without a Wd or failure being recorded (9th week).
 April 14, 10:00 p.m., Thurs. Easter student recess begins.
 April 19, Tues. Classes resume.
 May 6, 3:00 p.m., Fri. Applications for degrees must be made on or before this date.
 May 21, Noon, Sat. Last day a subject may be dropped before end of semester.
 May 28-June 4, 1:00 p.m., Sat.-Noon, Sat. Semester examinations.
 May 30, Noon, Mon. Grades to registrar for all candidates for degrees.
 June 2, 11:00 a.m., Thurs. Senate meeting to approve candidates for degrees.
 June 5, 3:00 p.m., Sun. Commencement, Fieldhouse.
 June 6, 5:00 p.m., Mon. Grade reports to registrar.
 June 9, 8:00 a.m., Thurs. Deficiency reports from registrar to deans' offices.

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 180 acres carefully landscaped, while beyond the campus there are 3,611 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 148 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.) For each semester hour of work a student gets points, according to the grades he makes, as follows: A, 4; B, 3; C, 2; D, 1; F, 0. For students entering after June 1, 1954, the graduation requirement is 1.7 as many points as credit hours in which the student has received a grade of A, B, C, D, or F in resident work.

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.

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 2.75 in the College.

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 indicates 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 61.
- (A) Agricultural Economics, B. S. in Agriculture, page 62.
 - (Agricultural Administration option), page 62.
 - (Rural Banking option), page 62.
 - (Agricultural Business and Industries option), page 62.
- (D) Technical Agricultural Economics, B. S. in Agriculture, page 63.
- (A) Agricultural Education, B. S. in Agriculture, page 70.
- (A) Dairy Manufacturing, B. S. in Agriculture, page 65.
- (A) Horticulture, B. S. in Agriculture, page 68.
 - (Floriculture option), page 68.
 - (Ornamental Horticulture option), page 68.
 - (Pomology option), page 68.
 - (Vegetable Crops option), page 68.
- (D) Technical Agronomy, B. S. in Agriculture, page 64.
 - (Soil Science option), page 64.
 - (Applied Agronomy and Soil Conservation option), page 64.
 - (Crop Science option), page 64.
 - (Wildlife Conservation option), page 64.
- (A) Agricultural Journalism, B. S. in Agricultural Journalism, page 71.
- (D) Landscape Design, B. S. in Landscape Design, page 69.
- (G) Milling Technology, B. S. in Milling Industry, page 66.
 - (Operation option), page 66.
 - (Chemistry option), page 66.
 - (Administration option), page 66.

IN THE SCHOOL OF ARTS AND SCIENCES

- (E) Applied Music, Bachelor of Music, page 107.
- (D) Biological Science (except Pre-Veterinary), B. S., page 97.
- (F) Business Administration, B. S. in Business Administration, page 99.
- (E) Education, B. S., B. S. in Elementary Education, B. S. in Music Education, B. S. in Physical Education, pages 100-103.
- (D) General, B. A., page 104.
 - (Physical Science, Pre-Medicine, Pre-Dentistry majors)
 - (Pre-Law, Humanities, Social Science majors)
 - (Biological Science, Physical Therapy majors)
- (E) Humanities, B. A., page 106.
- (D) Physical Science, B. S., page 108.
- (A) Pre-Veterinary, page 98.
 - Social Science, B. A., page 109.
- (F) (Economics, Sociology, Psychology majors)
- (E) (All majors except Economics, Sociology, Psychology)

IN THE SCHOOL OF ENGINEERING AND ARCHITECTURE

- (G) Agricultural Engineering, B. S. in Agricultural Engineering, page 186.
- (G) Architectural Engineering, B. S. in Architectural Engineering, page 187.
- (G) Architecture (five years), Bachelor of Architecture, page 188.
- (G) Chemical Engineering, B. S. in Chemical Engineering, page 189.
- (G) Civil Engineering, B. S. in Civil Engineering, page 190.
- (G) Electrical Engineering, B. S. in Electrical Engineering, page 191.
 - (Power option), page 191.
 - (Communication and Electronics option), page 191.
 - (in connection with second degree in Business Administration), page 192.
- (G) Industrial Education, B. S. in Industrial Education, page 193.
- (G) Industrial Engineering, B. S. in Industrial Engineering, page 194.
- (G) Industrial Technology, B. S. in Industrial Technology, page 195.

- (G) Mechanical Engineering, B. S. in Mechanical Engineering, page 196.
 (Aeronautical option), page 197.
 (Design option), page 197.
 (Petroleum Production option), page 197.
 (Management option), page 197.
- (G) Nuclear Engineering, B. S. in Nuclear Engineering, page 198.

IN THE SCHOOL OF HOME ECONOMICS

- (B) Home Economics with options, B. S. in Home Economics, page 225.
 (Art in High School option), page 227.
 (Clothing and Costume Design option), page 227.
 (Clothing and Textiles Research option), pages 227-228.
 (Clothing Retail option), page 227.
 (Costume Design option), page 226.
 (Crafts option), page 226.
 (Family and Child Development with Community Services option), page 228.
 (Family Economics and Finance option), page 229.
 (Foods and Nutrition Research option), page 229.
 (Foods Demonstration Work option), page 230.
 (Home Economics Extension Work option), page 230.
 (Homemaking option), page 228.
 (Household Equipment, Housing and Home Management option), page 229.
 (Interior Decoration option), page 226.
 (Nursery School Teaching option), page 228.
 (Teaching Home Economics in High School option), page 230.
- (B) Dietetics and Institutional Management, B. S. in Home Economics, page 231.
- (B) Home Economics and Journalism, B. S. in Home Economics and Journalism, page 233.
- (B) Home Economics and Nursing, B. S. in Home Economics, page 234.
- (B) Restaurant Management, B. S. in Restaurant Management, page 232.

IN THE SCHOOL OF VETERINARY MEDICINE

- Veterinary Medicine, D. V. M., page 246.
 (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 Kansas State College. A graduate of an accredited high school or academy in another state will be considered for admission 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 Direc-

tor 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	1 ½	1	½					1	7
D	3	1 ½	1						1	6 ½
E	3	1	1	½	½	1	1	1	1	5
Choice of one unit										
F	3	1							1	5
G	3	{ 1 ½	1						1	7
		{ ½		½	½					
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 pre-engineering 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 17.)

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 completed 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 is 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 of 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.

Payment of Fees. The incidental fee, the student health fee, the student union building fee, the student union equipment fee, and the student activities 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 personal services such as 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 and the services provided by this fee, see pages 26-27.

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

Student Union Equipment Fee. This fee is used to provide additional special equipment for the student union.

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.).

Fees for Regular Semesters

For students enrolling in more than six hours in a regular semester of sixteen weeks or more the following schedule of fees will apply.

	<i>Residents of Kansas or staff members</i>	<i>Non-residents of Kansas</i>	
		<i>Under-graduate</i>	<i>Graduate</i>
Incidental			
All except Veterinary Medicine students	\$ 70.00	\$165.00	\$120.00
Veterinary Medicine students	80.00	175.00	120.00
Student Health	10.00	10.00	10.00
Student Union Building	5.00	5.00	5.00
Student Union Equipment	2.50	2.50	2.50
Student Activities (incl. Union operations)	16.50	16.50	16.50
Totals—All except Veterinary Medicine students ..	<u>\$104.00</u>	<u>\$199.00</u>	<u>\$154.00</u>
Totals—Veterinary Medicine students	<u>\$114.00</u>	<u>\$209.00</u>	<u>\$154.00</u>

Fees for Summer Sessions

For students enrolling in more than three hours in a regular summer session of nine weeks the following schedule of fees will apply.

	<i>Residents of Kansas or staff members</i>	<i>Non-residents of Kansas</i>	
		<i>Under-graduate</i>	<i>Graduate</i>
Incidental			
All except Veterinary Medicine students	\$ 40.00	\$ 90.00	\$ 70.00
Veterinary Medicine students	45.00	95.00	70.00
Student Health	5.00	5.00	5.00
Student Union Building	2.00	2.00	2.00
Student Union Equipment	1.00	1.00	1.00
Student Activities	5.00	5.00	5.00
Totals—All except Veterinary Medicine students ..	<u>\$ 53.00</u>	<u>\$103.00</u>	<u>\$ 83.00</u>
Totals—Veterinary Medicine students	<u>\$ 58.00</u>	<u>\$108.00</u>	<u>\$ 83.00</u>

Fees for Pro-Rata Enrollments

For students enrolling in six credit hours or less in a regular semester or three credit hours or less in a summer session the following schedule of fees will apply.

	<i>Residents of Kansas or staff members</i>	<i>Non-residents of Kansas</i>	
		<i>Under-graduate</i>	<i>Graduate</i>
Incidental Per Credit Hour			
All except Veterinary Medicine Students	\$ 5.00	\$ 12.00	\$ 8.00
Veterinary Medicine students	6.00	13.00	8.00
Student Health	Not elig.	Not elig.	Not elig.
Student Union Building			
Regular Semester	3.25	3.25	3.25
Summer Session	1.25	1.25	1.25
Student Union Equipment			
Regular Semester	1.75	1.75	1.75
Summer Session .....	.75	.75	.75
Student Activities (incl. Union operations)			
Regular Semester	2.00	2.00	2.00
Summer Session	1.00	1.00	1.00

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 non-residents for the purpose of the payments 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 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.”

Definition of Staff Fees. Staff fees (the equivalent of residence fees) shall be applied to all members holding faculty rank in the following categories: Fellow, Graduate Assistant, Graduate Research Assistant, Assistant Instructor, Instructor, Assistant Professor, Associate Professor, and Professor. Wives and dependent children of such persons, but not husbands, are also entitled to staff fees.

Staff members holding positions in the classified civil service also are entitled to staff fees. Wives and dependent children, but not husbands, of staff members in the classified civil service having a monthly salary of \$395 per month (a salary at which classified employees automatically achieve classification in the administrative bracket) shall likewise be entitled to staff fees.

Personal Service Fees. Students majoring in Applied Music or Music Education are given the required number of private lessons without additional charges. The schedule for all other students who wish to enroll

for private music lessons shall be as follows: (Subject to refund policy outlined below)

	<i>Non-Music Majors</i>	
	<i>Students paying full semester incidental fee</i>	<i>Students not paying full semester 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

Field Geology Fee. The fee for the summer geology field camp is \$37 for all students, which is the additional amount required from students enrolled in this course to pay for their transportation and lodging for the field camp.

College Proper Refund Policy. (Applicable only to refundable fees, viz., incidental, health, union, activities, field geology 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:

	<i>Amount of Refund</i>	
	<i>Regular semester</i>	<i>Summer session</i>
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

Late Enrollment, Including Re-Enrollment After Withdrawal. A late enrollment fee of \$2.50 shall be assessed and collected from each person paying his fees after the regularly scheduled enrollment period. A larger late enrollment fee of \$5 shall be assessed and collected from each person 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.

Graduate Research Work in Absentia. The fee for graduate research work in absentia is \$3 a semester hour for all students. Resident staff members may not enroll in absentia while regular college sessions are in progress. This fee is not subject to refund.

Special Examination. The fee for taking a special examination to obtain college credit in lieu of attending classes is \$2.50 per credit hour in which examined for residents of Kansas or staff members; \$7.50 per credit hour for undergraduate non-residents of Kansas and \$5.50 for graduate students who are non-residents of Kansas. **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.

Auditing 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. This fee shall not be subject to refund.

Laboratory Fees and Course Charges or Deposits. No laboratory fee, course charge, or deposit may be assessed against or collected from persons enrolled in any regular semester or summer session at Kansas State College, except for geology field camps, and for 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.

Home Study Fees. For a complete listing of fees charged for work offered through the Department of Continuing Education, Division of Extension, see page 259.

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 arrangements with governmental or other 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 except that enrollees wishing to study in engineering and architecture are enrolled as pre-engineering students if they lack one unit of either algebra or plane geometry. 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 Pre-Veterinary 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.

* 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 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 218,516 bound volumes, besides much unbound material. It receives currently about 5,275 serial publications. As a depository the library receives the documents and other publications of the United States Government, as well as publications of all state experiment stations, extension services, and state departments of agriculture.

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

Publications

College publications include the following:

General Catalogue	Home Study Catalogue	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 six times during academic year.

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 approved student organizations and College departments may deliver and receive 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. Federal postal regulations prevent the handling of 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 stu-

dent 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 takes place as shown on the calendar. Later assignments to courses are made during regular office hours by the 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 ninth week of the semester, no mark shall be reported to the registrar. If he withdraws after the ninth 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. See the College Calendar.

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 at the discretion of the instructor to complete the required work.

Report of Grades

As shown on the academic calendar, deficiency reports of unsatisfactory work are reported to deans' offices at the close of the seventh week and to the Registrar at the close of the semester. The Registrar forwards end of semester deficiency reports to the deans' offices. The reports of the seventh 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 self-addressed official cards, with postage affixed, after the seventh Saturday of the semester or with their final examination papers. Instructors send reports so required 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 ninth 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 ninth 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 as shown on the academic calendar. Regardless of the time of withdrawal, however, a final grade is reported and designated as such, if all the required work of the course has been completed.

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

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, 4; B, 3; C, 2; D, 1; F, 0. For students entering after June 1, 1954, the graduation requirement is 1.7 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, DISMISSAL AND REINSTATEMENT

A student's cumulative grade point average is used to establish probation or dismissal status. An undergraduate student (excluding students of the School of Veterinary Medicine) is placed on probation or is dismissed if he falls below the averages listed for his classification.

	<i>Probation</i>	<i>Dismissal</i>
Freshman	1.5	1.3
Sophomore	1.5	1.4
Junior	1.7	1.5
Senior	1.7	1.6

Students are notified by their academic deans of their status from information supplied to the deans by the Registrar in early March and July. There are no dismissals for academic reasons at the close of the fall semester.

Students placed on probation remain on probation until they achieve an average above the probation threshold for their classification.

Dismissed students may not be readmitted until approved for readmission by the Reinstatement Committee. To receive such consideration the student must petition in writing, on a form provided by the School, for reinstatement.

CREDITS WHILE INELIGIBLE

Credits earned by a student in residence at another college during a period in which he is ineligible to attend Kansas State College or another 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 except that a student who misses classes while under the care of the Student Health will be issued an excuse from those classes by Student Health. The copy of the excuse issued to the student by the Student Health or by the student's dean shall be shown to each instructor concerned, and left finally with the ROTC department if the student has classes there. 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 complete 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

Undergraduate students other than freshmen or first year students in architecture who earn a grade in a minimum of 15 semester hours in a semester with an average of 3.25 or above have the privilege of optional attendance for the succeeding semester. 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 \$2.50 a credit hour for residents, \$7.50 for non-residents.

Scholastic Honors

Scholastic honors are computed on all undergraduate work completed in residence.

To be eligible for scholastic honors, awarded each semester, a student must receive a grade in a minimum of 15 semester hours of undergraduate work in residence and earn a grade point average of 3.25 (A=4, B=3, C=2, D=1, F=0) or better for that semester's work. Students in Graduate School are not considered for this recognition.

Bachelor degree candidates who rank in the top ten per cent of their class and who have completed a minimum of sixty hours of undergraduate work in residence are considered for commencement scholastic honors. Of these, the highest ranked, not to exceed three per cent of the class, may be selected by the Scholastic Honors 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 this recognition.

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 use not more than eight semester hours in these subjects toward graduation and enroll for not more than two in a semester.

A student is regularly assigned to these activities, but only on the written recommendation 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 which 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 interest, aptitudes, and skills; his emotional balance; his social relationships; his moral and religious values; his physical health; and his aesthetic appreciations. Student needs for adequate medical care, housing, food, financial assistance, employment, counseling, recreation, and spiritual inspiration have been provided in this program.

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: Housing, Food Service, K-State Union, Student Counseling Center, Placement Center, Student Health, Foreign Student, Student Religious Activities, and Student Organizations.

Office of the Associate Dean of Students

The Associate Dean of Students is responsible primarily for the welfare of the women students on campus. She supervises the residence hall program which is designed to contribute to the academic and social development of the students. This office is also responsible for assisting students living in sororities and off-campus housing. The Associate Dean is adviser to Associated Women Students and is available to assist staff and students of any group in problems of program and administration.

Housing for Women

The Associate Dean of Students 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 160; 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 \$310 per semester if paid in advance at the beginning of the semester or \$315 if paid in three installments at stated intervals: \$135 at the beginning of the semester, \$90 at the beginning of the second six-week period, and \$90 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 information about the residence hall living program or wishing to make application for a room in an off-campus house should write to the Office of the Associate Dean of Students, Kansas State College.

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 \$70 a semester. It may be paid in advance or in three installments. The first installment is \$36, the second and third installments, \$17 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 \$15 to \$30 a month.

FOR FAMILIES

For married students, the College operates 192 permanent dormitory apartments. The rent is \$62.50 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.

Fifty-two parking places for privately owned modern trailers are available for \$20 per month, including sewer, water, and 140 KWH of electricity per month.

Also available for a limited assignment are 208 old converted barracks apartments, and 30 places for non-modern privately owned trailers. The two-bedroom apartments rent for \$28 per month, the one-bedroom apartments for \$24 per month and the trailer spaces for \$12 per month. The apartments are not furnished except for cooking stove and space heater. 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 \$55 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, game facilities (bowling, billiards, table tennis, etc.), a little theater, and the Student Activities Center. In addition there are lounges, a browsing library, and music listening rooms.

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 300 students working on the fourteen committees which provide an extensive program of interesting activities. These activities are coordinated by the Program Council. The fourteen Union Committees are: Dance, Publicity, Movies, Games, Hospitality, Music and Library, Art, Campus Entertainment, Coffee Hours, Flash Cards, Harmonizers, Jazz, Personnel and Research, and Y-Orpheum. 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 Center

The Placement Center assists Kansas State College prospective freshmen, undergraduates, graduating seniors, graduate students, and alumni with their employment problems. The center 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 provides a centralized placement system for all the schools and departments of the College and brings together students, faculty members, and representatives of organizations seeking college-educated personnel for permanent positions. 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 employment opportunities is available, and qualified staff members help students with employment problems. The center is designed to help students and alumni in meeting and communicating with employers more effectively.

Student Health

The Student Health Service is supported by the student health fees. Full-time physicians are always on duty with an adequate medical support-

ing 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. A rate of \$3 a day 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 by one of the College doctors at either of the Manhattan city hospitals of the student's choice.

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. 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.

Employment physicals will be charged for at standard rates.

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

Religion at Kansas State College finds expression in the many church-sponsored student religious organizations related to the campus, and within the administrative and academic structure of the College itself.

On campus there are two beautiful memorial chapels—All-Faith Chapel and Danforth Chapel. Also, within the framework of the College is the office of the Director of Student Religious Activities. The functions of the Director are to coordinate religious activities on campus, to counsel students in their personal religious problems, and to promote religious knowledge by securing scholarly speakers for convocations and lectures and by teaching courses in religion in the Department of History, Government, and Philosophy.

The Religious Coordinating Council, a committee of the Student Council, is constituted of members from each of the organized student religious groups on campus. This council is responsible for the several interdenominational emphases on religion which are presented each year. Among other things this Council sponsors the annual Religious Emphasis Week, when outstanding religious leaders are brought to the campus for lectures and discussions on student religious and moral problems.

The Council of Religious Advisers is constituted of the denominational chaplains, religious workers, and sponsors of student religious organizations. This Council meets regularly to advise and promote student religious activities on campus.

Students are welcomed and find fellowship in the many fine congregations of the Manhattan community: Seventh-day Adventist, Central Baptist, 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, Bethel African Methodist, First Methodist, Free Methodist, Shepard Chapel Methodist, Wesleyan Methodist, Church of the Nazarene, First Presbyterian, United Presbyterian, Society of Friends and the Latter Day Saints.

Operation of Motor Vehicles

All motor vehicles operated on the campus by staff and students must be registered and identified with decals. Possession of cars by students is discouraged. Freshmen may not secure parking permits. By authority of Kansas Statutes, Chapter 484, Laws of Kansas, 1957, the College has established a Traffic and Security Office which operates under rules established by a student-faculty Traffic Control Board. Driving and parking of motor vehicles are governed by these regulations.

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.

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 student 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 chairman 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).

Mennonite Fellowship and Reorganized Latter Day Saints are student groups sponsored by the respective organizations.

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 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.

Student Organizations

Departmental

Agricultural Association	Home Economics Extension Club
Agricultural Economics Club	Home Economics Journalism Club
Agricultural Education Club	Home Economics Nursing Club
Arnold Air Society	Home Economics Teaching Club
Block and Bridle Club (Animal Husbandry)	Horticulture Club
Chancery Club (Pre-Law)	Industrial Education Association
Club Cervantes (Spanish)	Kansas State Engineers
Conservation Club	Kansas State Rifle Team
Dairy Club	Klud and Kernel Klub (Agronomy)
Entomology Club	Mathematics Club
Extension Club	Milling Association
Future Teachers of America	Phems
Geology Club	Philosophy Club
Geology Gems	Plow and Pen Club
Graduate Students Association	Political Science Club
Home Economics Art Club	Poultry Science Club
Home Economics Child Development Club	Psychology Club
Home Economics Clothing and Retailing Club	Women's Athletic Association
Home Economics Dietetics and Commercial Demonstration Club	

Student Government

Agricultural Council
 Arts and Sciences Council
 Associated Women Students
 Board of Student Publications
 Engineering Association Council
 Graduate Council
 Home Economics Council
 Independent Organized House Council

Interfraternity Council
 Interfraternity Pledge Council
 Panhellenic Council
 Student Council
 Student Governing Association
 Union Governing Board
 Veterinarian Council

Professional

American Chemical Society
 American Guild of Organists
 American Institute of Architects
 American Institute of Chemical Engineers
 American Institute of Electrical Engineers
 American Institute of Physics
 American Society of Agricultural Engineers
 American Society of Civil Engineers

American Society of Mechanical Engineers
 American Veterinary Medical Association
 American Veterinary Medical Association
 Auxiliary
 Institute of Aeronautical Sciences
 Institute of Radio Engineers
 Society for the Advancement of Management

Honorary

Blue Key (Senior Men)
 Chimes (Junior Women)
 Delta Phi Delta (Art)
 Delta Sigma Rho (Debate)
 K-Fraternity (Varsity Lettermen)
 Mortar Board (Senior Women)
 Mu Phi Epsilon (Women, Music)

Pershing Rifles (Military)
 Phi Delta Gamma (Graduate Women)
 Pi Epsilon Delta (Dramatics)
 Scabbard and Blade (Cadet ROTC Officers)
 Sigma Alpha Eta (Speech Therapy)
 Sigma Xi (Scientific Investigation)

Scholastic Honorary

Alpha Delta Theta (Medical Technology)
 Alpha Epsilon Rho (Radio-TV)
 Alpha Kappa Psi (Business Administration)
 Alpha Lambda Delta (Freshmen Women)
 Alpha Mu (Milling)
 Alpha Zeta (Agriculture)
 Eta Kappa Nu (Electrical Engineering)
 Gamma Sigma Delta (Agriculture)
 Omicron Nu (Home Ec)
 Phi Alpha Mu (Arts & Sciences)
 Phi Alpha Theta (History)
 Phi Chi Theta (Junior Women's Business)
 Phi Delta Kappa (Education)

Phi Epsilon Kappa (Men's Physical Ed.)
 Phi Eta Sigma (Freshmen Men)
 Phi Kappa Phi (All-College)
 Phi Lambda Upsilon (Chemistry and Chemical Engineering)
 Pi Mu (Mathematics)
 Pi Tau Sigma (Mechanical Engineering)
 Sigma Delta Chi (Journalism—Men)
 Sigma Gamma Epsilon (Geology)
 Sigma Tau (Engineering)
 Sigma Xi (Scientific)
 Tau Sigma Delta (Architecture)
 Theta Sigma Phi (Women Journalists)

- Interest Groups (Membership Open)

Alpha Phi Omega (Scouting)
 Amateur Radio Club
 Angel Flight
 Arab-American Club
 Astronomy Club
 Chaparajos Club
 Collegiate 4-II
 Cosmopolitan Club
 Dames Club
 Flying Club
 Forensic Union
 Independent Student Association
 KSDB (F. M. Radio)

K-State Jazz Club
 K-State Players
 K-State Sports Car Club
 Masonic Club
 Miniwanca Club (Religious Education)
 Promenaders
 ROTC Bands—Army and Air Force
 ROTC Rifle Teams—Army and Air Force
 Veterans' Organizations
 Whi-Purs
 Young Democrats
 Young Republicans

Interest Groups (Membership Selected)

Cheerleaders
 Frog Club
 Orchestras

Purple Pepsters
 Varsity Men's Glee Club
 Wampus Cats

SORORITIES AND FRATERNITIES

There are twenty-two Greek letter fraternities for men at Kansas State College and ten 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, Gamma Phi Beta, 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, Delta Upsilon, 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.

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 members on 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 So-

ciety of Civil Engineers, the American Institute of Electrical Engineers or the Institute 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 College 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 knowl-

edge 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 a Kansas 4-H Club annual; maintains a loan fund; assists at Round-up and has contributed to the building of the State 4-H Club Center and the K-State 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 4-H work and the entire Extension program. The value of this group is not confined to the Kansas State College campus; the contacts have caused many more former 4-H members to seek a college education.

Extension Club

Membership in the Extension Club is open to all men and women students who are interested in knowing more about the Cooperative Extension Service program. Students taking training to become county agricultural agents, home economics agents, or 4-H club agents will find this organization helpful. Membership in 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 Division of College Extension personnel, to receive an introduction to extension methods and policies, and to become better acquainted with the other Extension Club 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-Civic Orchestra

The College-Civic Orchestra is an organization the personnel of which comprises college students, faculty staff, and musicians in Manhattan and surrounding communities. Membership is voluntary and is open to all qualified musicians. The orchestra is conducted by the head of the Department of Music. The orchestra library is large and includes standard symphonic works and lighter classics.

The orchestra plays two formal concerts each season, appears on and off campus, and joins with the vocal organizations to present traditional Christmas and Easter music.

Opportunity is given to appear as soloists with the orchestra.

One credit hour a semester is given to college students.

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.

The Varsity Men's Glee Club is open by tryout to all male undergraduate and graduate students. This organization presents three concerts a year plus appearing between halves at basketball games and singing at various meetings and conventions on the K-State campus. The very best in music literature ranging from the classics to the favorite "pop" tunes is performed. The Varsity Men's Glee Club also joins with the K-State Choral Union in presenting the Messiah during the Christmas season. This group meets twice a week for one hour credit.

The Women's Glee Club is a popular organization for K-State women students. This group meets twice a week for one hour credit and presents three concerts a year. The repertoire of this group is the very best found for women's voices. The Women's Glee Club sings for various group conventions held on campus plus joining with the K-State Choral Union in the presentation of the Messiah during the Christmas season. Membership is open by tryout.

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 dramatics 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 Eight Conference. The other members are University of Colorado, Iowa State College, University of Kansas, University of Missouri, University of Nebraska, University of Oklahoma, and Oklahoma State University.

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 is 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 (indoor and outdoor), cross-country, 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 two 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, or the Assistant Dean of Students. 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 \$160,000 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 \$100. These loans are made by the chairman of the Loan Fund Committee, Charles Jacot, Assistant Dean of Students, and require no endorser and no interest charges.

The Alumni Loan Fund of approximately \$185,000 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.

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

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.

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 through the Secretary of the General Scholarship Committee.

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, Ralston-Purina Company, Pillsbury Mills, Inc., Allied Mills, Inc., Jacobson Machine Works, Feeds Illustrated, Inc., Archer-Daniels-Midland Company, Webster Charitable Foundation, Miller Publishing Company, Quaker Oats Company, and the Jones-Hettelsater 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.

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 and 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 \$300 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 General Scholarship Committee.

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 \$250 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.

LOYAL PAYNE SCHOLARSHIP. Established in honor of Professor Loyal Payne, former head of the Department of Poultry Husbandry, it provides a \$200 award annually to a deserving junior or senior student in poultry husbandry. Application should be made to the head of the Department of Poultry Husbandry.

SEARS, ROEBUCK. Scholarships of \$225 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 and Allied Arts 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.

PAUL WEIGEL FOUNDATION. Established to honor Paul Weigel, former head of the Department of Architecture and Allied Arts, it provides scholarship awards annually for a number of outstanding students in architecture. Applications should be submitted to the head of the Department.

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.

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 \$2,400,

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.

CITIES SERVICE OIL COMPANY. A \$600 award annually to a junior student in engineering or geology for use in his senior year. Apply to the Dean, School of Engineering and Architecture, or the Secretary of the General Scholarship Committee.

CONTINENTAL OIL COMPANY. A \$500 award annually to a student in mechanical engineering. Apply to the Dean, School of Engineering and Architecture.

CORPORATE ALUMNI AWARDS (GENERAL ELECTRIC COMPANY). These awards are made possible by gifts from Kansas State College alumni who are employed by the General Electric Company. Their gifts are matched by the Company. The fund provides a number of general scholarships and a number of scholarships to students in the School of Engineering and Architecture. Application should be made to the Secretary, General Scholarship Committee.

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.

DOWELL. A \$500 award annually to a junior student in Mechanical Engineering for use in the senior year. Apply to the Dean, School of Engineering and Architecture.

MARTIN K. EBY COMPANY. These \$300 awards are made annually to a male graduating senior of each Wichita public high school who enters Kansas State College to study civil engineering, architectural engineering, or architecture. Recipients are selected by a scholarship committee at each high school.

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.

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

J. O. HAMILTON MEMORIAL. A \$500 award annually in honor of Professor J. O. Hamilton, former head of the Physics Department. Awarded to an entering freshman who plans to study engineering or physics. Apply to the Secretary, General Scholarship Committee.

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.

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 or the Secretary, General Scholarship Committee.

KANSAS CONTRACTORS ASSOCIATION. Awards of \$500 annually to an entering freshman to study civil engineering. These awards are renewable for four

years of undergraduate study. Apply to the Secretary, General Scholarship Committee.

MAGNOLIA PETROLEUM COMPANY. An annual award of \$600 to a student entering his senior year in civil engineering. Apply to the Dean, School of Engineering and Architecture.

MUCHNIC FOUNDATION. These awards are made annually in varying amounts to juniors or seniors in engineering. Apply to the Dean, School of Engineering and Architecture.

SALINA SUPPLY COMPANY. Two awards of \$350 annually to male engineering students entering their sophomore year. Apply to the Dean, School of Engineering and Architecture.

SERVIS, VAN DOREN AND HAZARD. Four awards of \$100 each made annually to entering freshmen to study civil or mechanical engineering. Established by the employees of the Servis, Van Doren and Hazard Company. Apply to the Secretary, General Scholarship Committee.

SOCONY MOBIL OIL COMPANY ASPHALT INSTITUTE. A \$500 award annually to a junior or senior student in civil engineering. Apply to the Dean, School of Engineering and Architecture.

UNIVERSAL OIL PRODUCTS COMPANY. A \$500 award annually to a junior student in chemical engineering for use in his senior year. Apply to the head, Department of Chemical Engineering.

WESTERN ELECTRIC COMPANY. Two \$400 awards annually to entering or upperclass students in engineering. Apply to the Dean, School of Engineering and Architecture.

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.

MURRAY WILSON SCHOLARSHIP. A \$500 award annually to a male student in engineering who is entering his sophomore year. Established by the employees of the Wilson Company, Engineers and Architects, in honor of Murray Wilson.

HISTORY

COLONEL AND MRS. HARRIE S. MUELLER. A \$500 graduate scholarship is awarded annually by Colonel and Mrs. Mueller to a qualified student for graduate research in Kansas history. Apply to the head of the Department of History, Government and Philosophy.

FINE 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 Secretary, General 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*.)

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 economics agents. Awards are made on the bases of academic scholarship, financial need, and extracurricular participation. Information concerning the scholarships may be obtained from the state home economics leader, Kansas State College, or the Secretary, General Scholarship Committee.

KROGER. (See *Kroger* under *Agriculture*.) Applications for Kroger Scholarships in Home Economics are made to the Secretary, General Scholarship Committee.

MARGARET BURTIS MEMORIAL. Sponsored by Manhattan Soroptomist, 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 Secretary, General Scholarship Committee.

MUSIC

FIRST NATIONAL BANK OF MANHATTAN. Provides two \$150 awards annually to students majoring in music. Apply to the head of the Department of Music or to the Secretary, General Scholarship Committee.

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*.)

PHYSICS

J. O. HAMILTON MEMORIAL. (See *J. O. Hamilton Memorial* under *Engineering*.)

SPEECH

FIRST NATIONAL BANK OF MANHATTAN. Provides two \$150 awards annually to students majoring in speech or drama. Apply to the Secretary, General Scholarship Committee.

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.

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

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

4-H

Certain 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 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 \$100 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.

GENERAL MOTORS CORPORATION. Under their College Plan scholarship program General Motors Corporation supports two scholarships to entering freshmen annually which may be renewed throughout the four undergraduate years. Both men and women are eligible, and the amount of the awards is based on a calculation of financial need. These awards are administered by the General Scholarship Committee.

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.

HARRY H. HALBOWER, JR., MEMORIAL. An award of \$300 annually established by Mr. and Mrs. H. H. Halbower in honor of their son, First Lt. Harry H. Halbower, Jr. This award is made to any undergraduate student who is worthy and is in need of financial assistance, with preference being given to members of Gamma Epsilon chapter of Beta Theta Pi fraternity.

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 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.

EARL DEAN McVEY MEMORIAL. A \$150 award annually to an entering freshman from Atchison County Community High School. Established by Mrs. Wanda Lou McVey and her children in honor of her husband.

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 \$150 award may be made through the Secretary, 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.

ORDER OF EASTERN STAR. The Grand Chapter of Kansas, Order of the Eastern Star, has made available a scholarship of \$200 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 scholarships in the amount of resident enrollment fees, one each for a freshman, sophomore, junior, and senior girl who is a resident of Kansas. The awards are based upon high scholarship and financial need. These scholarships are administered by the General Scholarship Committee.

WILFRED L. PARK MEMORIAL. A \$200 award annually to an entering freshman from Oakley High School. Established by Mrs. Elaine A. Park in honor of her husband. Administered by the General Scholarship Committee.

PI BETA PHI. A sophomore year scholarship of \$200 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 Secretary, 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.

FAY N. SEATON MEMORIAL. Established by Mrs. Fay N. Seaton and her sons Richard M. Seaton and Fred A. Seaton. The fund provides for scholarships to former carriers of the Manhattan Mercury. Administered by the General Scholarship Committee.

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

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. 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. An award also will be given for outstanding leadership in the activities of the Student Branch of the Society.

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, good will and understanding among the various religious, cultural and ethnic groups on campus.

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."

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

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.

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.

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.

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

Larry Woods Speaking Contest. Open to elected representatives (freshman and sophomore) in each Oral Communication class. Students compete each semester for \$30 first prize, \$20 second prize, and \$10 third prize.

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.

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

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

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

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

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.

MEDALS

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

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.

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

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.

American Legion Medal. Awarded to first-year Advanced Course Army ROTC cadet displaying outstanding academic achievement and military proficiency.

Association of the U. S. Army Medals. Awarded to a second-year Advanced Course Army ROTC cadet commissioned in the Combat Arms displaying outstanding academic achievement and military proficiency.

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

Delta Sigma Rho Plaque. Awarded annually to the outstanding first-year participant in debate.

Delta Sigma Rho Plaque. Awarded annually to the outstanding graduating participant in debate.

Delta Sigma Rho Public Speaking Contest. Open to all undergraduates except previous winners and varsity debaters. Two rotating organizational trophies and four permanent plaques are awarded.

Distinguished Military Student Award. Each year, the PMST, with the concurrence of the College President and the deans, may designate certain outstanding Army ROTC students to be awarded the Distinguished Military Student Award. Receipt of this award makes the student eligible to apply for a commission as Second Lieutenant in the Regular Army.

Forensics.

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.

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.

Sons of the American Revolution Medal. Awarded to a second-year Advanced Course cadet displaying outstanding academic achievement and military proficiency.

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

Superior Cadet Ribbon. Awarded to the outstanding Army ROTC cadets enrolled in Military Science I, II, III, and IV.

The Armed Forces Communication and Electronics Association Gold Medal Honor Award. Awarded to the outstanding second-year Army ROTC cadet majoring in electrical engineering.

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

FEDERAL ASSISTANCE PROGRAMS

War Orphans' Educational Assistance Act of 1956 (Public Law 634, 84th Congress). This is a program of financial aid for the education of young men and women, between the ages of 18 and 23, whose parent and/or parents—World War I, World War II, or Korean veterans—died of injuries or diseases resulting from their military service. This provides \$110 per month for a maximum of thirty-six months.

Children of Deceased Veterans Whose Death Was Due to Peacetime Service or Otherwise. Unmarried children after reaching the age of 18 may continue to receive compensation until age 21 or graduation, whichever is earlier, provided they continue their education program in a VA-approved school. The compensation is paid to the parent or guardian.

Veterans' Readjustment Assistance Act of 1952 (Public Law 550, 82nd

Congress). This is a federal educational benefits program for veterans who were in the service after June 27, 1950, and before January 31, 1955. Entitlement is computed on the basis of 1½ days for each day in the service over ninety days up to a maximum of thirty-six months. Subsistence is based on \$110 per month for a single person; \$135 per month for self and one dependent; \$160 per month for self and two dependents.

Vocational Rehabilitation Act for Disabled Veterans (Public Law 894, 81st Congress as amended). This is a federal educational benefits program for veterans disabled while in service between June 27, 1950, and January 31, 1955. This program pays for tuition, books, and limited supplies. The maximum program is forty-eight months.

Information concerning these four VA educational programs may be obtained from the Veterans Service Office, Kansas State College, or any Veterans Administration Office.

State of Kansas Vocational Rehabilitation Program (Public Law 565, 83rd Congress). This is a federal program providing educational assistance to physically handicapped persons in the State of Kansas. This program provides tuition, books, and maintenance and is based on need. The maximum is four years.

Information concerning the State Vocational Rehabilitation Program may be obtained from the Vocational Rehabilitation Service, State Board for Vocational Education, State Office Building, Topeka, Kansas.

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

Minor graduate work is offered in each of the above departments or fields and in Anatomy, General Studies, Geography, Library Economics, Philosophy 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:

Agricultural Economics	Entomology
Agronomy	Foods and Nutrition
Animal Breeding	Genetics
Animal Nutrition	Industrial Psychology
Applied Mechanics	Mechanical Engineering
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 Breeding, in Animal Nutrition, and in

Genetics and for the Master of Science in Extension Education and 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, Art (Home Economics), Bacteriology, Botany and Plant Pathology, Business Administration, Chemical Engineering, Chemistry, Civil Engineering, Clothing and Textiles, Dairy Husbandry, Economics, Education, Electrical Engineering, English, Entomology, Family and Child Development, Family Economics, Flour and Feed Milling Industries, Foods and Nutrition, Genetics, Geology and Geography, Government, History, Horticulture, Industrial Engineering and Industrial Arts, Institutional Management, Journalism, Mathematics, Mechanical Engineering, Music, Parasitology, Physical Education, Physics, Poultry Husbandry, Psychology (Counseling), Sociology, 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

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.

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 is 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 de-

iciencies 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.

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 six 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 \$3.00 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 seven classes: A, B, C, D, Incomplete, F, and Withdrawn. 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

* See section headed Fees under General Information.

time is devoted to his major subject and one-third to one or more minor subjects. 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 advisory committee. 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) A minimum of thirty semester hours of graduate credit *including a master's thesis* of six to eight semester hours; (2) A minimum of 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 representative 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, 1958-1959

September 8-10, Monday-Wednesday—Physical examinations for all graduate students enrolling for the first time at Kansas State College.
 September 8-10, Monday-Wednesday—Registration.
 September 11, 8:00 a.m., Thursday—Classes begin.
 October 4, Saturday—Last day to enroll with full assignment.
 October 25, Noon, Saturday—Deficiency reports due in deans' offices (7th week).
 November 8, Noon, Saturday—Last day for dropping courses without a Wd. or failure being recorded (9th week).
 November 8, Noon, Saturday—Mid-semester deficiency reports due in deans' offices (9th week).
 November 25, 10:00 p.m., Tuesday—Thanksgiving student recess begins.
 December 1, 8:00 a.m., Monday—Classes resume.
 December 1, Monday—Tentative copy of doctors' dissertations due in departmental offices.
 December 8, Monday—Tentative copy of doctors' dissertations due in graduate dean's office.
 December 16, Tuesday—Tentative copies of masters' theses and reports due in departmental offices.
 December 20, Noon, Saturday—Applications for degrees must be made on or before this date.
 December 20, Noon, Saturday—Christmas student recess begins.
 January 5, 8:00 a.m., Monday—Classes resume.
 January 5, Noon, Monday—Final copies of doctors' dissertations due in graduate dean's office.
 January 5, Noon, Monday—Tentative copies of masters' theses and reports due in graduate dean's office.
 January 10, Noon, Saturday—Last day subject may be dropped before end of semester.
 January 17, Noon, Saturday—Grades to registrar for candidates for degrees.
 January 17-24, Saturday 1:00 p.m.-Saturday Noon—Semester examinations.
 January 19, 3:00 p.m., Monday—Final copies of masters' theses and reports due in graduate dean's office. End of period for masters' oral examinations.
 January 21, 4:00 p.m., Wednesday—Senate meeting to approve candidates for degrees.
 January 24, 10:00 a.m., Saturday—Commencement.

SECOND SEMESTER, 1958-1959

January 29-31, Thursday-Saturday—Physical examinations for all graduate students enrolling for the first time at Kansas State College.
 January 29-31, Thursday-Saturday—Registration.
 February 2, 8:00 a.m., Monday—Classes begin.
 February 28, Saturday—Last day to enroll with full assignment.
 March 21, Noon, Saturday—Deficiency reports due in deans' offices (7th week).
 April 4, Noon, Saturday—Last day for dropping courses without a Wd. or failure being recorded (9th week).
 March 26, 10:00 p.m., Thursday—Easter student recess begins.
 March 31, Tuesday—Classes resume.
 April 9, Noon, Thursday—Tentative copy of doctors' dissertations due in departmental offices.
 April 16, Noon, Thursday—Tentative copy of doctors' dissertations due in graduate dean's office.
 April 24, Noon, Friday—Tentative copies of masters' theses and reports due in departmental offices.
 April 30, Noon, Thursday—Final copies of doctors' dissertations due in graduate dean's office.
 May 1, Noon, Friday—Tentative copies of masters' theses and reports due in graduate dean's office.
 May 1, 3:00 p.m., Friday—Applications for degrees must be made on or before this date.
 May 16, Noon, Saturday—Last day a subject may be dropped before end of semester.
 May 23-30, Saturday, 1:00 p.m.-Saturday Noon—Semester examinations.
 May 25, Noon, Monday—Grades to registrar for all candidates for degrees.
 May 25, 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 28, 11:00 a.m., Thursday—Senate meeting to approve candidates for degrees.
 May 31, 3:00 p.m., Sunday—Commencement. Field House.

SUMMER SESSION, 1959

- June 8, 8:00 a.m., Monday—Physical examinations for all graduate students enrolling for the first time at Kansas State College.
- June 8, 8:00 a.m., Monday—Registration.
- June 9, 7:30 a.m., Tuesday—Classes begin.
- June 20, Noon, Saturday—Last day to enroll with full assignment.
- June 24, Noon, Wednesday—Tentative copy of doctors' dissertations due in departmental offices.
- July 1, Noon, Wednesday—Tentative copy of doctors' dissertations due in the office of the dean of the graduate school.
- July 3, 5:00 p.m., Friday—Deficiency reports due in deans' offices (4th week).
- July 4, Saturday—Holiday—Independence Day.
- July 9, 3:00 p.m., Thursday—Applications for degrees must be made on or before this date.
- July 10, Noon, Friday—Final copies of doctors' dissertations due in the office of dean of graduate school.
- July 10, 5:00 p.m., Friday—Last day for dropping courses without a Wd. or failure being recorded (5th week).
- July 13, Noon, Monday—Tentative copies of masters' theses and reports due in departmental offices.
- July 20, Noon, Monday—Tentative copies of masters' theses and reports due in the office of the dean of the graduate school.
- August 1, Noon, Saturday—Grades to registrar for all candidates for degrees.
- August 3, 3:00 p.m., Monday—Final copies of masters' theses and reports due in the office of the dean of the graduate school. End of period for masters' oral examinations.
- August 4, 4:00 p.m., Tuesday—Last day subject may be dropped before end of session.
- August 5, 4:00 p.m., Wednesday—Senate meeting to approve candidates for degrees.
- August 7, 7:30 p.m., Friday—Commencement.

FIRST SEMESTER, 1959-1960

- September 14-16, Monday-Wednesday—Physical examinations for all graduate students enrolling for the first time at Kansas State College.
- September 14-16, Monday-Wednesday—Registration.
- September 17, 8:00 a.m., Thursday—Classes begin.
- October 10, Saturday—Last day to enroll with full assignment.
- October 31, Noon, Saturday—Deficiency reports due in deans' offices (7th week).
- November 14, Noon, Saturday—Last day for dropping courses without a Wd. or failure being recorded (9th week).
- November 24, 10:00 p.m., Tuesday—Thanksgiving student recess begins.
- November 30, 8:00 a.m., Monday—Classes resume.
- November 30, Monday—Tentative copy of doctors' dissertations due in departmental offices.
- December 7, Monday—Tentative copy of doctors' dissertations due in graduate dean's office.
- December 15, Tuesday—Tentative copies of masters' theses and reports due in departmental offices.
- December 19, Noon, Saturday—Christmas student recess begins.
- December 19, Noon, Saturday—Applications for degrees must be made on or before this date.
- January 4, 8:00 a.m., Monday—Classes resume.
- January 4, Noon, Monday—Final copies of doctors' dissertations due in graduate dean's office.
- January 4, 4:00 p.m., Monday—Tentative copies of masters' theses and reports due in graduate dean's office.
- January 16, Noon, Saturday—Last day subject may be dropped before end of semester.
- January 23, Noon, Saturday—Grades to registrar for candidates for degrees.
- January 23-30, Saturday, 1:00 p.m.-Saturday Noon—Semester examinations.
- January 25, 3:00 p.m., Monday—Final copies of masters' theses and reports due in graduate dean's office. End of period for masters' oral examinations.
- January 27, 4:00 p.m., Wednesday—Senate meeting to approve candidates for degrees.
- January 30, 10:00 a.m., Saturday—Commencement.

Calendars for the academic year 1959-60 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 W. 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 61)

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 (with the exception of Flour and Feed Milling) 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 of 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 62)

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	Production Economics
Agricultural Extension	Agricultural Policy
Farm Management	Cooperative Marketing
Agricultural Statistics	Market Analysis
Land Economics	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 63)

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 64)

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 65)

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 66)

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 68)

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 69)

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 70)

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	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 71)

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 journalism 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, "Continuing Education," page 259.

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.	136	Written Comm. II	3
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.	102	El. of Dairying	2 and	A. H.	113	El. of An. Husb. Lab. 1 or	
D. H.	103	El. of Dairying Lab.	1	D. H.	102	El. of Dairying	2 and
		Air or Military Science ..	1	D. H.	103	El. of Dairying Lab.	1
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			17

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	4				
Total			16	Total			16

SENIOR

Gn. Ag.	003	Agr. Seminar	0	Gn. Ag.	003	Agr. Seminar	0
		Elective	16			Elective	16
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, Agricultural Engineering, Extension.	
Minor Agricultural Electives	9
These electives may be taken from one or more departments but must strengthen the student's preparation in agriculture.	
Other Electives	22
These electives will be chosen to meet individual needs and will be intended to round out the preparation provided by the rest of the student's courses. Six hours must be in the social sciences, and eight hours in the humanities. All students not offering one unit of high school physics for entrance must include at least three hours of physics among their electives.	

All electives must be officially approved before assignment.

Curriculum in Agricultural Economics

B. S. in Agriculture

FRESHMAN

FIRST SEMESTER			SECOND SEMESTER				
	<i>Course</i>	<i>Sem. Hrs.</i>		<i>Course</i>	<i>Sem. Hrs.</i>		
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. II.	102	El. of Dairying	2	Ag. Ec.	203	Econ. of Farm Business ..	3
D. H.	103	El. of Dairying Lab.	1	Agron.	149	Soils	4
Agron.	106	Farm Crops	4	A. II.	155	Prin. of Feeding	3
P. II.	104	Farm Poul. Prod. Rec. ..	2	Ec. So.	120	Economics II	3
P. II.	105	Farm Poul. Prod. Lab. ..	1			Air or Military Science ..	1
Engl.	136	Written Comm. II	3	Spch.	105	Oral Comm. I	2
Ec. So.	110	Economics I	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			17	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	17	Gn. Ag.	003	Agr. Seminar	0
						Option A, B, or C	15
Total			17	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	29
							47

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.	430	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.	220	Rural Bank Operations ..	4			Elective	20	
Ag. Ec.	569	Agr. Finance	3					47

OPTION C (Agricultural Business and Industries)

B. A.	275	Business Law I	3	Ec. So.	430	Money and Banking	3	
B. A.	330	Principles of Acctg.	3	Psych.	310	Gen. Psychology	3	
B. A.	730	Cost Accounting	3			Elective	23	
B. A.	405	Bus. Org. and Fin.	3					47
B. A.	440	Marketing	3					
B. A.	511	Business Policy	3					47

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			
	<i>Course</i>	<i>Sem. Hrs.</i>		<i>Course</i>	<i>Sem. Hrs.</i>		
Ag. Ec.	200	Intro. to Agr. Econ.	1	Engl.	136	Written Comm. II	3
Engl.	125	Written Comm. I	3	Ec. So.	110	Economics I	3
Chem.	110	General Chemistry	5	Gl. Gg.	110	General Geology	3
Gn. St.	150	Biology I	4	Gn. St.	160	Biology II	4
Math.	175	College Algebra	3	Math.	190	Plane Trig.	3
		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			17	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.	430	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	10
Spch.	105	Oral Comm. I	2				
Gn. Ag.	003	Agr. Seminar	0				
Engl.	090	English Proficiency	0				
		Elective	2				
Total			18	Total			17

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: nine hours in Agricultural Economics; nine hours in Social Science, not Agricultural Economics; thirteen hours general electives.

Curriculum in Technical Agronomy

B. S. in Agriculture

FRESHMAN

FIRST SEMESTER			SECOND SEMESTER		
	<i>Course</i>	<i>Sem. Hrs.</i>		<i>Course</i>	<i>Sem. Hrs.</i>
Engl.	125 Written Comm. I	3	Engl.	136 Written Comm. II	3
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			Total		
17			17		

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			Total		
17			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			Total		
17			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	12
Total			Total		
17			16		

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, 230, 245 Anal. Geom. and Calc.	12	Math.	320 El. Statistics	3
Chem.	435 Quant. Anal.	4 or		Electives	12
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.	110, 111 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 Fl'r'g 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.	691 Fisheries Mgt.	4		Electives	23

Curriculum in Dairy Manufacturing

B. S. in Agriculture

FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Engl.	125	Written Comm. I	3	Engl.	136	Written Comm. II	3
Gn. St.	150	Biology I	4	Spch.	105	Oral Comm. I	2
Chem.	210	Chemistry I	5	Gn. St.	160	Biology II	4
D. II.	102	El. of Dairying 2 and		Chem.	230	Chemistry II Rec.	3
D. II.	103	El. of Dairying Lab.	1	Chem.	250	Chemistry II Lab.	2 or
		Air or Military Science ..	1	D. II.	118	Dairy Cattle Judg.	2
Gn. Ag.	004	Freshman Assembly	0	A. II.	106	El. of An. Husb.	2
Gn. Ag.	003	Agr. Seminar	0	A. II.	113	El. of An. Husb. Lab.	1
Ph. Ed.	010	Physical Education	0			Air or Military Science ..	1
				Gn. Ag.	003	Agr. Seminar	0
				Ph. Ed.	010	Physical Education	0
Total			16	Total			18

SOPHOMORE

D. II.	125	Fund. Dairy Tech.	2	D. II.	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	B. A.	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. II.	132	Milk Production	3	D. II.	181	Cheese Making	3
D. II.	146	Butter Making	3	D. II.	188	Dairy Prod. Judg.	1
Engl.	155	Business Letter Writing	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	4				
Total			17	Total			18

SENIOR

D. II.	174	Ice Cream Making	3	D. II.	167	Cond. and Pwd. Milk	3
D. II.	195	Adv. Dy. Prod. Judg.	1	D. II.	404	Dairy Seminar	1
D. II.	446	Dairy Plant Mgt.	2	D. II.	454	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.	211	Engg. Graphics I	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
Ph. Ed.	010	Physical Education	0	Ph. Ed.	010	Physical Education	0
Total			17	Total			17

SOPHOMORE

Ec. So.	110	Economics I	3	Engl.	136	Written Comm. II	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
Ph. Ed.	010	Physical Education	0	Ph. Ed.	010	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.	482	Exp. Baking I	4	Engl.	155	Business Letter Writing	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	10	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.	105	Applied Mechanics	3	Math.	215	Anal. Geom. and Calc. I	4
Ap. M.	120	Strength of Materials	3	Math.	230	Anal. Geom. and Calc. II	4
I. E.	175	Metals and Alloys	2	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.	405	Mill. Tech.	3
M. E.	216	Engg. Graphics II	2	Millg.	412	Adv. Flr. and Feed Tech.	3
M. E.	221	Engg. Graphics III	2	Ec. So.	455	Labor Economics	3

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	B. A.	275	Business Law I	3
Chem.	435	Quantitative Analysis	4	A. II.	155	Prin. of Feeding	3
Ec. So.	430	Money and Banking	3	Math.	320	El. of Statistics	3
B. A.	330	Prin. of Accounting	3	Math.	340	App. El. of Statistics	2
B. A.	405	Bus. Org. and Finance	3	Millg.	425	Flour and Feed Analysis	3
B. A.	450	Sales Management	3	Millg.	200	El. of Feed Manufacture	3
Ec. So.	455	Labor Econ.	3				

Curriculum in Feed Technology

B. S. in Feed Technology

FRESHMAN

FIRST SEMESTER			SECOND SEMESTER		
	<i>Course</i>	<i>Sem. Hrs.</i>		<i>Course</i>	<i>Sem. Hrs.</i>
Chem.	210 Chemistry I	5	Chem.	230 Chemistry II Rec.	3
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.	211 Engg. Graphics I	2
Millg.	111 Survey of Milling	1	Math.	190 Plane Trig.	3
Gn. Ag.	004 Freshman Assembly	0	Millg.	104 El. of Milling	2
Millg.	018 Milling Ind. Seminar	0	Gn. Ag.	003 Agr. Seminar	0
Gn. Ag.	003 Agr. Seminar	0	Millg.	018 Milling Ind. Seminar	0
	Air or Military Science ..	1		Air or Military Science ..	1
Ph. Ed.	010 Physical Education	0	Ph. Ed.	010 Physical Education	0
Total			Total		
17			17		

SOPHOMORE

D. II.	102, 103 El. of Dairy.	3 or	Engl.	136 Written Comm. II	3
A. II.	106 El. of A. II. Lec.	2 and	Phys.	120 Gen. Physics II	4
A. II.	113 El. of A. II. Lab.	1	P. II.	104 Farm Poul. Prod. Rec.	2
Ec. So.	110 Economics I	3	P. H.	105 Farm Poul. Prod. Lab.	1
Millg.	118 Flow Sheets	2	Gn. Ag.	003 Agr. Seminar	0
Millg.	200 El. of Feed Mfg.	3	Millg.	018 Milling Ind. Seminar	0
Phys.	110 Gen. Physics I	4		Air or Military Science ..	1
Spch.	105 Oral Comm. I	2	Ph. Ed.	010 Physical Education	0
Gn. Ag.	003 Agr. Seminar	0		Option A, B, or C	5
Millg.	018 Milling Ind. Seminar	0			
	Air or Military Science ..	1			
Ph. Ed.	010 Physical Education	0			
Total			Total		
18			16		

JUNIOR

Agron.	135 Mkt. Grading Cer.	3	Ec. So.	455 Labor Econ.	3
A. H.	155 Prin. of Feeding	3 or	Millg.	402 Formula Feed Mfg.	3
Chem.	730 Prin. of An. Nutr.	3	Gn. Ag.	003 Agr. Seminar	0
Physi.	131 Anat. and Physiology	3	Millg.	018 Milling Ind. Seminar	0
Gn. Ag.	003 Agr. Seminar	0		Option A, B, or C	9
Millg.	018 Milling Ind. Seminar	0		Electives	2
Engl.	090 English Proficiency	0			
	Option A, B, or C	5			
	Electives	3			
Total			Total		
17			17		

SENIOR

H. G. P.	115 Civilization I	3	Entom.	165 Mill. Ent.	4
Millg.	600 Feed Tech. I	3	H. G. P.	130 Civilization II	3
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		Option A, B, or C	7
	Electives	3		Electives	3
Total			Total		
17			17		

Total number of hours required for graduation, 136.

OPTION A (Operation)

Ap. M.	105 Applied Mechanics	3	M. E.	230 Mechanism	3
Ap. M.	120 Strength of Materials	3	Math.	215 Anal. Geom. and Calc. I ..	4
I. E.	175 Metals and Alloys	2	Math.	230 Anal. Geom. and Calc. II ..	4
Chem.	330 Gen. Organic Chemistry ..	5	Millg.	412 Adv. Flr. and Feed Tech. ..	3
M. E.	216 Engg. Graphics II	2	Millg.	418 Flr. and Feed Mill Con. ..	3
M. E.	221 Engg. Graphics III	2			

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	B. A.	275 Bus. Law I	3
Ec. So.	430 Money and Banking	3	Math.	320 El. of Stat.	3
B. A.	330 Principles of Acct.	3	Math.	340 Applied El. of Stat.	2
B. A.	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.	136	Written Comm. II	3
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.	110	Econ. I	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			16 or 17

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	Journ.	305	Agr. Journalism	3
Bact.	140	Agr. Microbiology	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	5
		Option A, B, C, or D	3	Total			15 or 16
Total			15 or 16	Total			15 or 16

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			Option A, B, C, or D	4
		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.	422	Storage	3	Gn. Ag.	003	Agr. Seminar	0
Hort.	425	Hort. Seminar	1			Option A, B, C, or D	11
Gn. Ag.	003	Agr. Seminar	0			Option A, B, C, or D	8
		Option A, B, C, or D	8	Total			17
Total			17	Total			17

Number of hours required for graduation, men 132, women 128.

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	Greenhouse Cons. & Mgt. ...	3	Hort.	139	Plant Materials I	3
Hort.	217	Comm. Floriculture I	3	Hort.	146	Plant Materials II	3
Hort.	224	Comm. Floriculture II	3	Hort.	453	Planting Design	2
Hort.	203	Floral Arrgt. I	2	Hort.	418	Arboriculture	3
Bot.	690	Tax. Bot. Flr'g Plts.	3	Bot.	690	Tax. Bot. Flr'g Plts.	3
B. A.	330	Prin. of Acctg.	3			Social Science Courses* ..	3
		Social Science Courses* ..	3			Electives†	16
		Electives†	13	OPTION C (Pomology)			19
OPTION C (Pomology)				OPTION D (Vegetable Crops)			
Hort.		Any Pomology Courses	9	Hort.		Vegetable Courses	8
Hort.	189	Veg. Gardening	3	Hort.	175	Pres. Food by Freezing ..	3
Hort.	175	Pres. Food by Freezing ..	3	Hort.	160	Small Fruits	3
D. H.	102, 103	El. of Dairying	3 or	D. H.	102, 103	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* ..	3			Social Science Courses* ..	3
		Electives†	18			Electives†	19

* 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 physics among their electives.

Curriculum in Landscape Design

B. S. in Landscape Design

FRESHMAN

FIRST SEMESTER			SECOND SEMESTER				
	Course	Sem. Hrs.		Course	Sem. Hrs.		
Bot.	120	Gen. Botany	5	Hort.	110	El. of Hort. Rec.	2
Hort.	150	Lands. Gardening	3	Hort.	111	El. of Hort. Lab.	1
Engl.	125	Written Comm. I	3	Chem.	110	General Chemistry	5
Arch.	126	Basic Drawing	2	Engl.	136	Written Comm. II	3
Arch.	123	Arch. Graphics I	2	Bot.	670	Plant Ecology	3
Arch.	137	Intro. to Arch.	1	Arch.	126	Basic Drawing	2
		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.		Physical Education	0
Ph. Ed.		Physical Education	0				
Total			16 or 17	Total			16 or 17

SOPHOMORE

Gl. Gg.	110	General Geology	3	Arch.	234	El. of Arch. II	4
Arch.	230	El. of Arch. I	4	Entom.	210	Gen. Econ. Ent.	3
Arch.	127	Arch. Graphics II	2	Arch.	166	Water Color Ptg.	2
Spch.	105	Oral Comm. I	2	Arch.	200	Apprec. of Arch.	3
Arch.	133	Sketching	2	Math.	190	Plane Trig.	3
Bot.	690	Tax. Botany	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				
Total			16 or 17	Total			15 or 16

JUNIOR

Hort.	474	Theo. Lands. Des.	2 or	Hort.	453	Planting Design	2 or
Hort.	446	Lands. Constr.	3	Hort.	439	Community Planning	3
Hort.	139	Plant Mat. I	3	Hort.	146	Plant Mat. II	3
C. E.	120	Surveying I	2	Arch.	285	Hist. of Ptg. & Sculp.	3
Agron.	149	Soils	4	C. E.	125	Surveying II	3
Bot.	410	Plant Path. I	3	Gn. Ag.	003	Agr. Seminar	0
Gn. Ag.	003	Agr. Seminar	0			Electives	5
Engl.	090	English Prof.	0				
		Electives	3				
Total			17 or 18	Total			16 or 17

SENIOR

Hort.	446	Lands. Constr.	3 or	Hort.	439	Community Planning	3 or
Hort.	474	Theo. Lands. Des.	2	Hort.	453	Planting Design	2
Hort.	460	Lands. Design I	4	Hort.	467	Lands. Design II	4
Gn. St.	210	Introd. Soc. Sci. I	4	Gn. St.	220	Introd. Soc. Sci. II	4
Gn. Ag.	003	Agr. Seminar	0	Journ.	305	Agr. Journ.	3
		Electives	6	Gn. Ag.	003	Agr. Seminar	0
						Electives	4
Total			16 or 17	Total			17 or 18

Number of hours required for graduation, men 135, women 131.

Suggested electives for students pursuing special training for landscape nurserymen.

Hort.	104	Plant Propagation	3	Hort.	160	Small Fruits	3
Hort.	414	Nursery Management	3	Hort.	182	Greenhouse Cons. & Mgt.	3
Hort.	415	Turf Management	3	B. A.	401	Administration	3
Hort.	404	Spraying	3	B. A.	275	Business Law I	3
Hort.	418	Arboriculture	3	Engl.	155	Business Letter Writing	3

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>
A. II.	106	El. of An. Husb.	2	D. II.	102	El. of Dairying	2
A. II.	113	El. of An. Husb. Lab.	1	D. H.	103	El. of Dairying Lab.	1
Gn. Ag.	003	Agr. Seminar	0	Gn. Ag.	003	Agr. Seminar	0
Gn. Ag.	004	Freshman Assembly	0	Chem.	110	Gen. Chemistry	5
Bot.	110	Gen. Botany	5	Engl.	136	Written Comm. II	3
Engl.	125	Written Comm. I	3			Air or Military Science ..	1
Gl. Gg.	110	Gen. Geology	3	Ph. Ed.	010	Physical Education M	0
		Air or Military Science ..	1	Psych.	310	Gen. Psychology	3
Ph. Ed.	010	Physical Education M	0	Spch.	105	Oral Comm. I	2
I. E.	180	Welding	1				
Total			16	Total			17

SOPHOMORE

Agron.	106	Farm Crops	4	Agron.	149	Soils	4
Gn. Ag.	003	Agr. Seminar	0	A. H.	155	Prin. of Feeding	3
Hort.	110	El. of Hort. Rec.	2	Gn. Ag.	003	Agr. Seminar	0
Hort.	111	El. of Hort. Lab.	1	Ec. So.	110	Econ. I	3
Chem.	310	Org. Chem. (Agr.)	3	Educ.	105	Educ. Psych. II	3
Educ.	100	Educ. Psych. I	3			Air or Military Science ..	1
		Air or Military Science ..	1	Ph. Ed.	010	Physical Education M	0
Ph. Ed.	010	Physical Education M	0	Ag. E.	120	Farm Power	3
Ag. E.	110	Farm Mechanics	2				
Total			16	Total			17

JUNIOR

Agron.	160	Soil Management	3	Ec. So.	290	Rural Sociology	3
A. II.	197	Livestock Production	3	Agron.	114	Grain Gdg. and Judging ..	2
Gn. Ag.	003	Agr. Seminar	0	Gn. Ag.	003	Agr. Seminar	0
P. II.	104	Farm Plt. Prod. Rec.	2	Educ.	120	Prin. of Sec. Educ.	3
P. H.	105	Farm Plt. Prod. Lab.	1	Ag. E.	115	Farm Mach. Repair	3
Educ.	505	Voc. Education	3			Elective—Social Sci.	4
Engl.	090	English Prof.	0			Elective—Agriculture	2
		Elective—Agriculture	3				
		Elective—Biolog. Sci.	3				
Total			18	Total			17

SENIOR

Ag. Ec.	206	Farm Organization	3	A. II.	134	Prin. Lvst. Sel.	3
Entom.	210	Gen. Econ. Ent.	3	Gn. Ag.	003	Agr. Seminar	0
Gn. Ag.	003	Agr. Seminar	0	P. II.	133	Poultry Practicums	2
Ag. E.	410	Farm Bldgs. Const.	3	Educ.	255	Meth. Tchg. Agr.	3
Ag. E.	415	Agr. Engg. Applic.	2	Educ.	265	Tchg. Partic. Agr.	3
		Elective—Agriculture	6	Journ.	305	Agr. Journalism	3
				Ag. E.	405	Farm Mech. Meth.	3
Total			17	Total			17

Number of hours required for graduation, 135.

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.	136 Written Comm. II	3		
Gl. Gg.	110 General Geology	3		Air or Military Science ..	1		
			Ph. Ed.	010 Physical Education	0		
Ph. Ed.	010 Physical Education	0	Journ.	050 Tech. Journ. Lec.	0		
Spch.	105 Oral Comm. I	2	Journ.	105 Graphic Arts Survey	2		
Journ.	050 Tech. Journ. Lec.	0	Journ.	115 Typography Lab.	1		
	Agr'l elective	3		Agr'l elective	3		
Total	.....	17	Total	.....	18		

SOPHOMORE

Gn. Ag.	003 Agr. Seminar	0	A. II.	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.	200 World Regional Geog.	3		
Ph. Ed.	010 Physical Education	0		Air or Military Science ..	1		
Journ.	050 Tech. Journ. Lec.	0	Ph. Ed.	010 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		
Journ.	465 Mag. Art. Writ.	2		Agr'l elective	3		
	Agr'l elective	7		Elective	5		
	Elective	3	Total	.....	16		
Total	.....	17	Total	.....	16		

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		
			Journ.	485 Interp. of Contemp.	3		
				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 Director of the School 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 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) I, 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, S '59. 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, S '60. 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. 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, S '60. 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, junior or 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; Ag. Ec. 203, or consent of instructor.
- 561. Land Economics.** (3) I, II. Control and use of land resources: relation of population to land supply; property rights in land; land tenure; land utilization including conservation; land valuation; land taxation. Emphasis on agricultural lands. 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. Economic analyses of alternative uses of land from viewpoints of individuals and groups of persons including public projects and programs: watershed, irrigation, highway, adjustment in land uses, etc. Three hours rec. a week. Pr.: Ec. So. 110, Agron. 149, junior standing.
- Land Law.** See B. A. 490.
- 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.
- 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 in even years. Marketing organization, regulations, and efficiency; factors influencing prices. Three hours rec. a week. Pr.: Ec. So. 110.
- 597. Agricultural Economics Statistics.** (3) I, II, S '59. A study of the principles and methods involved in the collection, analysis, interpretation, and presentation of statistical materials, with special reference to agricultural economics data. Pr.: Ec. So. 110.
- 601. Agricultural Economics Problems.** Credit arranged. I, II, S. Pr.: Consult instructor.

FOR GRADUATE CREDIT

- 845. Economics of Agriculture I.** (3) I. A comprehensive study of the economics of agriculture, with special attention to the integration of agricultural problems into the general body of economic theory. Includes: Agriculture in the general economy, agricultural maladjustments, production and marketing organization, farm prices. Pr.: Consent of instructor.
- 850. Economics of Agriculture II.** (3) II. A comprehensive study of the economics of agriculture, with special attention to the integration of agricultural problems into the general body of economic theory. Includes: value, distribution, and income; agricultural land utilization and tenure; agricultural credit and insurance; international agricultural relations; public activities relating to agriculture. Pr.: Consent of instructor.
- 855. Price Analysis.** (3) Offered on sufficient demand. Theory and analysis of prices, including techniques for empirical investigation of price problems. Pr.: Ag. Ec. 573 or consent of instructor.
- 860. Analysis of Agricultural Resource Use.** (3) II. Formulation and analysis of static and dynamic problems of agricultural resource use by firms and industries. Pr.: Basic courses in economics and statistics and consent of instructor.
- 885. Seminar in Agricultural Economics.** (3) Offered on sufficient demand. Problems and current developments in agricultural economics. Pr.: Consent of instructor.
- 890. Research in Agricultural Economics.** Credit arranged. I, II, S. Individual research problems which may be used for a master's degree. Pr.: Consult instructor.
- 895. 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 460 acres of medium rolling upland soil, and 200 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 problem 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.
- 109. Forage Crops.** (3) I. Adaptation, distribution, production, and utilization of forage crops; studies of species and types of principal forage crops. Two hours rec. and three hours lab. 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. a week. Pr.: Agron. 106.
- 461. Weed Control.** (3) I. 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. Offered even years. 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.
- 478. Field Course in Range Management.** (2) S. A summer field and lecture course dealing with the principles of range ecology as applied to range management practices; emphasis on field techniques for range plant identification and mensuration, range site evaluation, range condition classification, plant succession, and the impact of various range management practices. Two weeks field course given jointly by Kansas State College and Oklahoma State University. Pr.: Agron. 412, Bot. 670 and 690 or 730. Suitable field experience may be substituted for these prerequisites with consent of instructor.
- 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. Topics 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.
- 134. Principles of Livestock Selection.** (3) I, II. 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. Second semester offering strictly for students not majoring in animal husbandry.

- 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) I. 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, Grading and Selection of Meats.** (1) I. Identification and judging of carcasses and wholesale cuts of beef, lamb, and pork. Application of grade standards to beef, lamb, and pork carcasses. 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.
- 484. Technological Principles of Meat Processing.** (2) I, II. Offered on sufficient demand. Application of biochemical, histological, and microchemical principles to fresh, frozen, cured, smoked, and processed meats, with reference to nutritive value and palatability factors. Two hours rec. a week. Pr.: A. H. 204, 211, and senior or graduate standing.
- 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 1961 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 1959 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 1960 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. C. FOUNTAINE, *Acting 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

- 102. 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. a week.
- 103. Elements of Dairying Laboratory.** (1) I, II. Three hours lab. a week.
- 118. Dairy Cattle Judging.** (2) II. Six hours lab. a week. Pr.: D. H. 102, 103.
- 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. 102, 103, 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. 102, 103, 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. 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. 102, 103, 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. 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. 102, 103, 125, Bact. 110.
- 174. Ice Cream Making.** (3) I. 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. 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. 102, 103.
- 195. Advanced Dairy Products Judging.** (1) I. Cont. of D. H. 188. Three hours lab. a week.
- 203. Artificial Breeding.** (2) I. Offered 1959-'60 and in alternate years. 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. 102, 103, 132.
- 411. Milk Secretion and Reproduction.** (3) II. 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. 102, 103, A. H. 155.
- 420. Dairy Cattle Management.** (2) II. Offered 1959-'60 and in alternate years. 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. 102, 103, 118, 132, A. H. 155.
- 439. Dairy Manufacturing Problems.** Credit arranged. I, II, S. Pr.: D. H. 102, 103, 146.
- 446. Dairy Plant Management.** (2) I. Offered in 1958-'59 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 651, (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. Consult department for prerequisites.

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) Offered on sufficient demand. Broad biological aspects of the subject, including geological history and evolution, and the various subdivisions of entomology. Pr.: Entom. 105, 110, or 210; Zool. 110.
- 425. Horticultural Entomology.** (2) I. Offered 1959-'60 and in alternate years. 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) I. 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 1958-'59 and in alternate years.
- 470. Insect Ecology.** (2) I. Offered 1958-'59 and in alternate years. Influence of biotic and physical, edaphic factors of environments on insects. Pr.: Entom. 105, 110, or 210, and Zool. 110.
- 480. Entomological Methods.** (3) S. 1958 and alternate summers. Methods, materials, and techniques used; population sampling, insect collecting and preserving; planning experimental work; rearing of laboratory insects; recording and use of environmental data; use of constant temperature and humidity equipment. Pr.: Entom. 105 and 110 or 210.
- 485. Insect Control by Host Plant Resistance.** (2) I. Offered 1958-'59 and in alternate years, or on demand. 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. Two hours rec. and six hours lab. a week. Pr.: Entom. 105, 110 or 210.
- 531. Internal Insect Morphology.** (4) II. Offered in 1959-'60 and alternate years, or on demand. Internal anatomy of representative insects, plan and structure of the internal systems. Two hours rec. and six hours lab. a week. Pr.: Entom. 516.
- 545. Insect Physiology.** (3) II. Offered second semester, 1958-'59, 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, 1958-'59, 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, 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. 516 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, for use in laboratory identification.
- 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) S. 1959 and alternate summers. Classification and bionomics of immature stages of insects; practice in their identification. Six hours lab. a week. Pr.: Entom. 575 and 590.
- 651. General Bee Culture.** (2) II. Offered in 1958-'59 and alternate years. Structure, life history, general behavior, activity, and products of the honeybee; bee diseases and their eradication and control; relation of bees to agriculture and horticulture. Two hours rec. a week. Pr.: Entom. 105 and 110 or 210.
- 665. Advanced Bee Culture I.** (3) Offered on sufficient demand. Requeening, wintering, honey extraction, and marketing. Two hours rec. and three hours lab. a week. Pr.: Entom. 651.
- 670. Advanced Bee Culture II.** (3) Offered on sufficient demand. 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. 651.
- 710. Insect Toxicology.** (3) I. Offered in 1959-'60 and alternate years. 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 various fields of entomology. 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, or consent of instructor.
- 910. Pesticidal Residues.** (2) II, 1959-'60, 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. Offered in 1959-'60 and alternate years. Design of laboratory experiments and evaluation of pesticidal, mammalian, and plant toxicity; effects of formulations on efficiency; analytical methods for determining 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, host plant resistance, 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, mathematics, and consent of department.

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 pages 66-67.)

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, II. An introduction to feed milling processes. Two hours lec. and three hours lab. a week.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 402. Formula Feed Manufacture.** (3) I, II. Applying principles of nutrition and economics to the manufacture of formula feeds. Two hours

- lec. and three hours lab. a week. Pr.: Chem. 330 and Millg. 200 or consent of instructor.
- 405. Milling Technology.** (3) I. Technical study of special phases of wheat conditioning and flour milling. Two hours lec. and three hours lab. a week. Pr.: Millg. 125.
- 412. Advanced Flour and Feed Technology.** (3) II. Advanced study of engineering principles used in flour and feed manufacture. Two hours lec. and three hours lab. a week. Pr.: Millg. 405 or 600.
- 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, or consent of instructor.
- 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. Offered odd years. 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 in 1958-'59 and even years. 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.
- 482. Experimental Baking I.** (4) Practice in laboratory baking tests; comparison of methods, formulas, and flour; interpretation of results. Two hours lec. and six hours lab. a week. Pr.: Chem. 330 or 516 and 517.
- 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.

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

C. PEAIRS WILSON, *Director*

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 floriculture, fruit growing, ornamental horticulture, and vegetable crops. 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 related to the culture of horticultural plants and their use. Two hours rec. a week. Pr.: Bot. 110 or Gn. St. 150.
- 111. Elements of Horticulture Laboratory.** (1) I, II. Practical exercises related to the identification, care, propagation, transplanting, and use of horticultural plants. Three hours lab. a week. To be taken conc. with Hort. 110 if possible. 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

- 404. Spraying.** (3) II. Spray equipment and principles of spray application; chemical properties of insecticides, fungicides, fumigants, herbicides and their influences on physiological activities of plants. Two hours rec. and three hours lab. a week. Pr.: Upperclassmen and graduate students.
- 411. Literature of Horticulture.** (2) II. Offered in 1958-'59 and alternate years. Books and publications are reviewed and bibliographies prepared. Open only to junior, senior, and graduate students in horticulture. Two hours rec. a week.
- 422. Storage.** (3) I. Storage structures, harvesting and handling in relation to storage; physiological changes associated with the storage of flowers, fruits, nursery stock, and vegetables. Three hours rec. a week. Pr.: Junior standing.

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.

810. Horticultural Crop Breeding. (1-3) I, II, S. Problems and breeding practices related to fruit, ornamental, or vegetable plants. Pr.: One course in genetics and consent of instructor.

COURSES IN FLORICULTURE

FOR UNDERGRADUATE CREDIT

182. Greenhouse Construction and Management. (3) II. Greenhouse construction, heating, air conditioning, and crop planning. 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. One hour rec. and three hours lab. a week. Pr.: Consult instructor.

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

508. Commercial Floriculture I. (3) I. Study of environmental conditions governing the culture of greenhouse crops, special emphasis being placed upon the culture of the rose, carnation and chrysanthemum. Two hours rec. and three hours lab. a week.

512. Commercial Floriculture II. (3) II. Production of florist-cut flowers and potted plants. Two hours rec. and three hours lab. a week. Pr.: Hort. 217.

COURSES IN FRUIT CROPS

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.

FOR UNDERGRADUATE AND GRADUATE CREDIT

480. Principles of Fruit Growing I. (3) I. Offered in 1959-'60 and alternate years. Pruning, soil management, marketing, grading and packing, and variety identification by tree characteristics. Two hours rec. and three hours lab. a week. Pr.: Hort. 110, 111.

482. Principles of Fruit Growing II. (3) II. Offered in 1959-'60 and alternate years. Moisture relations, nutrition, fruit setting, and temperature effects. Two hours rec. and three hours lab. a week. Pr.: Hort. 110, 111.

484. Systematic Pomology. (3) I. Offered in 1958-'59 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.

FOR GRADUATE CREDIT

- 830. Advanced Pomology.** (1-3) I, II, S. Morphological and physiological changes occurring in fruit plants. Pr.: Hort. 481 or 484 or 488 and consent of instructor.

COURSES IN LANDSCAPE DESIGN

FOR UNDERGRADUATE CREDIT

- 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 1959-'60 and alternate years. 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 1958-'59 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 1958-'59 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 1959-'60 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 ORNAMENTAL HORTICULTURE

FOR UNDERGRADUATE CREDIT

- 139. Plant Materials I.** (3) I. Perennials, annuals, and evergreens for general ornamental planting. 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.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 414. Nursery Management.** (3) II. Offered in 1959-'60 and alternate years. Fundamental principles of layout and management of the modern nursery. Two hours rec. and three hours lab. a week. Pr.: Hort. 104.
- 415. Turf Management.** (2) I. Offered in 1958-'59 and alternate years. Methods and principles of establishing and maintaining special purpose turf. Pr.: Agron. 149, Bot. 410.
- 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.

COURSES IN VEGETABLE CROPS

FOR UNDERGRADUATE CREDIT

- 189. Vegetable Gardening.** (3) II. Principles underlying vegetable production for the home or local market; special attention given to farm and urban gardens. Two hours rec. and three hours lab. a week.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 495. Market Gardening.** (3) I. Offered in 1958-'59 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.
- 503. Vegetable Cash Crops.** (3) I. Offered in 1959-'60 and alternate years. Vegetables grown in Kansas as cash crops: potatoes, sweet-potatoes, watermelons, muskmelons, onions, and tomatoes. Three hours rec. a week. Pr.: Hort. 110, 111.

FOR GRADUATE CREDIT

- 820. Advanced Vegetable Crops.** (1 to 3) I, II, S. A specialized study related to the physiological development or handling of selected vegetable crops. Pr.: Hort. 495 or 503 and consent of instructor.

POULTRY HUSBANDRY

THOMAS B. AVERY, *Head of Department*

The poultry plant, which is devoted to breeding, rearing, and management of stock used for class and experimental work, occupies thirty-five acres, and is situated at the northeast corner of the campus. An additional eighty acres located northwest of the campus is used primarily as a turkey farm and rearing range for young chickens.

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 1959-'60 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) I, 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, 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. Offered in 1958-'59 and alternate years. Special emphasis on the physiological processes in reproduction, digestion, absorption, circulation, respiration, excretion and internal secretions. Three hours rec. a week. 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.
- 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.
- 442. Poultry Genetics.** (3) II. Offered in 1958-'59 and alternate years. An advanced genetics course directed primarily toward an understanding of the mode of inheritance of quantitative traits. Methods of utilizing information for maximum rates of improvement in poultry studied. Three hours rec. a week. Pr.: One semester each of elementary genetics and statistics.
- 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 Experimental 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.

Farm, 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 $4\frac{1}{2}$ 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. In 1958 an 80-acre farm was deeded to the Kansas Agricultural Experiment Station by the Garden City Irrigation Company. Investigations in irrigation, dryland farming, dairying, crop improvement, horticultural and specialty crops, 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, St. John, Hutchinson, Canton, Ottawa, Dodge City, Thayer, and Columbus.

The School of Arts and Sciences

PAUL M. YOUNG, *Acting Dean*

ORVAL EBBERTS, *Assistant Dean*

JOHN P. MURRY, *Academic Adviser*

The School of Arts and Sciences through its 21 departments of instruction offers programs of study which enable the student to acquire a broad preparation for life in a democratic society, to obtain a sound basis for his professional training, or to receive training in the specific skills required for service in his chosen field of endeavor.

The courses offered in the School of Arts and Sciences provide the student an opportunity to develop his skill in communication with others, to appreciate the heritage of the past, to understand the laws of nature, to participate in the arts, and to maintain a healthy body. Courses in specific subject matter provide the professional training for scientists, research workers, teachers, technicians, businessmen, and writers.

Students who enter the School of Arts and Sciences with a potential for unusual scholastic attainment will be invited to participate in the Honors Program. This selection is based on the performance of the student in high school and an evaluation of his ability in comparison with all entering students at Kansas State. The evaluation is determined by a study of performances on entrance tests which are administered to each student. Students participating in the Honors Program will have the requirements of their curriculums adjusted to their individual abilities and thus will be afforded the opportunity of obtaining a more individualized program of study in consultation with an Honors Program adviser. Students previously enrolled in the School of Arts and Sciences who have demonstrated outstanding scholastic achievement may also be invited to participate in the Honors Program.

In each of the curriculums there are certain requirements in General Education which can be satisfied by taking comprehensive courses or approved substitutions. The policy on substitutions is as follows:

Biology: A minimum of 8 hours in at least three of the following sub-groups: I. Bacteriology, II. Botany, III. Entomology, IV. Zoology.

Physical Science: A minimum of 8 hours in at least two of the following sub-groups: I. Mathematics, II. Chemistry, Physics, III. Geology, Physical Geography, Astronomy, Meteorology.

Social Science: A minimum of 8 hours in at least three of the following four sub-groups: I. Economics, Business, II. History, III. Government, Geography, IV. Sociology, Anthropology, Psychology.

Humanities: A minimum of 8 hours in at least three of the following sub-groups: I. Literature (in English or a foreign language), II. Art, Architecture, III. Music, IV. Philosophy, History.

A student in the School of Arts and Sciences may enroll in any one of the following curriculums:

Biological Science	Humanities
Business Administration	Music
Education	Physical Science
General	Social Science

A list of the areas in which a student may major in each of the curriculums together with the degree received is given in the following table. The specific requirements for a degree in the various curriculums are indicated on pages 97-109.

TABULATION OF CURRICULUMS AND MAJORS

CURRICULUM:	Biological Science	Physical Science	Humanities	Social Science	General	Business Administration	Education	Music
DEGREE:	B.S.	B.S.	B.A.	B.A.	B.A.	B.S. in Bus. Ad.	B.S. in Ed.	B. Music
	Bacteriology	Chemistry	Art	Economics	Area	Business Administration	Elementary Education	Applied Music
	Biogeography	Geography	English	Geography	Biological Science	Accounting	Music Education	
	Botany	Geology	History	Government	Humanities		Physical Education	
	Entomology	Geophysics	Mathematics	History	Physical Science		Secondary Education ¹	
	Psychology	Mathematics	Modern Languages	Psychology	Social Science		Art Education	
	Speech	Physics	Music	Sociology				
	Technical Journalism	Statistics	Philosophy	Speech	<i>Pre-Professional</i>			
	Zoology	Technical Journalism	Speech	Technical Journalism	Physical Therapy			
	<i>Pre-Professional</i>		Statistics	<i>Pre-Professional</i>	Pre-Dentistry			
	Medical Technology			Pre-Law	Pre-Medicine			
	Pre-Dentistry				Pre-Law			
	Pre-Veterinary							

1. Requirements for a major will be met in a subject-matter department.

CURRICULUM IN BIOLOGICAL SCIENCE

Bachelor of Science

Hours required for graduation, men and women 128

This curriculum is designed for those who are preparing for professional work in bacteriology, botany, entomology, zoology, or related fields. It provides preparation for graduate study, work in an industrial or government laboratory, or teaching.

The major in speech provides the training for those who wish to enter the field of speech therapy. Students who wish to do technical writing in the field of biological science should major in technical journalism in this curriculum.

Major Fields

Bacteriology (p. 111)	Psychology (p. 170)
Biogeography (p. 141)	Speech (p. 173)
Botany (p. 114)	Technical Journalism (p. 178)
Entomology (p. 83)	Zoology (p. 180)

Pre-Professional Majors

Medical Technology ¹	Pre-Dentistry ²
Pre-Veterinary ²	

REQUIREMENTS

I. Communications: Written Communications I and II, 6 hours; Oral Communication, 2 hours; English Proficiency.

II. Physical Education (4 semesters) and Air or Military Science (for men), 4 hours.

III. General Education: Introductory Social Sciences, or approved substitutions, 8 hours; Introduction to Humanities, or approved substitutions, 8 hours.

IV. Mathematics (except Pre-Veterinary students): College Algebra, 3 hours; Trigonometry or Elementary Logic, 3 hours.

V. Biological and Physical Science:

FOR ALL STUDENTS EXCEPT PRE-VETERINARY

<i>Course</i>	<i>Hours</i>	<i>Course</i>	<i>Hours</i>
Genetics or Heredity and Eugenics ⁴	2-3	General Organic Chemistry	5
General Chemistry or Chemistry I ⁵	5	General Botany ⁸	5
Nature and Development of Plants ⁶	3	General Entomology ⁸	3
Bacteriology ⁷	5	General Entomology Laboratory ⁸	1
General Geology or Geography elective ...	3	General Microbiology ⁶	3
General Zoology	5	Physics (Introductory courses) ⁵	3-8

1. Medical Technology and Public Health Laboratory Scientists: Fulfillment of the requirements of the Curriculum in Biological Science, including Baet. 200, 250, 270, 610, 670; Chem. 210, 230, 250, 435, 505, 650; Geog. 3 hours; Math. 190; Phys. 215; Zool. 465, 525, 540, and 635; and the equivalent of 24 hours credit taken during 12 months study at an approved hospital or laboratory, will qualify the individual for a Bachelor of Science degree in four years.

2. Pre-Veterinary: 64 semester hours for women or 68 semester hours for men are required for application to enter the School of Veterinary Medicine. Pre-Veterinary students will fulfill the requirements of the Curriculum in Biological Science, except for the mathematics requirement (Category IV), and will substitute for the biological and physical science requirements of that curriculum (Category V) the following courses: Chem. 210, 230, 505, and 250; Zool. 110, 420; A. II. 405, 106, and 113; D. II. 102 and 103; P. II. 104 and 105; Phys. 220. 1 semester hour of free elective. Upon satisfactory completion of these requirements and those of two years in Veterinary Medicine School, the student will be eligible to apply for a B. S. degree in the School of Arts and Sciences.

3. Pre-Dentistry: Students who choose to enter dental school at the end of the junior year must use the Curriculum in Biological Science leading to the B. S. degree. In addition to fulfilling the requirements of this curriculum, 19-21 hours of course work consisting of Psych. 310, Chem. 230 and 250; Zool. 405 and 465 or 420; Engl. 245; and one year's work at an approved dental school must be completed. *Students wishing to qualify for the B. A. degree* must use the four-year General Curriculum, fulfilling all four group requirements (Category VI) and taking 26 semester hours of recommended courses in the physical and biological sciences.

4. Not required of Medical Technology majors.
5. Choice to be specified by department of major.
6. Psychology majors only.
7. Not required of Psychology majors.
8. Not required of Medical Technology and Psychology majors.

VI. Remaining Hours in Major, Additional Tool and Related Courses, and Free Electives. For these requirements see catalogue for appropriate department on the pages indicated above.

Students in the first year of this curriculum may plan their courses as follows:

ALL STUDENTS EXCEPT PRE-VETERINARY

FRESHMAN

FIRST SEMESTER		SECOND SEMESTER	
<i>Course</i>	<i>Hours</i>	<i>Course</i>	<i>Hours</i>
Written Communications I	3	Written Communications II	3
Chemistry I	5	Organic Chemistry	5
College Algebra	3	Geology or Geography	3
Introductory Social Science I	4	Introductory Social Science II	4
Air or Military Science	1	Air or Military Science	1
Physical Education	0	Physical Education	0
Total	15 or 16	Total	15 or 16

PRE-VETERINARY

FRESHMAN

FIRST SEMESTER		SECOND SEMESTER	
<i>Course</i>	<i>Hours</i>	<i>Course</i>	<i>Hours</i>
Written Communications I	3	Chemistry II Rec.	3
Chemistry I	5	Chemistry II Lab.	2
Oral Communication I	2	Written Communications II	3
Air or Military Science	1	General Zoology	5
Elective	1	Air or Military Science	1
Physical Education	0	Physical Education	0
Social Science elective	4	Social Science elective	4
Total	15 or 16	Total	17 or 18

CURRICULUM IN BUSINESS ADMINISTRATION

Bachelor of Science in Business Administration

Hours required for graduation, men 124, women 120

This curriculum offers professional training for the student who expects to enter industry or commerce upon graduation. He may concentrate his work in one of the fields of marketing, finance, labor management or general business.

Because of the demand for competent accountants this curriculum also offers a major in accounting. This major provides all of the academic work needed to qualify for the examination for a certified public accountant. Qualified accountants find extensive employment opportunities in government and industry and many establish their own accounting firms.

Major Fields

Business Administration (p. 116) Accounting (p. 116)

REQUIREMENTS

I. Communications: Written Communications I and II, 6 hours; Oral Communication, 2 hours; English Proficiency.

II. General Algebra. 5 hours.

III. General Education: Man's Physical World I and II, or approved substitutions, 8 hours; Biology I and II, or approved substitutions, 8 hours; Introduction to Humanities I and II, or approved substitutions, 8 hours.

IV. Physical Education (4 semesters) and Air or Military Science (for men), 4 hours.

V. Economics I and II, Economic Geography,* American Government, American Industrial History, General Psychology, Introduction to Sociology,* Public Finance. Total: 24 hours.

VI. Social Science Elective.

VII. Remaining Hours in Major, Additional Tool and Related Courses, and Free Electives. For major requirements, see catalogue statement for Department of Business Administration on the pages indicated above.

Students in the first year of this curriculum may plan their courses as follows:

FRESHMAN

FIRST SEMESTER		SECOND SEMESTER	
<i>Course</i>	<i>Hours</i>	<i>Course</i>	<i>Hours</i>
Written Communications I	3	Written Communications II	3
Oral Communication I	2	General Algebra	5
Man's Physical World I	4	Man's Physical World II	4
Accounting I	3	Accounting II	3
American Industrial History	3	Air or Military Science	1
Air or Military Science	1	Physical Education	0
Physical Education	0		
Total	15 or 16	Total	15 or 16

* Not required of accounting majors.

CURRICULUM IN EDUCATION*Bachelor of Science**Bachelor of Science in Elementary Education**Bachelor of Science in Music Education**Bachelor of Science in Physical Education*

Hours required for graduation, men and women 126*

This curriculum is designed to prepare students to teach in elementary and secondary schools. Students can prepare for teaching the subjects commonly taught in these schools, including the specialized areas of art, music and physical education.

This curriculum provides the following major fields: art education, elementary education, secondary education, music education, physical education. "Special curriculums exist in Agricultural Education, page 70; Home Economics Teaching, page 230; and Industrial Education, page 193."

The major in elementary education meets the requirements for the Degree Elementary Certificate as established by the State Board of Education. The major in secondary education, which includes a departmental major in the teaching field, meets the requirements for a Secondary Three-Year Certificate as established by the State Board of Education.

The theoretical and practical instruction given in this curriculum with a major in physical education for men or physical education for women prepares the student for teaching physical and health education and for coaching athletic games. By proper selection of electives, the student may qualify to teach one or more subjects outside the field of specialization.

The curriculum in education offers a major in music education with two options: voice or instrumental music. The student who completes this curriculum with a major in music education is eligible to receive a special state certificate to teach music and by proper choice of subjects may qualify for certification in a subject matter field.

Students in other curriculums may qualify for teacher certification by meeting the requirements included in the curriculum in education.

Major Fields

Art Education	Physical Education
Elementary Education	Men
Music Education	Women
Secondary Education ¹	

REQUIREMENTS

I. Communications: Written Communications I and II, 6 hours; Oral Communication, 2 hours; English Proficiency.

II. General Education:

1. Social Sciences (including history): Introductory Social Sciences I and II, or approved substitutions, plus elective, 10 hours.
2. Humanities (literature, language, art): Introduction to Humanities I and II, or approved substitutions, plus elective,² 10 hours.
3. Physical and Biological Sciences (must include courses in both): Man's Physical World I and II, or approved substitutions, 8 hours. Biology I and II, or approved substitutions, 8 hours.
4. Electives in Areas 1, 2, and 3: General Psychology, 3 hours. Electives (may include five semester hours of basic courses in history and appreciation of music and art), 6 hours.

* Except for Music Education, which requires 132 hours for men and 128 hours for women.

1. Certification requirements may also be met by completing a major in any department plus 19 hours of professional education courses (Section III below) as electives.

2. Music Education majors are not required to take Introduction to Humanities I and II. (Communication Skills [8 hours] may be applied toward certification requirements.)

III. Professional Education:

1. Educational Psychology I and II, 6 hours.
2. Principles of Elementary Education or Principles of Secondary Education. One of the following three courses: Educational Sociology, Extra-class Activities, or Principles and Practices of Guidance, 6 hours.
3. A minimum of four semester hours in directed teaching and a minimum of three semester hours in methods, 7 hours.

IV. Physical Education (4 semesters) and Air or Military Science, 4 hours.

V. Remaining Hours in Major, Additional Tool and Related Courses, and Free Electives. The requirements for a major in a particular field follow. In certain cases, some of the major requirements may be substituted for some of the General Education requirements (II).

Art Education: Arch. 166, 176, 186, 450; Art 100 or Arch. 196; Art 102 or Arch. 196; Arch. 212 or Art 106; Art 130, 134, 139, 140, 402, 411, 430; Art 401 or Arch. 285; Psych. 465; and two-hour art elective.

Elementary Education: Ph. Ed. 136, 280; Art 190, 192; Music 110; Engl. 470; Educ. 350, 355, 360, 365; and Psych. 425. The selection of electives must be planned so that there will be at least 24 hours of elective and required courses in one of the following fields: art or 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 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.

Music Education: Music 116, 121, 132, 150, 155, 160, 165, 170, 175, 180, 183, 186, 190, 195, 222, 230, 235, 240, 245, 247, 250; Educ. 246 (6 hours); and Phys. 240. All students must include Spch. 535 as part of their electives, and those with an instrument option must also include Music 436. Each student must take 20 hours of Applied Music of which 8 hours must be in the major instrument or voice, 8 hours of other applied music courses, chosen in consultation with a departmental adviser, 2 hours in the Laboratory Orchestra and 2 hours in the Laboratory Choir. Two years of work in Piano Ensemble are required. Recital attendance and participation in a music organization are required each semester.

Physical Education: For Women, Ph. Ed. 136, 150, 175, 240 or 245, 250, 265, 270, 275, 280, 285, 290, 295, 300, 305, 315, 325, 330, 340 and 355.

Physical Education: For Men, Ph. Ed. 105, 110, 115, 121, 126, 130, 136, 150, 155, 160, 165, 170, 185, 275, 290 and 425. Sports Option (6 hours to be chosen from Ph. Ed. 190, 195, 200, 205); and Physical Education Option (2 hours to be chosen from Ph. Ed. 175, 210, 215 and course not selected in Sports Option).

Secondary Education: General science requirements may be met in any of the groups Biological Science, Chemistry, Geology, Geography, Physics, or Physical Science.

Biological Science: Bact. 110; Bot. 110, 670 or 690; Chem. 110; Entom. 105, 110; Gl. Gg. 205; Zool. 110, 465, 665; 12 hours in bacteriology, botany, entomology, and zoology.

Business Administration: B. A. 300, 310, 320, 360, 370, 381, 391, 405, 440, 730; Ec. So. 110, 120, 430; Engl. 155; H. G. P. 205, 256; Math. 145; Ec. So. 250.

Chemistry: Bot. 110; Chem. 210, 230, 250, 435, 511, 512, 585; Gl. Gg. 110; Math. 175, 190, 215, 230, 245; Phys. 130, 140, 560; Zool. 110.

Economics: Ec. So. 110, 120, 250, 430, 505; Math. 145 or 175, 320; B. A. 330; H. G. P. 256; 6 hours of history; 3 hours of sociology;

12 hours of courses numbered 400 or above in economics, agricultural economics, or business administration, to be selected with advice of student's adviser.

English: Engl. 145 or 150, 405 or 410, 415, 476, 555 or 565, and 16 hours in advanced courses in English and American literature.

Geography: Phys. 360; Ec. So. 110; H. G. P. 256; Gl. Gg. 110, 200, 205, 215, 220, 410, 735; 3 hours of American history and 12 hours of geography.

Geology: Bot. 110; Chem. 210, 230; Ec. So. 110; Gl. Gg. 110, 205, 405, 410, 416, 417; H. G. P. 256; Math. 175, 190, 215; Phys. 110, 120; Zool. 110.

Government: H. G. P. 115, 130, 175, 190, 256, and 261 or 270; 3 hours each in economics and sociology, plus 18 hours in government.

History: H. G. P. 115, 130, 175, 190, 256, and 261 or 270; 3 hours each in economics and sociology, plus 12 hours in history.

Journalism: Engl. 245; Gl. Gg. 205; H. G. P. 220, 256, 365; Journ. 050, 105, 115, 220, 221, 225, 265, 295, 625; 3 hours in English, 3 hours in American history, 9 hours in a modern language or 3 hours in English and 6 hours in social science; 5 hours in Technical Journalism.

Mathematics: Math. 175, 190, 215, 230, 245, 320, 415, 525; and 3 hours in mathematics.

Modern Languages: Arch. 200; Engl. 215, 225, 245, 255; H. G. P. 115, 130; Music 250; 6 hours in English, 6 hours in history; 24 hours in one modern language.

Physical Science: Bot. 110; Chem. 210, 230, 250, 505; Gl. Gg. 110, 405; Math. 175, 190, 215, 230; Phys. 130, 140, 560; Zool. 110.

Physics: Bot. 110;* Chem. 210, 230, 250, 505; 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; H. G. P. 115, 130, 256; Math. 145 or 175; 3 hours in government, 6 hours in American history, 3 hours in sociology; 18 hours in psychology beyond curricular requirements.

Sociology: Ec. So. 110, 250, 625, 665, 675 or 677, and 680; H. G. P. 256; 3 hours of college mathematics, logic or philosophy of science; 3 hours in economics; 3 hours in government; 6 hours in history; 10 hours in sociology.

Speech: Spch. 115, 135, 155 or 285, 165, 176, 216, 255, 285 or 366, 405 or 436, 450, 465, 526, 535; one course in two of the following: Dramatics, Radio or Correction; and 6 hours of speech electives.

Students in this curriculum may use the following to plan their first-year courses:

ELEMENTARY EDUCATION

FRESHMAN

FIRST SEMESTER		SECOND SEMESTER	
Course	Hours	Course	Hours
Written Communications I	3	Written Communications II	3
Man's Physical World I	4	Man's Physical World II	4
General Psychology	3	Art for Elementary Teachers	3
Oral Communication I	2	Personal and Community Health	3
Elective	3	Elective	3
Air or Military Science	1	Air or Military Science	1
Physical Education	0	Physical Education	0
Total	15 or 16	Total	15 or 16

* Recommended, but not required.

SECONDARY EDUCATION

FRESHMAN

FIRST SEMESTER		SECOND SEMESTER	
<i>Course</i>	<i>Hours</i>	<i>Course</i>	<i>Hours</i>
Written Communications I	3	Written Communications II	3
Physical Science	4	Physical Science	4
Elective and Major	8	General Psychology	3
Air or Military Science	1	Oral Communication I	2
Physical Education	0	Elective and Major	3
		Air or Military Science	1
		Physical Education	0
Total	15 or 16	Total	15 or 16

MUSIC EDUCATION

FRESHMAN

FIRST SEMESTER		SECOND SEMESTER	
<i>Course</i>	<i>Hours</i>	<i>Course</i>	<i>Hours</i>
Written Communications I	3	Written Communications II	3
Biology I	4	Biology II	4
Theory of Music I	3	Theory of Music II	3
Orch. Instr. I (String)	1	Orch. Instr. II (String)	1
Appreciation of Music	2	Oral Communication 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

PHYSICAL EDUCATION (MEN)

FRESHMAN

FIRST SEMESTER		SECOND SEMESTER	
<i>Course</i>	<i>Hours</i>	<i>Course</i>	<i>Hours</i>
Written Communications I	3	Written Communications II	3
Man's Physical World I	4	Man's Physical World II	4
Intro. to Physical Education	1	History of Physical Education	2
Physical Education Activities I	2	Physical Education Activities II	1
General Psychology	3	General Zoology	5
Oral Communication I	2	Air or Military Science	1
Air or Military Science	1	Physical Education	0
Physical Education	0		
Total	16	Total	16

PHYSICAL EDUCATION (WOMEN)

FRESHMAN

FIRST SEMESTER		SECOND SEMESTER	
<i>Course</i>	<i>Hours</i>	<i>Course</i>	<i>Hours</i>
Written Communications I	3	Written Communications II	3
Applied Nutrition	2	Phys. Ed. Orientation	1
Man's Physical World I	4	Man's Physical World II	4
General Psychology	3	General Zoology	5
Oral Communication I	2	Fund. of Rhythms	2
Tumbling, Rec. Sports.....	2	Physical Education Lecture	0
Physical Education Lecture	0	Physical Education	0
Physical Education	0		
Total	16	Total	15

GENERAL CURRICULUM*Bachelor of Arts*

Hours required for graduation, men 132, women 128

This curriculum is designed for the student who wishes to major in the broad areas of biological science, physical science, humanities and social science rather than to concentrate his work in the more specialized area of the individual academic disciplines. In addition to providing a broad basis for a liberal education this curriculum provides the basic training for students who are preparing to enter professional schools of law, medicine or dentistry. Students who plan to major in physical therapy should enroll in this curriculum.

Area Majors	Major Fields	Pre-Professional Majors
Biological Science		Physical Therapy ¹
Physical Science		Pre-Medicine
Humanities		Pre-Dentistry ²
Social Sciences		Pre-Law ³

REQUIREMENTS

I. Communications: Written Communications I and II, 6 hours; Oral Communication, 2 hours; English Proficiency.

II. Physical Education (4 semesters) and Air or Military Science (for men), 4 hours.

III. General Psychology: Civilization I and II, 9 hours.

IV. Modern Language:⁴ Each student must attain the degree of proficiency in one language indicated by fulfillment of a 12-hour foreign language requirement. High school and college study may be combined, depending upon the student's proficiency. For example, 4 units of a single high school language or 2 units of a single high school language plus 6 hours of college credit in the same language may fulfill the requirement.

V. College Mathematics, Logic, or Approved Philosophy Course.⁵

VI. Three of the following four groups are required.⁶ (Major requirements will be substituted for the fourth group.)

Area 1: Biological Science. Biology I and II, or approved substitutions, and an additional course in the area, preferably General Microbiology, General Entomology and General Entomology Laboratory, or any approved introductory biological science course including a laboratory. 11-13 hours.

Area 2: Physical Science. Man's Physical World I and II, or approved substitutions, and either Descriptive Astronomy, Introductory Meteorology, or Historical Geology. 11 hours.

Area 3: Humanities. Introduction to Humanities I and II, or approved substitutions, and an additional 6 hours in literature, normally either American Literature I and II, English Literature I and II, or Books and Men I and II. At the discretion of student and adviser, the additional 6-hour requirement may be satisfied by other literature courses in any language. 14 hours.

Area 4: Social Sciences. Introductory Social Science I and II, or approved substitutions, and an additional 6 hours in geography (other than Physi-

1. Plus an equivalent of 30 hours credit taken during 12 months study in an off-campus Certificate Program.

2. Pre-Dentistry students who choose to enter dental school at the end of the junior year must use the Curriculum in Biological Science and take the B. S. degree.

3. Pre-Law students should take recommended courses in government and accounting.

4. Except for Pre-Professional majors, for whom the equivalent of 9 hours of College courses in one language is required.

5. Pre-Medicine and Pre-Dentistry students must take College Algebra.

6. Except for Pre-Medicine and Pre-Dentistry students who must fulfill *all four* group requirements. Physical Therapy students will omit Area 1, and Pre-Law students will omit area of major concentration.

cal Geography), Economics, Social Psychology, or courses above the introductory level in government or sociology. 14 hours.

VII. Major Requirements: Area Majors (One of the following four groups will be chosen as an Area Major):

1. **Biological Science:** General Microbiology, General Botany, General Entomology and General Entomology Laboratory, and General Zoology; in addition, 16 hours in two or more of the following fields: bacteriology, botany, entomology, psychology, and zoology. At least 12 of these 16 hours must be in courses above the introductory level. 33 hours.

2. **Physical Science:** College Algebra must be taken to satisfy the Mathematics, Logic, or Approved Philosophy Course requirement; Chemistry I and II, General Geology, Plane Trigonometry, and General Physics I and II; in addition, 15 hours in two or more of the following fields: chemistry, geology, mathematics, and physics. At least 12 of these 15 hours must be in courses above the introductory level. 37 hours.

3. **Humanities:** Appreciation of Architecture, History of Painting and Sculpture, Introduction to Literature, Shakespeare, and Appreciation of Music; in addition, 21 hours in two or more of the following fields: art, English, history, languages (above the required proficiency), music, philosophy, and speech arts (except Radio Speech). At least 12 of these 21 hours must be in courses above the introductory level. 35 hours.

4. **Social Sciences:** American Government (3 hours), Economics (3 hours), Geography (3 hours), Sociology (3 hours), and U.S. History (3 hours); in addition, 21 hours in two or more of the following fields: economics, geography, government, history, psychology, and sociology. At least 12 of these 21 hours must be in courses above the introductory level. 35 hours.

Pre-Professional Majors

1. **Physical Therapy:** 21 hours of courses in the Biological Sciences including: Bact. 110 and 200, Zool. 110 and 465, and Psych. 415 and 435. The last 30 hours of major course work for the B. A. degree will be transferred from the off-campus Certificate course.

2. **Pre-Medicine and Pre-Dentistry:** 26 hours of courses from the physical and biological sciences.

3. **Pre-Law:** Recommended courses in government and accounting.

VIII. Remaining Hours in Free Electives.

Students in the first year of this curriculum may plan their courses as follows:

FRESHMAN			
FIRST SEMESTER		SECOND SEMESTER	
<i>Course</i>	<i>Hours</i>	<i>Course</i>	<i>Hours</i>
Written Communications I	3	Written Communication II	3
Civilization I	3	Civilization II	3
Man's Physical World I or Biology I	4	Man's Physical World II or Biology II	4
Elective or Major	6	Oral Communication I	2
Air or Military Science	1	Elective or Major	4
Physical Education	0	Air or Military Science	1
		Physical Education	0
Total	16 or 17	Total	16 or 17

CURRICULUM IN HUMANITIES

Bachelor of Arts

Hours required for graduation, men 124, women 120

This curriculum provides the opportunity for students to obtain a broad, liberal education with a major concentration in one of the humanities: art, English, history, mathematics, modern languages, music, philosophy, speech, statistics. Students may prepare for professional careers in any of these areas, for further graduate study, or for the enrichment of their personal lives.

Major Fields

Art (p. 235)	Music (p. 158)
English (p. 135)	Philosophy (p. 149)
History (p. 145)	Speech (p. 173)
Mathematics (p. 151)	Statistics (p. 151)
Modern Languages (p. 156)	

REQUIREMENTS

I. Communications: Written Communications I and II, 6 hours; Oral Communication, 2 hours; English Proficiency.

II. Foreign Language: Each student must attain the degree of proficiency in one language indicated by fulfillment of a 12-hour foreign language requirement. High school and college study may be combined, depending upon the student's proficiency. For example, 4 units of a single high school language or 2 units of a single high school language plus 6 hours of college credit in the same language may fulfill the requirement.

III. College Mathematics, Logic, or Approved Philosophy Course, 3 hours.

IV. Physical Education (4 semesters) and Air or Military Science (for men), 4 hours.

V. General Education: Man's Physical World I and II, or approved substitutions, 8 hours; Biology I and II, or approved substitutions, 8 hours; Introductory Social Science I and II, or approved substitutions, 8 hours.

VI. Social Science courses beyond the introductory level, 4 hours.

VII. History, 6 hours.

VIII. Literature, English, American, or foreign, 6 hours.

IX. Remaining Hours in Major, Additional Tool and Related Courses, and Free Electives. For these requirements, except art, see catalogue statement for appropriate department on the pages indicated above.

The requirements for a major in art are: 45 semester hours chosen from the following courses: Arch. 126, 150, 166, 176, 186, 196, 200, 212, 285, 290, 410, 415, 450; and Art 134, 139, 140, and 411.

Students in the first year of this curriculum may plan their courses as follows:

FIRST SEMESTER		FRESHMAN		SECOND SEMESTER	
<i>Course</i>	<i>Hours</i>	<i>Course</i>	<i>Hours</i>	<i>Course</i>	<i>Hours</i>
Written Communications I	3	Written Communications II	3	Written Communications II	3
Foreign language	3	Foreign language	3	Foreign language	3
Man's Physical World I	4	Man's Physical World II	4	Man's Physical World II	4
Oral Communication I	2	Elective	2	Elective	2
History	3	History	3	History	3
Air or Military Science	1	Air or Military Science	1	Air or Military Science	1
Physical Education	0	Physical Education	0	Physical Education	0
Total	15 or 16	Total	15 or 16	Total	15 or 16

CURRICULUM IN APPLIED MUSIC

Bachelor of Music

Hours required for graduation, men 132, women 128

The student in this curriculum is offered the option of majoring in instrument or voice. These options give the student the opportunity for personalized major instruction in voice, piano, violin, organ, or other instruments and the opportunity to minor in another of these fields. See also p. 158.

REQUIREMENTS

I. Communications: Written Communications I and II, 6 hours; Oral Communications, 2 hours; English Proficiency.

II. Physical Education (4 semesters) and Air or Military Science (for men), 4 hours.

III. General Psychology (3 hours) and **Physics for Musicians** (2 hours).

IV. General Education: Man's Physical World I and II, or approved substitutions; **or** Biology I and II, or approved substitutions; **or** Introductory Social Science I and II, or approved substitutions, 8 hours.

V. Modern Language, 9 hours.

VI. Remaining Hours in Major, Additional Tool and Related Courses, and Free Elective. For major requirements, see catalogue statement for Department of Music, p. 158.

Students in the first year of this curriculum may plan their courses as follows:

FIRST SEMESTER		FRESHMAN		SECOND SEMESTER	
<i>Course</i>	<i>Hours</i>	<i>Course</i>	<i>Hours</i>	<i>Course</i>	<i>Hours</i>
Written Communications I	3	Written Communications II	3	Written Communications II	3
Theory of Music I	3	Theory of Music II	3	Theory of Music II	3
Physics for Musicians	2	Appreciation of Music	2	Appreciation of Music	2
Oral Communication I	2	General Psychology	3	General Psychology	3
Applied Music	5	Applied Music	5	Applied Music	5
Air or Military Science	1	Air or Military Science	1	Air or Military Science	1
Physical Education	0	Physical Education	0	Physical Education	0
Total	15 or 16	Total	16 or 17	Total	16 or 17

CURRICULUM IN PHYSICAL SCIENCE

Bachelor of Science

Hours required for graduation, men 132, women 128

This curriculum provides for the needs of the student who desires major work in physical sciences. By choosing the proper electives he may prepare himself for graduate, commercial, or government laboratory work, or for secondary teaching. Students who plan to do technical writing in the physical sciences should plan to major in technical journalism.

Major Fields

Chemistry (p. 120)	Mathematics (p. 151)
Geography (p. 144)	Physics (p. 167)
Geology (p. 142)	Statistics (p. 151)
Geophysics (p. 167)	Technical Journalism (p. 178)

REQUIREMENTS

I. Communications: Written Communications I and II, 6 hours; Oral Communication, 2 hours; English Proficiency.

II. College Algebra, Trigonometry, Analytical Geometry and Calculus I and II, 14 hours.

III. Chemistry I and II, Qualitative Analysis, 11 hours.¹

IV. General Geology, 3 hours.

V. Engineering Physics I and II, 10 hours.²

VI. General Education: Biology I and II, or approved substitutions, 8 hours; Introductory Social Sciences I and II, or approved substitutions, 8 hours; Introduction to Humanities I and II, or approved substitutions, 8 hours.

VII. Physical Education (4 semesters) and Air or Military Science, 4 hours.

VIII. Remaining Hours in Major, Additional Tool and Related Courses, and Free Electives. For these requirements, see catalogue statement for appropriate department on the pages indicated above.

Students in the first year of this curriculum should plan their courses as follows:

FIRST SEMESTER		FRESHMAN		SECOND SEMESTER	
<i>Course</i>	<i>Hours</i>	<i>Course</i>	<i>Hours</i>	<i>Course</i>	<i>Hours</i>
Written Communications I	3	Written Communications II	3	Written Communications II	3
Chemistry I	5	Chemistry II	3	Chemistry II	3
College Algebra	3	General Geology	3	General Geology	3
Plane Trigonometry	3	Analytical Geometry and Calculus I	4	Analytical Geometry and Calculus I	4
Oral Communication I	2	Elective and Major	3	Elective and Major	3
Air or Military Science	1	Air or Military Science	1	Air or Military Science	1
Physical Education	0	Physical Education	0	Physical Education	0
Total	16 or 17	Total	16 or 17	Total	16 or 17

1. Change to Chemistry I and II (8 hours) for students intending to major in mathematics or statistics, or to Chemistry I and II and Chemistry II Laboratory (10 hours) for students intending to major in geography, geology, geophysics, or physics.

2. Change to General Physics I and II (8 hours) for students intending to major in geography, geology, mathematics, or statistics.

CURRICULUM IN SOCIAL SCIENCE*Bachelor of Arts*

Hours required for graduation, men 124, women 120

This curriculum is designed for students who plan to major in economics, geography, government, history, psychology, sociology, speech, or technical journalism. By his choice of electives, a student may prepare himself in his field of specialization for research, graduate study, teaching or employment in business concerns or government agencies, including the Foreign Service. Students who plan to enter law school may enroll in this curriculum and should take recommended courses in government and accounting.

Major Fields

Economics (p. 125)	Psychology (p. 170)
Geography (p. 144)	Sociology (p. 125)
Government (p. 145)	Speech (p. 173)
History (p. 145)	Technical Journalism (p. 178)

Pre-Professional Major

Pre-Law

REQUIREMENTS

I. Communications: 8 hours. Written Communications I and II, 6 hours; Oral Communication, 2 hours; English Proficiency.

II. Foreign Languages: Each student must attain the degree of proficiency in one language indicated by fulfillment of a 9-hour foreign language requirement. High school and college study may be combined, depending upon the student's proficiency.

III. College Mathematics, Logic, or Approved Philosophy Course, 3 hours.

IV. Physical Education (4 semesters) and Air or Military Science (for men), 4 hours.

V. General Education: Man's Physical World I and II, or approved substitutions, 8 hours; Biology I and II, or approved substitutions, 8 hours; Introduction to Humanities I and II, or approved substitutions, 8 hours.

VI. Literature: English, American, or foreign, 6 hours.

VII. 3 hours in each of the following: economics, geography, government, psychology, and sociology.

VIII. History, 6 hours.

IX. Social Science Elective (outside major field), 6 hours.

X. Remaining Hours in Electives and Major. For major requirements, see catalogue statement for appropriate department on the pages indicated above.

Students in the first year of this curriculum may plan their courses as follows:

FIRST SEMESTER		FRESHMAN		SECOND SEMESTER	
<i>Course</i>	<i>Hours</i>	<i>Course</i>	<i>Hours</i>	<i>Course</i>	<i>Hours</i>
Written Communications I	3	Written Communications II	3	Written Communications II	3
Foreign language	3	Foreign language	3	Foreign language	3
Man's Physical World I	4	Man's Physical World II	4	Man's Physical World II	4
Oral Communication I	2	Social Science	3	Social Science	3
Social Science	3	Elective	3	Elective	3
Air or Military Science	1	Air or Military Science	1	Air or Military Science	1
Physical Education	0	Physical Education	0	Physical Education	0
Total	15 or 16	Total	16 or 17	Total	16 or 17

AIR SCIENCE

CHARLES H. WILKINS, *Head of Department*

Kansas General Statutes, 1949, 76-436, as amended by the 1957 Legislature, 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, except those exempted by the Registrar due to age, religious belief, foreign citizenship, and previous training in the armed services.

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 upon call by the Secretary of the Air Force for a designated period in accordance with the needs of the Department of the Air Force at that time.

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.

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.

- 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.
- 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.

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.
- 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.
- 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. 207, 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. 207, 213.
- 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 Eight Conference. The other members are the University of Colorado, Iowa State College, the University of Kansas, the University of Missouri, the University of Nebraska, the University of Oklahoma, and Oklahoma State University.

Kansas State College, as a member of the Conference, participates with member schools in football, basketball, baseball, track (indoor and outdoor), tennis, golf, swimming, wrestling, and cross country. Intercollegiate competition is open to all men students and is coached by a staff who are specialists in their respective sports.

BACTERIOLOGY

ALFRED F. BORG, *Head of Department*

Students majoring in bacteriology should enroll in the Curriculum in Biological Science. (See p. 97.)

For a major (VI, p. 98), 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 of courses above the introductory level; Chem. 210, 230, 250, 435, 505, and 650; Geog. 200; Phys. 110, 120; Spch. 116; and A. H. 405. Math. 175, 190 should be taken to satisfy requirement IV (p. 97).

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

- 110. General Microbiology.** (3) I, II, S. Morphology, physiology, 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. 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. Study of the biochemical changes wrought by bacteria. Three hours rec. and six hours lab. a week. Required of students majoring in biological science. Pr.: Chem. 230 and 505 or equiv.
- 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. Cont. 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 equiv.
- 480. Soil Microbiology.** (3) II. Microbial population of the soil and its role in soil fertility. Pr.: Bact. 110 or equiv.; Chem. 330 or equiv.
- 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, S in odd years. 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 or consent of instructor.
- 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.

- 840. Advanced Immunology.** (3) S. Recent advances in theoretical and practical antigen and antibody relationships and the application of this knowledge to human and veterinary immunology. Pr.: Bact. 670 or equiv.
- 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 PATHOLOGY

STUART M. PADY, *Head of Department*

Students majoring in botany should enroll in the Curriculum in Biological Science. (See p. 97.)

For a major in botany (VI, p. 98), the requirements are Bot. 110 and nineteen hours of botany courses above the introductory level.

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.
- 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, 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 in odd years. 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.
- 470. Principles of Plant Disease Control.** (3) II in odd years. Host-parasite relationships. Methods of control, chemical, cultural, and biological; nature and inheritance of resistance; breeding disease-resistant varieties. Two hours rec. and three hours lab. a week. 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) I. Structure and dynamics of vegetation. Two hours rec. and three hours field work or lab. work a week. Pr.: 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. Six hours a week of combined rec. and lab. work. 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. 451.
- 850. Plant Pathological Technic.** (3) II in even years. Technic in methods of isolation, culture and inoculation used in studying the causal organisms of plant diseases. One hour rec. and six hours lab. a week. Pr.: Bot. 410.
- 860. Advanced Plant Ecology.** (4) II in even years. Advanced study of the relationships of plants and environment at various plant developmental stages. Eight hours combined rec. and lab. a week. Pr.: Bot. 300 or 600, and 670.
- 870. Advanced Systematic Botany.** (4) II in odd years. Advanced studies in morphology, classification, nomenclature, collecting and identification of vascular plants. Two hours rec. and six hours lab. a week. Pr.: Bot. 690.

- 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 Department of Business Administration offers professional training in business for men and women desiring to enter commerce, industry, or a professional career. Students may specialize in either business or accounting. Business majors have the opportunity of developing areas of special interest in management, marketing, finance, personnel, or secretarial science. Accounting majors may prepare for careers in either public or private accounting. Those persons preparing to teach commerce subjects in high school should follow the Secondary Education Curriculum for Business Administration, p. 101.

To graduate in business administration, students, except dual degree candidates, must comply with the core curriculum, p. 99. Items I, III, and IV of the curriculum are specified. The following paragraphs detail the course work necessary to complete items II, V, VI, and VII:

Business: For a major in business the requirements are: Item II, p. 99, Math. 145; item V, p. 99, Gl Gg. 215, H. G. P. 205, 256, Psych. 310, and Ec. So. 110, 120, 256; item VI, p. 99, Ec. So. 430; item VII, p. 99, B. A. 275, 280, 300, 310, 321, 401, 405, 440, 460, and 511, Math. 320, Engl. 155, nine semester hours of special business electives chosen with the approval of the Business Administration Department, and sufficient additional work to fulfill the graduation requirement of 124 hours for men and 120 hours for women.

Accounting: For a major in accounting the requirements are: Item II, p. 99, Math. 145; item V, p. 99, H. G. P. 205, 256, Psych. 310, and Ec. So. 110, 120; item VI, p. 99, Ec. So. 430; item VII, p. 99, B. A. 275, 280, 300, 310, 320, 401, 405, 460, 511, 730, 735, 740, 745, 750, 755, Math. 160, 320, Engl. 155, and sufficient additional work to fulfill the graduation requirements of 124 hours for men and 120 hours for women. Students preparing for the examination for Certified Public Accountant should include elective accounting courses, selected with the help of the accounting staff, for a portion of the work necessary to complete item VII.

Dual Degree: Students desiring to earn a B. S. Degree in Business Administration in addition to another undergraduate degree (see p. 192) should complete the following course work: B. A. 275, 280, 330, 401, 405, 440, 460, 511, 730, Ec. So. 110, 120, 430, and six hours of business electives chosen with the approval of the Business Administration Department.

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

COURSES IN BUSINESS ADMINISTRATION

FOR UNDERGRADUATE CREDIT

- 130. Introduction to Business.** (3) I, II. A survey of the content of the Business Administration Curriculum. The course establishes a framework for the curriculum, develops vocabulary, and gives purpose and objectivity to the study of business administration.
- 140. Personal Finance.** (2) I, II. 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.

- 275. Business Law I.** (3) I, II, S. Contracts, agency, and sales.
- 280. Business Law II.** (3) I, II, S. Negotiable instruments, partnerships, and corporations.
- 300. Accounting I.** (3) I, II, S. An introduction to basic accounting principles, financial statements, special journals, and controlling accounts. Six hours rec. and lab. a week.
- 310. Accounting II.** (3) I, II, S. Accounting for partnerships and corporations, including asset accounts, bonds, manufacturing accounts, payrolls, and miscellaneous items. 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.
- 321. Managerial Accounting.** (3) I, II. Development and use of accounting information as an instrument of management control. Coverage includes analysis of financial statements, cost accounting applications, internal controls, budgeting, fundamentals of income tax, and accounting reports to management. Pr.: B. A. 310 or 330.
- 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.
- 335. Data Processing.** (2) II. The application of data processing and punched card machines and systems to the operation of a business enterprise, including capabilities, limitations, system design, and operation. Pr.: Math. 375.
- 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. Cont. of Typewriting I. Pr.: B. A. 360.
- 381. Shorthand I.** (4) I, II, S. Fundamentals of Gregg Shorthand. Meets five hours each week.
- 391. Transcription I.** (3) II. Advanced shorthand with speeds of 100 to 120 or higher. Setting up of business letters in various styles—gaining of speed in transcription of letters and manuscripts. Pr.: B. A. 381.
- 395. Office Practice and Technique.** (3) I. Training for the executive secretary. The course work covers dictation and transcription, secretarial functions and responsibilities, and the use of office machines. Pr.: B. A. 391.
- 396. Office Management.** (3) II. An examination of the theory and practice of office management. The scope of the course is defined by the five functions of the office manager—organizing, staffing, directing, planning, and controlling.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 401. Administration.** (3) I. Fundamental principles and techniques of management of business activities. The course provides a basic understanding of administrative problems through the study of organization, planning, control, and communications. Pr.: B. A. 130 or consent of instructor.
- 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 investment are compared as to risk, return, and intrinsic value. Pr.: B. A. 310 or 330 and 405.
- 425. Property Insurance.** (2) I. Fire, marine, automobile, title, credit insurance, and corporate bonding; also other forms of property insurance. Pr.: Ec. So. 110.
- 430. Life Insurance.** (2) II. 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. A study of the fundamental principles involved in extending credit and an analysis of present collection practices. Pr.: B. A. 440.
- 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 and junior standing.
- 445. Retailing.** (3) I and S. An introduction to retailing from the management point of view. Study of retail 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.
- 446. Salesmanship.** (2) I. An introduction to the theory and practice of sales activities which constitute the daily work of the salesman. The course content is selected so as to be of value to students throughout the College as well as to those majoring in business. Pr.: Junior standing.
- 450. Sales Management.** (3) II. 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.
- 460. Personnel Administration.** (3) I, II, S. Development and use of principles of management as applied to the administration of personnel. Planning, organizing, and controlling the labor force of a firm, including consideration of the problems of employee selection, training, compensation, supervision, and separation. The effect of collective bargaining on personnel administration. Pr.: Ec. So. 110, junior standing.
- 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 unit costs of goods manufactured and sold, and the utilization of such data by management. 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. Valuation of balance sheet accounts. Pr.: B. A. 320.
- 745. Advanced Accounting.** (3) I, II. 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. 320 or 730.
- 755. Tax Accounting.** (3) II. 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. 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) A study of problems given in various C. P. A. examinations. Pr.: B. A. 745 and consent of instructor.
- 781. Accounting Internship.** (3) I. Provides five weeks of practical diversified public accounting experience for accounting majors. The course objective is a broader educational experience for participating students. Pr.: B. A. 745, 755, 765, 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
- 820. Accounting Theory Seminar.** (3) II. A critical examination of accounting literature, with emphasis upon accounting theory and intensive study of current issues in accounting theory. Pr.: Consent of instructor.
- 830. Business Finance Seminar.** (3) I. An examination of the literature in the area of business finance covering recent developments in money markets, government regulations, and current finance. Pr.: Consent of instructor.
- 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.

CHEMISTRYTHOMAS D. O'BRIEN, *Head of Department*

For a major in chemistry, the student should enroll in the Curriculum in Physical Science, Chemistry Major. The standard core of courses in this curriculum should be taken. In addition to these core courses the Department of Chemistry requires completion of the following courses in order to fulfill the requirements for the Bachelor of Science degree: Math. 245, Chem. 451, 501, 511, 512, 516, 517, 585, 590, 595, 600, 095 (junior and senior years). A minimum of five semester hours must be selected from Chem. 399, 442, 501, and/or any course of a number higher than the required courses in the field. One of these courses must include a laboratory. Each candidate for a degree must also demonstrate a proficiency (reading knowledge) of German. Completion of this curriculum provides certification by the American Chemical Society.

Listed prerequisites can be waived upon consent of instructor.

For a minor in chemistry the following courses should be completed: Chem. 210, 230, 250, 435, and 505.

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

COURSES IN GENERAL CHEMISTRY

FOR UNDERGRADUATE CREDIT

- 095. Chemistry Seminar.** (0) I, II. Required of all juniors and seniors in the Physical Science, Chemistry Major Curriculum. The meetings of the seminar are devoted to special topics, discussions, and items of interest to the undergraduate student majoring 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. 110 or 210.
- 170. Chemistry E-II.** (4) I, II, S. Cont. 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.** (1,2,3) I, II, S. Analytical, inorganic, organic, physical, or biochemistry.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 401.* Geochemistry.** (2) II. Chemistry and composition of the earth. Chemical reactions in the hydrosphere, atmosphere, and biosphere. Chemistry of the igneous, sedimentary, and metamorphic rocks. Pr.: Chem. 230, 250, Geol. 110, 405, 416 and 417, or consent of instructor.

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

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

501. Inorganic Chemistry. (3) I 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

755. Inorganic Techniques. (2,3) I, II, S. Synthesis of selected types of inorganic compounds and separation of elements from complex ores, with emphasis on less common laboratory techniques. Six to nine lab. hours a week. Pr.: Chem. 451.

802. Graduate Seminar in Inorganic Chemistry. (0-1) I, II.

807. Survey of Inorganic Chemistry. (1) I, II, S. An independent study and outside reading course followed by a comprehensive written examination.

820. Systematic Inorganic Chemistry. (3) II, 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.

451.* Quantitative Analysis I. (4) I, S. General procedures of gravimetric and colorimetric analyses. Two hours rec. and six hours lab. a week. Pr.: Chem. 250 or 270.

456.* Quantitative Analysis II. (4) II, S. General procedures of volumetric analysis. 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. 451, 456, 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. Radiactive Tracer Techniques.** (3) II and alt. S. (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

- 801. Graduate Seminar in Analytical Chemistry.** (0-1) I, II.
- 806. Survey of Analytical Chemistry.** (1) I, II, S. An independent study and outside reading course followed by a comprehensive written examination.
- 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 170 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. General principles of organic chemistry and survey of the main classes of aliphatic and aromatic compounds. For chemistry and chemical engineering majors and others who desire a more thorough course than Chem. 310, 330 or 505. Pr.: Chem. 435 or 451. 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. Cont. of Chem. 511. 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

- 803. Graduate Seminar in Organic Chemistry.** (0-1) I, II.
- 808. Survey of Organic Chemistry.** (1) I, II, S. An independent study and outside reading course followed by a comprehensive written examination.
- 858. Advanced Organic Chemistry Laboratory.** (3) II. One hour rec. and six hours lab. a week. Modern techniques employing specialized equipment and apparatus, such as high pressure reactions, heterogeneous catalysis, vacuum distillation, pyrolysis, etc. Pr.: Chem. 516, 525.
- 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 of alt. years. Pr.: Chem. 860.
- 864. Heterocyclic Compounds.** (2) II of alt. years and alt. S. Pr.: Chem. 860.
- 865. Theoretical Organic Chemistry I.** (3) I. Bond structure, stereochemistry, relation of constitution to physical properties, solvents, and other general topics of a theoretical nature. Pr.: Chem. 525 and 860.
- 867. Theoretical Organic Chemistry II.** (3) II. The principal mechanisms of organic reactions and various types of evidence for them. Recent developments are followed in the current literature. Pr.: Chem. 525 and 860.
- 868. Natural Products.** (3) I of alt. years. Structure proofs and synthetic approaches to important natural products, such as terpenes, alkaloids, and plant pigments. Pr.: Chem. 525, 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 451 and 456, and 585 or conc. registration.
- 595.* Physical Chemistry II.** (3) II. Thermodynamics and chemical equilibrium, reaction kinetics, electrochemistry, etc. Pr.: Chem. 590, 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

- 804. Graduate Seminar in Physical Chemistry.** (0-1) I, II.
- 809. Survey of Physical Chemistry.** (1) I, II, S. An independent study and outside reading course followed by a comprehensive written examination.

- 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) I in alt years. Pr.: Chem. 600, 635.
- 915. Electronic Spectra of Molecules.** (3) I. Pr.: Chem. 886, Phys. 890, or consent of instructor.

COURSES IN AGRICULTURAL AND BIOLOGICAL CHEMISTRY

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 645. Chemistry of the Carbohydrates.** (2) I. General properties, reactions and proof of structure of monosaccharides, oligosaccharides, and polysaccharides. Pr.: Chem. 516, 517 and 650, or consent of instructor.
- 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, 595, or consent of instructor.
- 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.
- 680. Intermediary Metabolism.** (3) II, S. Intermediary metabolism of carbohydrates, fats, and proteins. Pr.: Chem. 650.
- 685. Hormones.** (2) I. 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) 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

- 805. Graduate Seminar in Agricultural and Biological Chemistry.** (0-1) I, II.

- 810. Survey of Agricultural and Biological Chemistry.** (1) I, II, S. An independent study and outside reading course followed by a comprehensive written examination.
- 812. Proteins.** (2) I in odd years. Pr.: Chem. 600, 650, or equivalent.
- 890. Theoretical Biochemistry.** (2) II in even years. Pr.: Chem. 600, 650, or consent of instructor.

ECONOMICS AND SOCIOLOGY

GEORGE MONTGOMERY, *Head of Department*

(Courses in Agricultural Economics and Rural Sociology are offered by the School of Agriculture; courses in Accounting and Business Administration are offered by the Department of Business Administration.)

Economics:

Courses in economics will help students understand the principles underlying the production and distribution of income, the factors that cause business prosperity and depression, and the principles governing best use of labor and capital. Students may pursue concentrated study in the fields of economic theory, money and banking, finance, labor relations, and international trade.

By studying economics, the student may prepare himself for a career in business and industry, in government, or in education. He may also acquire the background needed as a citizen for understanding and appraising the economic policies of governments.

Those students 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 Sciences with a major in economics. (See page 109.) Those students interested in economics who also desire to prepare for teaching in secondary schools should enroll in the Curriculum in Secondary Education with a major in economics. (See page 101.) The sequence of courses should be planned in cooperation with a faculty member of the Department of Economics and Sociology who will be assigned as the student's adviser.

The special requirements in the Curriculum in Social Sciences with a major in economics (X, p. 109) are: Ec. So. 120, 430, 505; Math. 320, B. A. 330; and twelve semester hours of courses numbered 400 or above in economics, agricultural economics or business administration selected in consultation with the student's adviser. Math. 145 or 175 should be used to satisfy requirement III, p. 109. Ec. So. 110 should be taken to satisfy the three hours required in economics (VII, p. 109). Three hours of sociology and three hours of government should be taken to satisfy the Social Science elective requirement (IX, p. 109).

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 Curriculum in Social Sciences with a major in sociology. (See page 109.) The student interested in sociology who also desires to prepare for teaching in secondary schools should enroll in the Curriculum in Secondary Education with a major in sociology. (See page 102.)

The requirements in the Curriculum in Social Sciences with a major in sociology (X, p. 109) are: twenty-one semester hours in sociology, including Ec. So. 625, 665, 675 or 677, and 680. Ec. So. 250 should be taken to satisfy the three hours required in sociology (VII, p. 109). Three

hours of economics and three hours of government should be taken to satisfy the Social Science elective requirement (IX, p. 109).

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. Cont. 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.

455. Labor Economics. (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 Legislation. (3) 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.

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. Monetary, central bank, tax, public expenditure, and public debt policies; their influences on business activity and the price level. Utilization of such policies to maintain economic stability and progress. 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 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 odd 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 Analysis. (3) I, S in even years. The nature and scope of economic analysis including the function of the price system; determination of price and output of commodities and factor services in different market structures, with emphasis on the business firm as a decision maker. Pr.: Ec. So. 120 or consent of instructor.

510. Income and Employment Theory. (3) II, S in even years. Factors determining the national income, employment, and the price level.

The income theory of J. M. Keynes is emphasized, with some attention being given to developments growing out of Keynesian theory. 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 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, S in even years. Development of economic ideas and doctrines and the relation of these to conditions existing when they were formulated. Pr.: Ec. So. 110.
- 815. Value and Distribution Theory.** (3) I, S in odd years. Neo-classical value and distribution theory; theories of imperfect competition; introduction to general equilibrium theory and dynamic analysis. Pr.: Ec. So. 505 or consent of instructor.
- 830. Seminar in Economics.** (3) I, II. Special topics in economic theory, Pr.: Graduate standing.
- 835. Econometric Methods.** (3) Offered on sufficient demand. Quantitative methods of research used in economics. Pr.: Ec. So. 515 or consent of instructor.
- 840. Economic Welfare and Public Policy.** (3) I. Theory of welfare economics, with applications to current economic problems and policy. Pr.: Ec. So. 815 or consent of instructor.
- 845. Advanced Economic Theory.** (3) II. A study of traditional theories of a firm and competitive market in the light of contemporary thought. General equilibrium theory. Modern micro-economic theories, with attention given to risk and uncertainty. Pr.: Ec. So. 815.
- 850. Advanced Income and Employment Theory.** (3) II. Post-Keynesian macro-economic theory; growth models and cyclical models; current developments in national income analysis. Pr.: Ec. So. 510 or consent of instructor.
- 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.
- 280. Introduction to Anthropology.** (3) I, II, S. A survey of anthropology which introduces the fundamental concepts and perspectives of the field. A review of the sources and significance of man's biological uniqueness; development of man from more primitive types; meaning and significance of race differences. Prehistoric development of culture, and an analysis of cultural processes. Emphasis on fundamental concepts and relationships.

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.
- 651. Cultural Anthropology.** (3) II. Prehistoric development of culture; processes of cultural growth and change; culture areas of the world; detailed analysis of selected cultures; development of evaluation of major points of view in cultural anthropology. Pr.: Ec. So. 250 or 280.
- 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. 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

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 2.0 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 organization 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 2.0 in all course work and a minimum point average of 2.5 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 2.0 in all course work, a minimum point average of 2.5 in all course work in teaching field, approved credit for observation experience, 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; ninety hours of completed course work; an over-all grade average of 2.0.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 405. Statistical Methods in Education and Psychology.** (3) On sufficient demand. Nature and measurement in education and psychology, organization 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 or 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 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 over-all 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 schools. 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) Offered on sufficient demand. 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 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.** (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, or consent of instructor.
- 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, (9) Adult 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, elementary education, 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

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, supervision, 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.: Consent of instructor.
- 560. Organization Problems in Teaching Farm Mechanics.** (2) Offered on sufficient demand. 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

- 911. Young Farmer and Adult Farmer Education in Agriculture.** (2 or 3) I, II, S. Organization, objectives, and procedures for conducting Young Farmer and Adult Farmer classes. Designed for teachers in service. Pr.: Experience in teaching vocational agriculture.
- 916. Agricultural Education for Beginning Teachers.** (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

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. 170; F. & N. 240; Educ. 120 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. 276.

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. 276 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. 276 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*

Students may elect under the Curriculum in Humanities a major program in either English or American Literature and Language. The general requirement in each is thirty semester hours subsequent to Engl. 136. (See page 106.) Specific requirements (VIII and IX, p. 106) for the English Literature emphasis include Engl. 250; 495, 555, or 565; 576; a period or type course in American Literature; and either 505 and 515 or two period courses in English Literature. Specific requirements (VIII and IX, p. 106) for the American Literature emphasis include Engl. 250; 555 or 565; 495 or 576; 650 or 666 or 670; a period or type course in English Literature; and either 680 and 690 or 590 and 623.

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 102). The department offers service courses beyond the freshman level: Engl. 155, 210, 435, 444. General education courses aiming at introductory appreciation are: Engl. 145, 150, 215, 225, 245, 255, 310, 320. Many programs 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 this requirement.

A minor program should include fifteen hours beyond the freshman level. Nine of these hours must be selected from courses numbered 400 or above.

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 review in fundamentals of composition. Especially 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. 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. Reading and composition for freshmen. Students may be assigned to two additional hours a week of Writing Laboratory upon recommendation of the instructor. Pr.: Satisfactory entrance test.
- 136. Written Communications II.** (3) I, II, S. Cont. of Engl. 125. Students may be assigned to two additional hours a week of Writing Laboratory upon recommendation of the instructor. 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. Business Letter Writing.** (3) I, II, S. Writing of adjustment, credit, collection, and sales letters; principles of effective commercial writing. Pr.: Engl. 136.
- 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. 136.
- 215. English Literature I.** (3) I, II, S. Pr.: Engl. 136.
- 225. English Literature II.** (3) I, II, S. Pr.: Engl. 136.
- 250. Forms of Literature.** (3) I. An introduction to the critical analysis of poetry, drama, and prose fiction. Required for English majors. Pr.: Engl. 136.
- 310. Books and Men I.** (3) I. Introduction to great world classics from present to past: Hemingway and Tolstoy; Lewis, Dickens, and Chaucer; Warren and Shakespeare; Faulkner and Conrad. Pr.: Engl. 136.

- 320. Books and Men II.** (3) II. Cont. of Engl. 310: Huxley, Swift, and Plato; Dostoevsky; Homer and Cervantes; The Bible, Dante, and T. S. Eliot. Pr.: Engl. 136.
- 399. Honors Seminar in English.** (1) I, II. Readings and colloquia in selected masterpieces. For non-English majors in the Honors Program. Pr.: Honors students only.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 402. Advanced Composition.** (3) I. Expository writing, primarily for candidates for the teaching certificate in Secondary Education. Pr.: Engl. 136.
- 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. 136.
- 415. Advanced Writing I.** (3) I. Subjects selected from the student's particular field of work; exposition of mechanisms, processes, and general expository writing. Pr.: Engl. 136.
- 425. Advanced Writing II.** (3) I. 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. 136.
- 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. 136.
- 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. 136.
- 450. Creative Writing.** (3) I, II. Imaginative writing, with particular emphasis on the short story. Pr.: Engl. 410, or consent 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. 136.
- 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. 136.
- 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. 136.
- 525. Seventeenth Century Literature.** (3) I in alt. years. A survey of the principal non-dramatic writers, apart from Milton, 1600-1660, with emphasis on Donne and the Metaphysicals. Pr.: Engl. 136.
- 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. 136.

- 531. Elizabethan Non-dramatic Literature.** (3) I in alt. years. An introduction to the literature of the English Renaissance, with some emphasis on its Continental affiliations. Pr.: Engl. 136.
- 536. Eighteenth Century I.** (3) I. English literature from the Restoration to the death of Swift, with emphasis upon Dryden, Swift, and Pope. Pr.: Engl. 136.
- 540. Eighteenth Century II.** (3) II. The age of Dr. Johnson and the beginnings of Romanticism. Pr.: Engl. 136.
- 545. English Bible.** (3) II in alt. years. Pr.: Engl. 136.
- 550. The Epic Tradition.** (3) II in alt. years. Greek and Roman masterpieces in translation as a background for the study of English literature. Pr.: Junior standing.
- 555. Shakespearean Drama I.** (3) I. An introductory study of representative comedies, tragedies, and histories. Pr.: Engl. 136.
- 565. Shakespearean Drama II.** (3) II. A study of Shakespearean drama, with special attention to the criticism and bibliography. Pr.: Engl. 136 and junior standing.
- 576. Milton.** (3) II. Pr.: Engl. 136.
- 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. 136.
- 596. The Victorian Era.** (3) II. Pr.: Engl. 136.
- 626. English Novel I.** (3) I. Survey of British fiction from Defoe and Fielding to the Brontes. Pr.: Engl. 136.
- 636. English Novel II.** (3) II. Survey of British fiction from Dickens and Thackeray to Galsworthy and Bennett. Pr.: Engl. 136.
- 640. Biography.** (3) I. Biographical writing from antiquity to the present time, including Plato, Plutarch, Boswell, Trevelyan, Lockhart, Forster, and Freeman. Pr.: Engl. 136.
- 646. Twentieth Century English Novel.** (3) II in alt. years. British fiction from Conrad and Joyce to Greene and Waugh. Pr.: Engl. 136.
- 667. Twentieth Century English Poetry.** (3) I. Development of English poetry from Hardy and Yeats to the present time. Pr.: Engl. 136.
- 668. Twentieth Century European Novel.** (3) II. Offered in alt. years with Twentieth Century English Novel. A study of the works, in translation, of such modern European masters as Silone, Mann, Gide, Kafka, and others. Pr.: Engl. 136.
- 685. Twentieth Century English Drama.** (3) I. Special emphasis on Shaw. Pr.: Engl. 136.
- 699. English Seminar.** (3) II. Intensive study of the writings of a single major author, English or American. Pr.: Senior or graduate standing and consent of instructor.
- 799. Problems in English.** Credit arranged. I, II, S. Work offered in major authors, types, and periods of English and American literature; linguistics; 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. Pr.: Registration in the Graduate School, with sufficient training to carry on the line of research undertaken.

COURSES IN AMERICAN

FOR UNDERGRADUATE CREDIT

245. American Literature I. (3) I, II, S. Pr.: Engl. 136.**255. American Literature II.** (3) I, II, S. Pr.: Engl. 136.

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. 136.**480. American Short Story.** (3) II, S. A study of the form from its American beginnings to the present, with emphasis on the major writers: Poe, Hawthorne, James, Crane, Hemingway, Faulkner. Pr.: Engl. 136.**590. Romanticism in America.** (3) I, S. Prose and poetry of Emerson and Thoreau, Transcendentalism, the Romanticism of Hawthorne, Poe, and Melville. Pr.: Engl. 136.**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. 136.**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. 136.**624. Henry James and William Faulkner.** (2) II. Pr.: Junior standing.**650. Twentieth Century American Drama.** (3) S. American drama from O'Neill and Anderson to Miller and Williams. Pr.: Engl. 136.**666. Twentieth Century American Poetry.** (3) I, S. Development of American poetry from Robinson and Frost to Eliot and the present time. Pr.: Engl. 136.**670. Twentieth Century American Novel.** (3) I, S. The modern American novel from Dreiser and Wharton to the present. Pr.: Engl. 136.**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 STUDIESEARL 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. Pr.: Gn. St. 110.

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.

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

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

In these courses one studies the fundamental relationships between plants and animals and other environmental factors. The structure of representative plants and animals, including man, is presented in some detail so that growth, food manufacture and utilization, reproduction, digestion, assimilation, circulation, respiration, and other life processes may be understood and their importance appreciated; also the relationship of structure to heredity and behavior. Principles which govern the classification and identification of various plants and animals are studied. The economic importance, both positive and negative, of plants and animals is considered; the relation of lower plants and animals to food production, food destruction, disease in lower plants and animals, and how these ravages may be controlled; the utilization, propagation, and conservation of plants and animals useful to man; and finally, a detailed study of man himself—his anatomy, functioning, heredity, and future as a member of the community and the nation. Life is interpreted as an integrative process which results in a dynamic whole.

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

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

An integrated study of society by examining the social influences in their totality as they bear upon man-in-society. Social institutions and processes are considered with the purpose of helping the student to comprehend them intelligently. Social relationships and issues are studied in a manner to encourage the student to develop his ability to apply critical and objective thinking to meeting the social problems arising from conditions in his community, nation, and the world. Emphasis is placed upon the responsibility of the student as a future citizen in a democratic society in making decisions which determine social policy.

250. Introduction to Humanities I. (4) 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 de-

voted 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 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.

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. A consideration of the social, economic, and professional status of "academic man"; analysis of the major functions of the college teacher: instruction (course and curriculum development), policy-making, counseling, and research and scholarship; and treatment of the administrative context of teaching: organization, finance and control, student personnel services, and the problems of admission. Open to all graduate students, particularly for those expecting to teach at the college level.

810. Problems of College Teaching. (2) II. Focus is upon the instructional function: the source, determination, and formulation of course objectives; the selection of learning experiences (organization of materials, choice of methods); and the principles of evaluation. The general principles involved in these aspects of the instructional process are adapted to the major fields and teaching interests of the students enrolled in the class. Open to all graduate students, and particularly for those expecting to teach at the college level.

GEOLOGY AND GEOGRAPHY

J. R. CHELIKOWSKY, *Head of Department*

The Department of Geology and Geography offers opportunities for study in geology, geophysics, geography, and biogeography. For detailed plans of study in these fields and for information regarding Engineering Geology, consult the head of the department.

Curriculum in Physical Science (VIII, p. 108)

The requirements for a *major in Geology* are: Gl. Gg. 405, 410, 416, 417, 425, 435, 445, 455, 495, 515, 575, and 586.

The requirements for a *major in Geophysics* are: Gl. Gg. 405, 416, 417, 425, 445, 515, 536, 730; Math. 245, 600; Phys. 471, 480, 522, 530, 618, and 621.

The requirements for a *major in Geography* are: Gl. Gg. 205, 215, 220, 410, 425, 445, 730, 735; Phys. 360; Agron. 509; and 12 additional hours in geography.

Curriculum in Biological Science (p. 97)

The requirements for a *major in Biogeography* (VI, p. 98) are: Bot. 670; Phys. 360; Zool. 620; three hours in American History; Gl. Gg. 110, 205, 215, 410, 735; and 15 additional hours in geography; Math. 175, 190 to satisfy IV, p. 97; Econ. 110; sociology or anthropology, 3 hours; and H. G. P. 250 to satisfy the Social Science requirement, III, p. 97.

Curriculum in Social Sciences (X, p. 109)

The requirements for a *major in Geography* are: Gl. Gg. 205, 215, 735; and 15 additional hours in geography.

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. One or two 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.
- 320. 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.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 400. Geology for Science Teachers.** (2) S. Classification and identification of rocks, minerals, and fossils; demonstration methods for teaching geology. One hour rec. and three hours lab. a week. Pr.: Gl. Gg. 110 or 205.
- 405. Historical Geology.** (4) I, II, S. 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, S. 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.
- 416. Crystallography.** (4) I, II. The fundamentals of crystallography and their uses in mineral identification. Two hours rec. and six hours lab. a week.
- 417. Mineralogy.** (4) I, II. Physical and chemical mineralogy. Description, identification, and classification of minerals. Three hours rec. and three hours lab. a week. Pr.: Chem. 110 and Gl. Gg. 416.
- 425. Field Methods in Geology.** (3) I, II. 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. 405.
- 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) I, II. Interpretation and use of aerial photographs; characteristics of photographs; adjustment of geologic, cultural, and topographic detail. One hour rec. and six hours lab. a week. Pr.: Gl. Gg. 425.
- 455. Invertebrate Paleontology.** (4) I, II. 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, II. 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, II. 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, 410.
- 518. Regional Geology.** (3) I, II. Structure and the stratigraphy of the major tectonic units of North America. Pr.: Gl. Gg. 495, 515.
- 536. Petroleum Geology.** (3) I, II. Origin, migration, and accumulation of petroleum. Stratigraphy and structure of important fields. Three hours rec. a week. Pr.: Gl. Gg. 405.
- 546. Economic Geology.** (3) II. Origin and mode of occurrence of non-metallic minerals, including coal and petroleum, and of metallic mineral deposits. Pr.: Gl. Gg. 405, 417.
- 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, II. 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. 417.
- 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.
- 586. Sedimentary Petrology.** (4) I, 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.
- 606. Mineragraphy.** (3) II. Methods of studying opaque minerals and applications to problems in ore genesis and history. Two hours rec. and three hours lab. a week. Pr.: Gl. Gg. 546, 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. One hour rec. and three hours lab. a week. Pr.: Gl. Gg. 415, 536.
- 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. One hour rec. and three hours lab. a week. Pr.: Gl. Gg. 536.
- 635. Conservation of Mineral and Water Resources.** (3) II. Pr.: Gl. Gg. 110, 417.
- 645. Geologic Literature.** (3) I. Current geologic literature and history of geology. Pr.: Gl. Gg. 405, 415.
- 655. Geologic Reports and Illustrations.** (2) I, 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. 586.

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

200. World Regional Geography. (3) I, II, S. An introduction to the fundamentals of geography through an examination of the physical, cultural, and economic features of the world's major regions.

205. Introductory Physical Geography. (3) I, II, S. A study of the geographic factors of our physical environment: map fundamentals, climatic factors, land forms, natural vegetation, soils, and water and mineral resources. Three hours rec. a week.

215. Economic Geography. (3) I, II, S. 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. Pr.: Three hours of geography or junior standing.

710. Climatology. (3) II. A systematic analysis of climatic elements and controls and a world regional study of climate. Pr.: Gl. Gg. 205 or Phys. 360 or junior standing.

730. Cartography. (3) I, 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 205.

735. Geography of Anglo-America. (3) II. Modern Canada, Alaska, and United States: agricultural and manufacturing regions, stressing interdependence of all. Pr.: Three hours of geography 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.: Three hours of geography 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.: Three hours of geography 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.: Three hours of geography or junior standing.

755. Geography of Eastern Asia. (3) I. The nations and peoples of eastern and southern Asia; major emphasis on China, Japan, and India; relationships between oriental agriculture, industry, and the land resources. Trends are emphasized to show the impact of the new nationalism on ancient lands. Pr.: Three hours of geography or junior standing.

790. Seminar in Geography. (Variable credit) I, II. Pr.: Consent of instructor.

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

HISTORY, GOVERNMENT AND PHILOSOPHY

FRED L. PARRISH, *Head of Department*

Students who plan to major in this department enroll as follows: (a) In History, either in the Social Science curriculum, or the Humanities curriculum; (b) In Government, in the Social Science curriculum; (c) In Philosophy, in the Humanities curriculum. Student majors in this Department, who plan to teach history and government in the high school, are required to take in addition to the major requirements the necessary courses in Education. Students who plan to teach, but who do not plan to meet the requirements for the Bachelor of Arts degree, should not enroll in the Social Science or Humanities curriculum but should enroll in the Curriculum in Secondary Education leading to the Bachelor of Science in Education degree.

COURSES IN HISTORY

The requirements for a major in history in the curriculum in Humanities (IX, p. 106) are H. G. P. 175, 190 and twelve hours from courses with numbers between 400 and 797 in history. H. G. P. 115 and 130 should be used to satisfy requirement VII, p. 106.

The requirements for a major in history in the curriculum in Social Science (X, p. 109) are H. G. P. 115, 130 and twelve hours from courses with numbers between 400 and 797 in history, and three hours in government. H. G. P. 256 should be used to partially fulfill requirement VII, p. 109. H. G. P. 175 and 190 should be used to satisfy requirement VIII, p. 109. The Social Science electives (IX, p. 109) should be in economics and sociology.

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, S. World developments within the past ten years. May be taken only one semester for credit. Not open for credit to majors in History, Government and Philosophy.

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.
- 420. Jackson to Lincoln, 1829-1860.** (2) The democratic forces in America, Western expansion, reforms, and the growth of sectionalism. Pr.: Three hours of American history or junior standing.
- 430. Civil War, Reconstruction, and the New South.** (3) The economic, diplomatic, political, military, and social history of the Civil War, the problems of reconstruction, and the postwar society of the South. 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. Contemporary United States.** (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.
- 460. American Intellectual History.** (3) The major political, economic, religious, and moral ideas that have affected the course of American life. Pr.: Three hours of American history 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.
- 470. American Social History.** (3) An interpretative study of social changes and esthetic developments in American history. Pr.: Three hours of American history 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 humanism, 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. 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.
- 570. Modern Germany.** (3) Major developments in Central Europe from the Reformation to the present. Stress is placed upon the cultural, political, economic, and social forces that have shaped modern Germany. Pr.: H. G. P. 130 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.
- 600. India and Southeast Asia.** (3) Modern and contemporary institutions and culture of South Asia and Indonesia. Pr.: H. G. P. 115, or 130, 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.
- 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 GOVERNMENT

The requirements for a major in Government, in the curriculum in Social Science (X, p. 109), are: H. G. P. 240 and 261, and additional hours in government, for a total of twenty-one semester hours. H. G. P. 256 should be used to partially fulfill the requirements (VII, p. 109); and the Social Science electives (IX, p. 109) should be in economics and sociology.

FOR UNDERGRADUATE CREDIT

- 240. Modern Democracy.** (3) I, S. Comparative treatment of modern democracies and their development; introduction to principles of political science.
- 256. American Government I.** (3) I, II, S. National, state, and local governments, with emphasis on constitutional principles and basic structure.
- 261. American Government II.** (2) II. Functions and services of American government in modern society; cont. of American Government I. Pr.: H. G. P. 256 or equiv.
- 265. State and Local Government.** (3) I, II, S. Government of American states and subdivisions.
- 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

- 656. International Relations.** (3) I, S. Analysis of contemporary world society, with emphasis on the behavior of states and current international problems. Pr.: H. G. P. 256 or Gn. St. 210, 220, or equiv.
- 666. International Law and Organization.** (3) II. Nature and scope of international law; the structure and functions of international institutions; the value and effectiveness of international law and organization in the modern world. Pr.: H. G. P. 256 or Gn. St. 210, 220, or equiv.
- 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.
- 680. Government of Britain and the Commonwealth.** (3) II. Analysis of the government of Great Britain and the Commonwealth. Pr.: H. G. P. 240 or equiv.
- 682. Governments of Continental Europe.** (3) I, S. Analysis of the major governments of Continental Europe. Pr.: H. G. P. 240 or equiv.
- 685. Soviet Systems.** (3) II. Government and politics of the Soviet Union and other Communist-controlled nations. Pr.: H. G. P. 240 or equiv.
- 690. City Government.** (3) I, S. Government and administration of American cities. Pr.: H. G. P. 256 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.
- 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. 256 or Gn. St. 220.
- 719. Political Parties and Pressure Groups.** (3) I. Relationship of interest groups in the United States to the development of public policy; nature and evolution of the American party system. Pr.: H. G. P. 256 or Gn. St. 210, 220, or equiv.
- 721. Public Policy Toward Business.** (3) II, S. Examination of the relationship between the state and economic institutions; political theory and economic theory. Pr.: Three hours of government and three hours of economics.

- 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. 256 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.

COURSES IN PHILOSOPHY

The requirements for a major in philosophy in the curriculum in Humanities (IX, p. 106) are: H. G. P. 350, 755, 760, and nine additional semester hours from courses with numbers from 740 through 799 in philosophy. H. G. P. 365 should be used to satisfy requirement III, p. 106, and H. G. P. 115 and 130 to satisfy requirement VII, p. 106.

FOR UNDERGRADUATE CREDIT

- 350. Introduction to Philosophy.** (3) I, II, S. A survey of the major problems of philosophy. Consideration of their tentative solutions and implications for one's philosophy of life.
- 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.
- 375. Introduction to Religion.** (3) A course designed to acquaint the student with the nature of the religious experience, with the basic language and literature of religion, and with the similarities and differences in polity and belief among the major contemporary religious institutions and theologies. For freshmen and sophomores.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 740. History of Science I.** (3) I, S. The growth of scientific thought in earliest times, in Egypt, Mesopotamia, Ancient Greece and Rome, the Moslem world, and Medieval Europe. This course is not a substitute for a history requirement. Pr.: Algebra and junior standing or consent of instructor.
- 745. History of Science II.** (3) II, S. The development of scientific thought from early modern times to the recent past. This course is not a substitute for a history requirement. Pr.: Algebra and junior standing or consent of instructor.
- 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.
- 752. Philosophy of Science.** (3) Philosophic ideas and problems encountered by physicists, mathematicians, economists, psychologists, and biologists, in basic and frontier areas of research. Pr.: One course in philosophy or 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.: One course in American or English literature or junior standing.
- 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.
- 777. Aesthetics.** (3) II and S. A critical examination of contemporary theories of artistic creation, aesthetic experience, the nature of art, its role in society, the foundations and function of art criticism. Pr.: One course in art, literature, or music.
- 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.
- 782. Symbolic Logic.** (3) A systematic introduction to modern logic. Truth-functions, truth-tables, calculus of propositions, classes, and relations. Illustrations from practical affairs, science, mathematics. Pr.: Elementary Logic or consent of instructor.
- 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.
- 786. Philosophy of Religion.** (3) An analysis of religion according to its function, reinterpretations, and techniques—to include a critical examination of Fundamentalism, Thomism (Catholicism), Transcendentalism, and Naturalism. Pr.: Junior standing or consent of instructor.
- 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.

LIBRARY ECONOMICS

WILLIAM F. BAEHR, *Head of Department*

FOR UNDERGRADUATE CREDIT

State requirements for school librarians specify that they must have courses 402, 420, and 442 to qualify as school librarians in Kansas.

- 110. Introduction to Bibliography.** (1) I. Principles and content of general and special bibliography. Pr.: Junior standing.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 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. Pr.: Junior standing.

420. Cataloguing and Classification. (3) S. Fundamentals of the Dewey Decimal Classification and the basic cataloguing techniques necessary for organizing a library collection. Pr.: Junior standing.

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. Pr.: Junior standing.

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.

The requirements in the Curriculum in Physical Sciences for a major in mathematics (VIII, p. 108) are: Math. 245, 320, 600, and 9 semester hours chosen from among courses in mathematics numbered 400 to 699. For a major in statistics in physical sciences (VIII, p. 108) the following courses should be completed: Math. 245, 320, 340, 600, 785, and 6 hours chosen from courses in statistics. For a mathematics major in Humanities (IX, p. 106) the following courses are required: Math. 190, 215, 230, 245, 320, 600, and 9 semester hours from courses with numbers between 400 and 699. Math. 175 should be taken to satisfy the college mathematics, logic or approved philosophy courses (III, p. 106). For a major in statistics in the Curriculum in Humanities (IX, p. 106) the following courses should be completed: Math. 190, 215, 230, 245, 320, 340, 600, 785, and 6 semester hours from among the 700 courses in statistics. Math. 175 should be taken to satisfy the college mathematics, logic or approved philosophy courses (III, p. 106).

Any course will be offered any term on the request of a sufficient number of students. Information concerning courses offered during the summer term may be had on writing to the department.

FOR UNDERGRADUATE CREDIT

010. Elementary Algebra. 1 entrance unit. I. 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 1 unit of high school algebra.

125. Mathematics in Human Affairs. (3) I, II. No credit 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. Not open to students with credit in Math. 145.

- 190. Plane Trigonometry.** (3) I, II, S. Pr.: Plane geometry and $1\frac{1}{2}$ 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.
- 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.
- 375. Elementary Digital Computing Techniques.** (2) I. Introduction to punched card equipment. Digital computers. Fixed and floating-point arithmetic. Programming for high-speed computers. Pr.: Math. 145 or 175; junior standing and consent of instructor.

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.
- 440. Determinants and Matrices.** (3) I alt. years. Applications of determinants and matrices to genetics, economics, electronics, and other fields. Pr.: Math. 145 or 175; junior standing.
- 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. Theory of Matrices I.** (3) I alt. years. Pr.: Math. 415, 600.
- 490. Theory of Matrices II.** (3) II alt. years. Cont. of Math. 485. Pr.: Math. 485.
- 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, II. 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) I, 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) On sufficient demand. 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.
- 646. Numerical Methods III.** (3) I alt. years and alt. summers. Cont. of Math. 644. Approximation by polynomials and orthogonal functions. Matrices and eigenvalue problems. Large-scale linear systems. Harmonic analysis. Data analysis. Pr.: Math. 644.
- 648. Scientific Digital Computing Techniques.** (3) II. Science and practice of solving scientific problems on a magnetic drum computer. Pr.: Math. 245 or 290, 375; and preferably 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 expectations; 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.
- 742. Statistical Genetics.** (3) I alt. years. Statistical approaches in the analysis of quantitative inheritance; design, analysis, and tests of hypotheses in genetic experiments; methods of estimating various genetic components of variance. Pr.: Math. 725 and 6 hours of genetics.
- 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) I. 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.
- 790. Introduction to Operations Research.** (3) II alt. years. Analysis of complex organizations using scientific methods; study of inventory, allocation, waiting-time, replacement and competitive models. Pr.: Math. 725 or 785 or consent of instructor.
- 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 General Statutes, 1949, 76-436, as amended by the 1957 Legislature, stipulate 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, except those exempted by the Registrar due to age, religious belief, foreign citizenship, and previous training in the armed services.

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.

Senior Advanced Course cadets are eligible to participate in the Army ROTC Flight Training Program on a volunteer and selective basis. This training consists of 35 hours of ground school and 36½ hours of dual and solo flight instruction. Successful completion of this training will qualify students for Civil Aeronautics Administration Pilot's Certificate. Students enrolling in flight training must agree to serve three years on active duty with the Army following graduation.

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.

SENIOR DIVISION, ROTC

BASIC COURSES

FOR UNDERGRADUATE CREDIT

- 110. Military IA.** (1) I. Organization of the Army and ROTC; individual weapons and marksmanship; leadership, drill, and command. Two hours rec. and the equiv. of approximately one hour of practical work a week.
- 115. Military IB.** (1) II. American military history; leadership, drill, and 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; role of Army in national defense; leadership, drill, and 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; leadership, drill, and 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; map reading; rifle marksmanship; role of the Army; leadership, drill, and 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 communication; pre-camp orientation; leadership, drill, and 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 staff; estimate of the situation and combat orders; military intelligence; troop movements; the military team; training management; motor transportation; leadership, drill, and 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's indoctrination; leadership, drill, and command. Four hours rec. and the equiv. of approximately one hour of practical work a week. Pr.: Mil. S. 276.

MODERN LANGUAGESFRITZ MOORE, *Head of Department*

Students majoring in language should enroll in the Curriculum in Humanities. (See p. 106.)

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

For a major (IX, p. 106), thirty-three hours in a single language should be completed, which includes the twelve-hour curricular requirement. In addition, nine hours of history beyond curricular requirements are needed.

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) 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.
180. German Composition and Conversation. (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, stringed, woodwind, and bass instruments are offered. For specific requirements for each curriculum, see pages 101 and 107.

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 106, 150, and 155. Specific requirements for music are: Instrument or Voice, eight hours; Music 160, 165, 180, 190, 195, 250, and eight elective hours. This major is not intended to prepare students to teach music as a major field in the public schools of Kansas.

Prerequisites for students taking a thirty-hour major in music in the Curriculum in Humanities are the same as for candidates for the Bachelor of Science degree in Music Education. The requirements for this degree are given on page 101.

For a minor, the following courses are required: Music 080 (two semesters), 106, 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. No more than two credits a semester will be granted for Applied Music as an elective.

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, stringed, woodwind, and brass instruments. The student will also find that a minor may be taken in any of the above applied fields. The student who com-

pletes a curriculum in Applied Music is awarded a Bachelor of Music Degree.

The basic requirements in the curriculum in Applied Music with a major in Voice or Instrument are: Music 160, 165, 170, 175, 180, 190, 195, 210, 215, 222, 320, 325, 425, 430, 645, and 655.

For a major in Voice the following courses must be taken: thirty-two semester hours in Voice (Music 279), four hours of Piano (Music 275), two hours of Laboratory Choir (Music 274), four hours of Vocal Ensemble (Music 330), four semesters of Piano Ensemble (Music 080). Elective courses in areas other than music must include Spch. 245, twelve semester hours in one foreign language, six semester hours in a second foreign language, and six semester hours of literature.

For a major in Instrument (Piano, Organ, String, Woodwind, Brass, Percussion) the following courses must be taken in addition to the basic requirements: Music 183, 186, thirty-two semester hours on the major instrument, eight semester hours on the minor instrument, four hours of Laboratory Orchestra (Music 271), six hours of Instrumental Ensemble (Music 335), and four semesters of Piano Ensemble (Music 080). If piano or organ is not the major instrument, it must be the minor instrument. Organ majors must register for Music 545 and 555. Elective courses in areas other than music must include Spch. 245 and nine hours of one foreign language.

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

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 tuition for students who are regularly enrolled in College. All others pay the fee stated on page 164.

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

- 106. Music Fundamentals.** (3) 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 106.
- 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.
- 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 121.
- 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.
- 436. Band Administration and Percussion Techniques.** (3) II, S. A study of percussion instruments, with emphasis on the snare drum; problems of school band organization, with emphasis on the marching band. Three hours rec. a week. Pr.: Senior standing.

- 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.
- 480. Choral Techniques and Literature.** (2) II, S. Study and discussion of basic problems involved in training of choral groups; emphasis upon arranging music for standard vocal groups. Pr.: Senior standing.
- 530. Advanced Analysis I.** (3) I and alt. S. Combination of harmony, counterpoint, and form as used in compositions in their historical setting. Pr.: Music 165, 180.
- 535. Advanced Analysis 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 132.
- 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. 260 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.
- 660. The Junior High Music Program.** (3) S. A methods course dealing with the particular problems of this age group such as the changing voice, the importance of the general music class, and the planning and selecting of music literature for the junior high voice. Pr.: Consent of instructor.
- 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.

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 thirty-two hours in any one applicable to a degree. The fees for these courses are listed following Music 900.

275. Piano	291. Double Bass	306. French Horn
277. Organ	293. Flute	308. Trumpet
279. Voice	296. Oboe	309. Baritone
283. Violin	298. Clarinet	311. Trombone
286. Viola	301. Bassoon	313. Tuba
289. Violoncello	303. Saxophone	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.

355. Women's Glee Club. (1), I, II. Membership by tryouts.

356. Varsity Men's Glee Club. (1) I, II, S. Membership by tryouts.

360. College Chorus. (1) I, II. Membership by tryouts.

365. Kansas State Singers. (1) I, II. Membership by tryouts.

370. Orchestra. (1) I, II. Membership by tryouts.

375. Band. (1) I, II. Membership by tryouts.

FOR GRADUATE CREDIT

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

FEES IN MUSIC

Students Paying Full Semester Incidental Fee

Students majoring in Applied Music or Music Education are exempted from paying fees for private lessons. All other students are charged fees for private lessons according to the following schedule:

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

One thirty-minute lesson each week for a semester including one hour use of practice room daily—\$17.50.

Single lesson rate—\$1.50.

Special and Non-College Students

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 101.) 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;

* Option on Ph. Ed. 115 and 126.

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.
- 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 a major, a student should enroll in one of the curriculums in Physical Education. (See page 101.) For a minor, a student should enroll in the following courses: Ph. Ed. 136, 175, 240 or 245, 265, 270, 275, 280, 285, 295 or 300, 305, 325,* 340,* and 355.

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.

* Optional.

- 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.
- 240. Sports Officiating W I.** (2) I. Principles and practices of officiating athletic games: softball, hockey, and volleyball. Pr.: Playing knowledge of the team sports.
- 245. Sports Officiating W II.** (2) II. Principles and practices of officiating athletic games: soccer, speedball, and basketball. Pr.: Playing knowledge of team games.
- 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.
- 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 and Educ. 300 or consent of instructor.
- 282. Camp Counseling.** (2) I. Basic principles and skills in camping for future counselors. 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. Offered in odd-numbered years.
- 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. Offered in even-numbered years.
- 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.
- 325. Methods and Materials of Dance.** (2) I. History of the dance; methods of teaching dance. One hour rec. and three hours lab. a week. Pr.: Semester each of beginning and intermediate 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.
- 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. Offered in odd-numbered years.
- 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.
- 160. 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 schools. 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.
- 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.: Advanced Swimming.
- 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

ALVIN B. CARDWELL, *Head of Department*

The physical science curriculum (p. 108) with a major in physics is designed to provide a broad basic program. By judicious choice of elec-

tives this curriculum may be made appropriate to the student's ability and goals.

For a major in physics the following courses, in addition to those specified in the core curriculum (VIII, p. 108), are required: 410, 420, 432, 450, 460, 471, 480, 560, 740, and Math. 245, 600, plus three hours in mathematics courses numbered 400 or higher.

For a student interested in graduate study in physics or a career in research or development work in an industrial or governmental laboratory, it is recommended that the following courses be included as electives: Math. 615, 620; Phys. 434, 520, 522, 575, 591.

For a student interested in secondary school science teaching it is recommended that Bot. 110 and Zool. 110 be taken and that the following courses be included as electives: Psych. 310 and Educ. 100, 105, 120, 165, and 415 or 420 or 455. By so doing, a student meets the certification requirements to teach biology, chemistry, general science, mathematics, and physics in high school.

Students interested in such fields as meteorology, biophysics, chemical physics, soil physics, and industrial development and research will choose their electives in consultation with a departmental adviser.

110. General Physics I. (4) I, II, S. Mechanics, heat, and sound. One hour lec., two hours rec., one hour quiz, and two hours lab. a week. Pr.: Math. 190.

120. General Physics II. (4) I, II, S. Magnetism, electricity, and light. One hour lec., two hours rec., one hour quiz, and two hours lab. a week. Pr.: Phys. 110.

130. Engineering Physics I. (5) I, II, S. Mechanics, heat, and sound; for technical students. Two hours lec., two hours rec., one hour quiz, and two hours lab. a week. Pr.: Math. 230 or 275 or conc. registration.

140. Engineering Physics II. (5) I, II, S. Magnetism, electricity, and light; for technical students. Two hours lec., two hours rec., one hour quiz, and two hours lab. a week. Pr.: Phys. 130; Math. 230 or 275.

210. Household Physics. (4) I, II. Physical laws and principles involved in household appliances. Three hours rec. and three hours lab. a week.

215. Physics for Medical Technicians. (4) I. Physical laws and principles involved in medical technology. Three hours rec. and three hours lab. a week.

220. Descriptive Physics. (3) I, II. 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. A general study of the solar system and the universe. Laboratory observation period is scheduled in the evening. Two hours rec. and two hours lab. a week.

360. Descriptive Meteorology. (3) II, S. Atmospheric phenomena, meteorological instruments and their understanding from physical concepts. Application of meteorological knowledge to agriculture, engineering, and other aspects of everyday life.

370. Photography. (2) 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. Physics for Science Teachers. (2) S. 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. 360 or 600.

420. Light Laboratory. (1) Pr.: Phys. 410 or conc. registration.

432. Mechanics I. (3) I. Principles of statics and dynamics of particles and rigid bodies by the methods of the calculus. Pr.: Math. 360 or 600, or conc. registration in either.

- 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. registration.
- 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. registration.
- 520. Electronic Physics I.** (3) I. Pr.: Math. 245 or 290; Phys. 471, 480, and 560 or conc. registration.
- 522. Electronic Physics Laboratory.** (1) Pr.: Phys. 520 or 530 or conc. registration in either.
- 530. Electronic Physics II.** (3) Pr.: Phys. 471.
- 545. Advanced Electronic Physics Laboratory.** (1) Pr.: Phys. 522.
- 560. Atomic Physics.** (3) I, II, S. 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.
- 591. Modern Physics Laboratory I.** (1) I, II, S. 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.
- 604. X-ray and Crystal Physics.** (3) I. Pr.: Phys. 471.
- 607. X-ray Laboratory.** (1) I. Three hours lab. a week. Pr.: Phys. 604 or conc. registration.
- 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) 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) II, S. (See Chem. 635.) Physics and chemistry of radioactive substances in the 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 (including gaseous electronics), heat, light, meteorology, mechanics, nuclear physics, solid state physics, sound and vibrations, spectroscopy, and X-rays. Pr.: Background of courses needed for topic undertaken.
- FOR GRADUATE CREDIT
- 805. Theoretical Physics I.** (3) I. Pr.: Phys. 432; Math. 600 or 360, 615.
- 815. Theoretical Physics II.** (3) II. Pr.: Phys. 805; Math. 620.
- 820. Introductory Quantum Mechanics.** (3) I. Methods of quantum mechanics and solution of some basic problems in atomic, molecular, and solid state physics. Pr.: Phys. 432, 560; Math. 600 or 360.
- 825. Advanced Dynamics.** (3) Pr.: Phys. 815.
- 835. Electrodynamics.** (3) Pr.: Phys. 815.

- 845. Thermodynamics.** (3) Pr.: Math. 600 or 360; Phys. 450.
- 855. Statistical Mechanics.** (3) Pr.: Phys. 845.
- 865. Quantum Mechanics I.** (3) II. Pr.: Phys. 805 or conc. registration; Phys. 820; Math. 615.
- 875. Quantum Mechanics II.** (3) I. Pr.: Phys. 865.
- 890. Atomic and Molecular Spectra.** (3) II. Atomic and molecular energy levels and the origins of spectra. Pr.: Phys. 820.
- 915. Advanced Molecular Spectra.** (3) Pr.: Phys. 890.
- 925. X-ray.** (3) Pr.: Math. 600 or 360; Phys. 604.
- 935. Theory of the Solid State.** (3) Pr.: Phys. 520, 865.
- 945. Advanced Nuclear Physics.** (3) Pr.: Math. 620; Phys. 575, 865.
- 955. Mathematical Physics.** (3) Pr.: Phys. 875.
- 999. Research in Physics.** Credit arranged. Work is offered in electricity, electronics (including gaseous electronics), light, nuclear physics, solid state physics, sound, spectroscopy, thermodynamics, theoretical physics, and X-rays. 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.

In the Social Science Curriculum the requirements for a major in psychology (X, p. 109) are in addition to General Psychology: Psych. 330, 600, 610, 611, 612, 720, 775, and eight hours of psychology electives. Math. 175 or 145 should be taken to meet the college mathematics requirement (III, p. 109).

In the Biological Science Curriculum the requirements for a major in psychology (VI, p. 98) are: Psych. 310, 330, 600, 610, 611, 612, 720, 775; Math. 215; Phil. 752; Zool. 465 and 470. The mathematics requirement (IV, p. 97) should be met with Math. 175 and 190. The biological and physical science requirements (V, p. 97) are A. H. 405; Chem. 110 and 330; Bot. 190; Geog. 205; Zool. 110; Bact. 110; and Phys. 215.

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.

399. Honors Seminar in Psychology. (1) I, II. Selected topics. Open to non-majors in the Honors Program.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 405. Abnormal Psychology.** (3) 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. Survey of the nature and scope of clinical psychology and its methods and problems. 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. 330.
- 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. Basic principles that underlie acquisition and retention; interrelations among variables related to rate of acquisition and degree of retention. Pr.: Psych. 330 or conc. registration.
- 611. Perception.** (2) II. Development and theory in the visual sense modality; the influence of learning and social factors. Pr.: Psych. 610.
- 612. Motivation.** (2) II. An evaluation of the experimental and theoretical literature on the origins of motives; development and maintenance of secondary motives; the relations between motives and the initiation, direction, and maintenance of behavior. 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.
- 715. Physiological Psychology.** (3) I. Physiological correlates of behavior, including sensory processes, emotion, motivation, and learning. Pr.: Zool. 465; Psych. 611, 612; or consent of instructor.
- 716. Comparative Psychology.** (3) II. An evaluation of the experimental and theoretical literature on similarities and differences in behavior at various phylogenetic levels as an aid to the clarification of important principles of behavior. Pr.: Consent of instructor.
- 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.
- 741. Vocational Psychology.** (3) I. Environmental and human factors in occupational adjustment; appraisal of vocational fitness. Pr.: Psych. 600.
- 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, or consent of instructor.
- 781. Psychological Literature.** (1) I, II. Reports and discussion of current articles. May be repeated. For undergraduate and graduate majors.
- 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

- 800. Advanced Measurement.** (3) I. The logic of measurement; scaling theory; psychophysics and psychometrics. Problems in classification and prediction. Pr.: Psych. 600.
- 805. Experimental Design in Psychology.** (3) II. Problems in research planning and experimental design. Role of quantitative methodology; critical evaluation of selected experiments. Pr.: Math. 725 and consent of instructor.
- 810. Learning Theory.** (3) II. Contemporary learning theories. Pr.: Psych. 611, 612, or consent of instructor.

- 820. Personality Theory.** (3) II. Contemporary personality theories. Pr.: Psych. 720 or consent of instructor.
- 822. Psychopathology.** (3) I. Theory and description of psychopathological disorders and their causes and treatments. Pr.: Psych. 720, 775, or conc. registration.
- 825. Clinical Testing I: Intelligence.** (3) I, S. Theory and techniques of intellectual evaluation; supervised practice in administration, scoring, and interpretation of major individual intelligence tests. Pr.: Psych. 600 or consent of instructor.
- 826. Clinical Testing II: Personality.** (3) II. Nature, validity, and assumptions of major diagnostic clinical tests, with emphasis on projectives and their administration and interpretation. Pr.: Psych. 822 and consent of instructor.
- 830. 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.
- 845. Advanced Counseling.** (3) II, S. Current theories of counseling; case studies. Pr.: Psych. 545 or 741 or consent of instructor.
- 850. Seminar in Personnel and Industrial Psychology.** Credit arranged. I, II, S. Pr.: Psych. 741 and consent of instructor.
- 852. Seminar in Counseling Psychology.** Credit arranged. I, II, S. Pr.: Psych. 845 and consent of instructor.
- 860. Practicum I.** Credit arranged. I, II, S. Supervised experience in the application of psychological principles and procedures in counseling and personnel. Pr.: Psych. 845 or 850 or conc. registration; second-year graduate standing and consent of instructor.
- 861. Practicum II.** Credit arranged. I, II, S. Pr.: Psych. 860 and consent of instructor.
- 865. Internship in Counseling Psychology.** Credit arranged. I, II, S. Pr.: Psych. 826, 852, 861; third-year graduate standing and consent of instructor.
- 885. Pro-Seminar in Psychology.** Credit arranged. I, II. Required of all graduate students majoring in psychology. Classical problems in methodology, sensory processes, learning, personality, and social psychology. Pr.: Approval of department.
- 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, theater 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. 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 departmental office.

In the curriculums in Humanities (IX, p. 106) and Social Science (X, p. 109) the requirements for a major in speech are Spch. 165, 135

or 155 or 285, 176 or 405 or 436; one course in two of the following areas: theater, radio, and speech therapy; and additional hours chosen in consultation with an approved adviser, and dependent on the areas of major emphasis, for a total of thirty to thirty-six hours of speech.

For a major in speech in the Biological Science Curriculum, with an emphasis on speech therapy (VI, p. 98) the requirements are Spch. 165, 135 or 155 or 285, 176 or 405 or 436, 416, 450, 455, 465, 467, 468, 760 (6 hours), 799 (problems in hearing), and one course in two of the following areas: theater, radio, speech therapy.

Demonstration of proficiency in oral communication is required of all majors prior to the completion of their work. This may be done by passing 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.

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 or 3) I, II, S. Selection and outlining of material, with special emphasis on logic and with oral presentation practice. Coordinated with Engl. 125, 136.
- 116. Advanced Public Speaking.** (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 in use of voice and diction by study and drill with the speech mechanism, tone, quality, range, rate, time, accent, stress, diction, articulation, and pronunciation.
- 155. Oral Reading.** (2) I, II, S. Attainment of some proficiency in the art of reading aloud.
- 165. Elements of Phonetics.** (2) I, II, S. 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.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 416. Theory and Principles of Communicative Behavior.** (2) II. Study of bases of oral communication. Pr.: Spch. 105, consent of instructor.
- 450. Teaching of Speech.** (3) II, S. Methods and techniques in the teaching of speech and direction of speech activities. Pr.: Spch. 105 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.

Theater and Interpretation: Spch. 245 or 255.

Rhetoric and Public Address: Spch. 176 or 405.

Discussion and Conference: Spch. 436.

Speech Therapy: Spch. 455 or 465.

Radio and Television: 15 hours in radio or graduate standing, and consent of instructor.

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 THEATER AND INTERPRETATION

- 235. Dramatic Participation.** (1 or 2) I, II, S. Pr.: Junior standing.
- 245. Acting and Rehearsal.** (2) I, II, S. Fundamentals of acting. One hour rec. and three hours lab. a week.
- 255. Elementary Stagecraft.** (2) I, II, S. Construction, function, and operation of scenery. One hour lec. and three hours scheduled lab. a week.

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, or consent of instructor.
- 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. Advanced Acting.** (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, and alt. 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 theater. Pr.: Spch. 255.
- 600. Techniques of Makeup.** (2) I, S. Techniques of makeup for stage, movies, and television.
- 605. Development of the Theater I.** (3) I and alt. S. History of the theater from early times to the end of the nineteenth century.

- 610. Stage Costuming.** (3) II. Studies in stage costuming: history, characterization, fabrics, construction. A lecture-laboratory course including student planning and construction of costumes for Kansas State Players productions. Pr.: Spch. 605 or consent of instructor.
- 615. Development of the Theater II.** (3) II and alt. S. History of the theater 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 Participation.** (2) II. Open only to members of the intercollegiate debate squads. Pr.: Spch. 176 and/or consent of instructor.
- 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 the 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, S. Principles and techniques of discussion for committees, 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

- 430. Introduction to Audiology.** (3) I and alt. S. Etiology and diagnosis of deafness and hardness of hearing; anatomy and physiology of the ear; social, emotional, and educational problems of deafness; audiometry and use of psycho-acoustic equipment.
- 455. Speech Correction for the Classroom Teacher.** (3) II, S. Types and etiology of speech problems and methods which teachers and administrators can employ; a survey of current therapeutic methods. 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 cardiac areas, the nose and throat, and the mouth. Pr.: Spch. 105.
- 468. Speech Therapy I.** (3) II, S. Methods and materials employed in the treatment of organic and functional problems of voice, articulation, hearing and aysrhythmic problems by individual and group techniques. Pr.: Spch. 455 or 465.
- 668. Teaching Lip Reading.** (3) II and alt. S. Methods of communication among deaf; problems in instruction of deaf and hard of hearing. Pr.: Introduction to audiology, Spch. 430.
- 760. Clinical Practice.** (3) I, II, S. Supervised practice in clinical teaching, application of methods in diagnosis, and retraining of individuals having disorders in 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 announcements and introductions 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.: Spch. 285.
- 325. Station Traffic, Music, and Continuity.** (2) I. Practical experience writing commercial continuity, servicing accounts, handling radio traffic, and operating a music library. 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 Broadcasting.** (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 non-majors 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 TV 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 visual and dramatic principles in television. Five hours rec. and lab. a week. Pr.: Spch. 105.
- 675. Radio and Television Advertising.** (3) II. Principles and practice in broadcast 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 of 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.: Junior standing.
- 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 or consent of instructor.
- 750. Radio-Television Audience.** (3) I, S. Listening and viewing habits, preferences, and attitudes. Pr.: Junior standing or 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*

Students who major in journalism can qualify for either the bachelor of science degree or the bachelor of arts degree, depending upon which curriculum they follow in the School of Arts and Sciences. The Biological Science Curriculum (page 97) and the Physical Science Curriculum (page 108) lead to the bachelor of science degree; the Social Science Curriculum (page 109) leads to the bachelor of arts degree.

The requirements for a journalism major are identical in the three curricula: Journ. 050 each semester, 105, 115, 220, 221, 225, 255, 265, 405 or 445, and journalism electives (13). (See pages 97, 108, 109.)

Students interested in Agricultural Journalism should note requirements on page 71; those interested in Home Economics and Journalism should note requirements on page 233.

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 majoring in journalism.
- 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 and 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.
- 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. 220. 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) I. 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. 136 and senior 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 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) II, S. Study of technical, trade, and general publications; writing for general magazines, agricultural and business publications, and women's departments. Pr.: For students in 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 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. A consideration of influences and controls that define the role of the journalist in American society, including law as it relates to the press. Open to non-majors. Pr.: Senior standing or consent of instructor.
- 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.: Junior 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 requirements in the Curriculum in Biological Science for a major in zoology (VI, p. 98) are at least nineteen 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. 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.
- 250. Natural History of Animals.** (3) I. A survey of the animal world and certain of the life processes and characteristics of animals. This is a terminal course and is not acceptable as a prerequisite for other courses in Zoology. Two hours rec. and three hours lab. a week.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 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, odd years. Principles of embryology as determined by comparative and experimental methods. One hour lec. and six hours lab. a week. Pr.: Zool. 420.
- 451. Cytology.** (3) I, odd years. 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.
- 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.: To be taken concurrently with 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.
- 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.
- 655. Animal Ecology.** (3) II, even years. Structure and dynamics of animal populations in relation to the physical, edaphic, and biotic environment. Two hours rec. and three 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 two hours rec. and six hours lab. a week in summer school. Pr.: Zool. 110 or equiv.
- 670. Ichthyology and Herpetology.** (3) II, even years. Taxonomy and natural history of freshwater fishes, amphibians and reptiles. One hour rec. and six hours lab. a week. Pr.: Zool. 110.
- 675. Mammalogy.** (3) I, odd years. 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. Methods and techniques in the management and propagation of wildlife. Pr.: Zool. 110 or equiv.
- 685. Wildlife Management Techniques.** (3) I, even years. 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. 655 and 680 or consent of instructor.
- 691. Fisheries Management.** (4) II, odd years. 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. 670 or consent of instructor.
- 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*

KENNETH KING GOWDY, *Instructor*

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 186)

Agricultural engineering is the application of the art and science of engineering principles to the agricultural industry. Agricultural engineering includes farm power and machinery, soil and water conservation, irrigation and drainage, farm structures, rural electrification, and processing of agricultural products.

Students completing this curriculum are prepared to do design, research, testing, sales promotion, teaching, and extension work in the various phases of engineering as applied to agriculture. Federal and State agencies, colleges and universities, machinery manufacturers, rural electric power suppliers, and the many enterprises involving agriculture, the greatest of all American industries, desire and need the services of the agricultural engineer.

The curriculum includes all basic courses such as mathematics, physics, chemistry, and mechanics, common to other engineering curriculums, as well as engineering courses in each of the phases in the field of agricultural engineering.

Curriculum in Architectural Engineering (Page 187)

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 188)

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 vacation in

the building industry, either on construction projects or in the office of an architect.

Curriculum in Chemical Engineering (Page 189)

The Curriculum in Chemical Engineering prepares the student for engineering work in any of the process industries. Research, development, design, construction, operation, and technical sales are fields of activity for which graduates in this curriculum are employed. The process industries are those in which a raw material undergoes either a physical or chemical change. Examples are petroleum, rubber, paint and varnish, detergents and soap, plastics, pharmaceuticals, food, pulp and paper, and chemicals.

Curriculum in Civil Engineering (Page 190)

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 191)

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 theoretical and applied electronics, computers, and other electrical engineering areas.

Curriculum in Industrial Education (Page 193)

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 194)

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 195)

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 in 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 196)

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 198)

The Curriculum in Nuclear Engineering is designed to train young men and women for work in the engineering phases of nuclear science. The curriculum combines the fundamentals of atomic energy and radioactive tracer techniques with basic engineering courses in mechanics, unit operations, thermodynamics, and design. The courses in reactor technology are designed to give training in the applications of the theory to the production and recovery 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 studied.

The present size of government and private facilities for research and development in nuclear science indicates 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					
	Course		Sem. Hrs.		Course		Sem. Hrs.		
Engl.	125	Written Comm. I	3	Engl.	136	Written Comm. II	3		
Chem.	140	Chemistry E-I	4	Chem.	170	Chemistry E-II	4		
M. E.	211	Engg. Graphics I	2	M. E.	216	Engg. Graphics II	2		
Math.	175	College Algebra*	3	Math.	215	Anal. Geom. & Calc. I ..	4		
Math.	190	Plane Trigonometry	3			Elective†	3		
I. E.	180	Welding	1			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		
Spch.	105	Oral Comm. I	2	Ag. E.	130	Agricultural Machinery ..	3		
I. E.	125	Shop A	2	Ap. M.	408	Statics	3		
I. E.	175	Metals and Alloys	2	M. E.	221	Engg. Graphics III	2		
C. E.	120	Surveying 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.	115	Engg. Assembly	0		
G. E.	115	Engg. Assembly	0						
Total				18	Total				18

JUNIOR

Bot.	190	Nature & Dev. of Plants ..	3	Agron.	106	Farm Crops	4		
Ec. So.	110	Economics I	3	Ap. M.	471	Fluid Mechanics	3		
M. E.	411	Engg. Thermodynamics I ..	4	Ap. M.	410	Mech. of Matls. I	4		
Ap. M.	409	Dynamics	2	Ap. M.	418	Mech. of Matls. Lab.	1		
Ag. E.	475	Agricultural Hydrology ..	3	Ag. E.	446	Tractors	4		
Gl. Gg.	110	General Geology	3			Elective†	2		
Engl.	090	English Proficiency	0	G. E.	115	Engg. Assembly	0		
G. E.	115	Engg. Assembly	0						
Total				18	Total				18

SENIOR

Ag. E.	435	Design of Farm Machin'y ..	4	Ag. E.	480	Soil and Water Conserv. ..	4		
Agron.	149	Soils	4	Ag. E.	500	Rural Electrification	4		
Ag. E.	465	Farm Structures	4			Elective†	10		
E. E.	120	Elec. Engg. C. Rec.	2	G. E.	115	Engg. Assembly	0		
E. E.	124	Elec. Engg. C. Lab.	1						
		Elective†	3						
G. E.	115	Engg. Assembly	0						
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. A minimum of twelve credit hours of electives must be chosen from lists on page 199, with at least six credit hours from the Humanities group.

Curriculum in Architectural Engineering

B. S. in Architectural Engineering

FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
	Course	Sem. Hrs.		Course	Sem. Hrs.		Sem. Hrs.
Engl.	125	Written Comm. I	3	Engl.	136	Written Comm. II	3
Chem.	140	Chemistry E-I	4	Chem.	170	Chemistry E-II	4
Arch.	123	Arch. Graphics I	2	Arch.	127	Arch. Graphics II	2
Math.	190	Plane Trigonometry	3	Spch.	105	Oral Comm. I	2
Math.	175	College Algebra*	3	Math.	215	Anal. Geom. & Calc. I	4
		Air or Military Science ..	1	Arch.	126	Basic Drawing	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				Total			
16				18			

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.	270	History of Arch. I	2	Arch.	274	History of Arch. II	2
Arch.	137	Intro. to Arch.	1	Arch.	230	Elem. of Arch. I	4
C. E.	120	Surveying I	2	Ap. M.	408	Statics	3
Arch.	133	Sketching	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			
Total				19			
17				19			

JUNIOR

Arch.	278	History of Arch. III	2	Arch.	280	History of Arch. IV	2
Arch.	234	Elements of Arch. II	4	Arch.	300	Bldg. Matls. & Constr. ..	3
Ec. So.	110	Economics I	3	Arch.	310	Working Drawings	3
Ap. M.	410	Mech. of Matls. I	4	Arch.	240	Arch. Design I	5
Ap. M.	418	Mech. of Matls. Lab.	1	C. E.	421	Stress Anal. I Rec.	3
Ap. M.	409	Dynamics	2	E. E.	130	Illumination A	2
		Elective†	2	G. E.	115	Engg. Assembly	0
Engl.	090	English Proficiency	0	Total			
G. E.	115	Engg. Assembly	0	18			
Total				18			
18				18			

SENIOR

Gn. St.	150	Biology I	4	Gn. St.	160	Biology II	4
C. E.	428	Stress Anal. II	3	C. E.	470	Des. Framed Struc.	3
C. E.	424	Stress Anal. I Lab.	2	C. E.	478	Reinf. Conc. Des. Rec.	2
Ap. M.	450	Soil Mechanics I	2	C. E.	480	Reinf. Conc. Des. Lab. ..	2
C. E.	460	Foundations	2	Arch.	305	Bldg. Equipment	2
M. E.	130	Air Conditioning A	3	Arch.	340	Prof. Practice	2
		Elective†	2			Elective†	3
Arch.	390	Inspection Trip	0	G. E.	115	Engg. Assembly	0
G. E.	115	Engg. Assembly	0	Total			
Total				18			
18				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. A minimum of seven credit hours of electives must be chosen from lists on page 199, with at least five credit hours from the social science group.

Curriculum in Architecture

Bachelor of Architecture

FIRST YEAR

FIRST SEMESTER				SECOND SEMESTER			
	Course	Sem. Hrs.		Course	Sem. Hrs.		
Engl.	125	Written Comm. I	3	Engl.	136	Written Comm. II	3
Arch.	270	Hist. of Arch. I	2	Arch.	274	Hist. of Arch. II	2
Arch.	126	Basic Drawing	2	Arch.	126	Basic Drawing	2
Arch.	123	Arch. Graphics I	2	Arch.	127	Arch. Graphics II	2
Math.	175	College Algebra*	3	Math.	190	Plane Trigonometry	3
Spch.	105	Oral Comm. 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.	110	Engg. Lectures	0	G. E.	110	Engg. Lectures	0
Total				Total			
15				16			

SECOND YEAR

Phys.	110	General Physics I	4	Phys.	120	General Physics II	4
Arch.	230	Elements of Arch. I	4	Arch.	234	Elements of Arch. II	4
Arch.	278	History of Arch. III	2	Arch.	280	History of Arch. IV	2
Arch.	137	Intro. to Arch.	1	Ap. M.	105	Applied Mechanics A	3
Arch.	300	Bldg. Matls. & Constr. ..	3	Arch.	166	Water Color Painting	2
Arch.	133	Sketching	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			
17				16			

THIRD YEAR

Arch.	240	Arch. Design I	5	Arch.	244	Arch. Design II	5
Ap. M.	120	Str. of Matls. A Rec.	3	Arch.	320	Theory of Structures I	4
Ap. M.	124	Str. of Matls. A Lab.	1	E. E.	130	Illumination A	2
Arch.	305	Building Equipment	2	Arch.	176	Figure & Portrait Draw.	2
Arch.	285	History Ptg. and Sculp. ...	3			Elective†	3
Arch.	310	Working Drawings	3	G. E.	115	Engg. Assembly	0
Engl.	090	English Proficiency	0	Total			
G. E.	115	Engg. Assembly	0	16			
17				16			

FOURTH YEAR

Gn. St.	150	Biology I	4	Gn. St.	160	Biology II	4
Arch.	324	Theory of Structures II. ...	5	Arch.	328	Theory of Structures III	4
Arch.	248	Arch. Design III	5	Arch.	250	Arch. Design IV	5
M. E.	130	Air Conditioning A	3	Arch.	176	Fig. & Portrait Draw.	2
G. E.	115	Engg. Assembly	0	G. E.	115	Engg. Assembly	0
Total				Total			
17				15			

FIFTH YEAR

Arch.	461	City Planning I	3	Arch.	463	City Planning II	3
Arch.	491	Arch. Design V	5	Arch.	495	Arch. Design VI	5
Arch.	340	Prof. Practice	2			Elective†	7
		Elective†	6	G. E.	115	Engg. Assembly	0
Arch.	390	Inspection Trip	0	Total			
G. E.	115	Engg. Assembly	0	15			
16				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. A minimum of seven credit hours of electives must be chosen from lists on page 199, with at least five credit hours 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>	
Engl.	125	Written Comm. I	3	Engl.	136	Written Comm. II	3
M. E.	211	Engg. Graphics I	2	M. E.	216	Engg. Graphics II	2
Chem.	210	Chemistry I	5	Chem.	230	Chemistry II Rec.	3
Math.	175	College Algebra*	3	Chem.	250	Chemistry II Lab.	2
Math.	190	Plane Trigonometry	3	Ch. E.	201	Ch. E. Orientation	1
Ph. Ed.	010	Air or Military Science ..	1	Math.	215	Anal. Geom. & Calc. I ...	4
G. E.	110	Physical Education	0			Air or Military Science ..	1
		Engg. Lectures	0	Ph. Ed.	010	Physical Education	0
				G. E.	110	Engg. Lectures	0
Total			17	Total			16

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
Ch. E.	205	Ch. E. Materials	2	Ch. E.	211	Indus. Stoichiometry	4
Chem.	435	Quan. Analysis	4	M. E.	221	Engg. Graphics III	2
Spch.	105	Oral Comm. I	2			Elective†	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

SUMMER

Ap. M.	405	Applied Mechanics	4	Ec. So.	110	Economics I	3
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JUNIOR

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
Ch. E.	492	Ch. E. Thermo. I	3	Ch. E.	420	Unit Oper. I Rec.	3
Ch. E.	411	Ch. E. Measurements	2	Ch. E.	425	Unit Oper. I Lab.	2
Math.	600	Diff. Equa. or Elective†	3			Elective†	3
Engl.	090	English Proficiency	0	G. E.	115	Engg. Assembly	0
G. E.	115	Engg. Assembly	0				
Total			18	Total			18

SENIOR

Ch. E.	461	Ch. E. Design I	3	Ch. E.	465	Ch. E. Design II	4
Ch. E.	428	Unit Oper. II Rec.	3	Ch. E.	440	Unit Process Lab.	2
Ch. E.	430	Unit Oper. II Lab.	1	Ch. E.	502	Ind. Reaction Rates or	
Ch. E.	496	Ch. E. Thermo. II	3			Elective†	3
Ap. M.	410	Mech. of Matls. I	4	E. E.	120	Elec. Engg. C. Rec.	2
		Elective†	4	E. E.	124	Elec. Engg. C. Lab.	1
G. E.	115	Engg. Assembly	0			Elective†	6
				G. E.	115	Engg. Assembly	0
Total			18	Total			18

Number of hours required for graduation, 148.

* 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. A minimum of fifteen credit hours of electives must be chosen from lists on page 199, with at least six credit hours from the Humanities group.

Curriculum in Civil Engineering

B. S. in Civil Engineering

FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
		Course	Sem. Hrs.			Course	Sem. Hrs.
Engl.	125	Written Comm. I	3	Engl.	136	Written Comm. II	3
Chem.	140	Chemistry E-I	4	Chem.	170	Chemistry E-II	4
M. E.	211	Engg. Graphics I	2	M. E.	216	Engg. Graphics II	2
Math.	175	College Algebra*	3	Speh.	105	Oral Comm. I	2
Math.	190	Trigonometry	3	Math.	215	Anal. Geom. & Calc. I ..	4
Ph. Ed.	010	Air or Military Science ..	1	C. E.	120	Surveying I	2
G. E.	110	Physical Education	0	Ph. Ed.	010	Air or Military Science ..	1
		Engg. Lectures	0	G. E.	110	Physical Education	0
			0			Engg. Lectures	0
Total			16	Total			18

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 & Alloys	2	Ap. M.	408	Statics	3
C. E.	125	Surveying II	3	C. E.	131	Surveying III	3
Ec. So.	110	Economics I	3			Elective†	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 & Sewage Bact. ..	3
E. E.	124	Elec. Engg. C Lab.	1	Gl. Gg.	110	General Geology	3
Ap. M.	409	Dynamics	2	Ap. M.	420	Hwy., Airp't Matls. Lab. ..	1
Ap. M.	410	Mech. of Matls. I	4	Ap. M.	450	Soil Mechanics I	2
Ap. M.	418	Mech. of Matls. Lab.	1	Ap. M.	471	Fluid Mechanics	3
M. E.	115	El. of Thermodynamics ..	3			Elective†	3
		Elective†	2	G. E.	115	Engg. Assembly	0
Engl.	090	English Proficiency	0				
G. E.	115	Engg. Assembly	0				
Total			18	Total			18

SENIOR

C. E.	424	Stress Anal. I Lab.	2	C. E.	440	Sanitary Engg.	4
C. E.	428	Stress Anal. II	3	C. E.	456	Hydrology	2
C. E.	451	Transpor. Engg. Rec.	3	C. E.	470	Des. Fr. Str.	3
C. E.	453	Transpor. Engg. Lab.	2	C. E.	478	Reinf. Conc. Des. Rec. ..	2
C. E.	458	Hydraulic Engg.	3	C. E.	480	Reinf. Conc. Des. Lab. ..	2
C. E.	460	Foundations	2			Elective†	5
		Elective†	3	G. E.	115	Engg. Assembly	0
G. E.	115	Engg. Assembly	0				
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. A minimum of fifteen credit hours of electives must be chosen from lists on page 199, with at least six credit hours 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>
Engl.	125	Written Comm. I	3	Engl.	136	Written Comm. II	3
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.	211	Engg. Graphics I	2
		Elective†	3			Elective†	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.	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.	125	Shop A	2	E. E.	405	Basic Elec. Engg.	4
Ec. So.	110	Economics I	3	Spch.	105	Oral Comm. I	2
		Elective†	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

SENIOR

E. E.	460	Electronics I	2	E. E.	464	Electronics II Rec.	4
E. E.	426	A-C Circuits	5	E. E.	468	Electronics II Lab.	2
E. E.	411	D-C Machinery Rec.	3	Ap. M.	405	Applied Mechanics	4
E. E.	414	D-C Machinery Lab.	1	E. E.	430	A-C Machinery I	3
E. E.	490	Elec. Meas. Rec.	2	E. E.	437	A-C Laboratory	1
E. E.	494	Elec. Meas. Lab.	1	E. E.	450	Circuit Analysis	3
Math.	360	Diff. Equa. for Engrs. ..	2			Elective†	1
		Elective†	2	G. E.	115	Engg. Assembly	0
Engl.	090	English Proficiency	0				
G. E.	115	Engg. Assembly	0				
Total		.....	18	Total		.....	18

SENIOR

E. E.	439	A-C Machinery II	2	M. E.	462	Mech. Engg. Lab. E	1
E. E.	442	A-C Machinery Lab.	1	E. E.	576	Elec. Engg. Summary	2
Phys.	560	Atomic Physics	3	Ap. M.	410	Mech. of Matls. I	4
M. E.	411	Engg. Thermodynamics I ..	4			Elective†	3
E. E.	539	Networks Rec.	3	G. E.	115	Engg. Assembly	0
E. E.	541	Networks Lab.	1				
G. E.	115	Engg. Assembly	0				

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.	531	Electronics III Rec.	4
E. E.	554	Electromag. Waves Lab. ..	1	E. E.	535	Electronics III Lab.	1
						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. A minimum of fifteen credit hours of electives must be chosen from lists on page 199, with at least six credit hours from the Humanities group.

Suggested Electives

Students who elect either the Power Option or the Communication and Electronics Option are free to choose electives for college courses in business administration, language, physics, mathematics, geology, social sciences, humanities, 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 may 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 Power Option or the Communication and Electronics Option plus the following courses:*

	<i>Course</i>	<i>Sem. Hrs.</i>		<i>Course</i>	<i>Sem. Hrs.</i>
Ec. So.	120 Economics II	3	B. A.	440 Marketing	3
B. A.	330 Principles of Accounting	3	B. A.	460 Personnel	3
B. A.	730 Cost Accounting	3	B. A.	405 Business Organization	
B. A.	275 Business Law I	3		and Finance	3
B. A.	280 Business Law II	3	Ec. So.	430 Money and Banking	3
B. A.	401 Administration	3	B. A.	511 Business Policy	3
				Business Elective†	6

* Some of these additional courses may be substituted for the electives in the Curriculum in Electrical Engineering. A minimum of thirty 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		
	<i>Course</i>	<i>Sem. Hrs.</i>		<i>Course</i>	<i>Sem. Hrs.</i>
Engl.	125 Written Comm. I	3	Engl.	136 Written Comm. II	3
Chem.	140 Chemistry E-I	4	Chem.	170 Chemistry E-II	4
M. E.	211 Engg. Graphics I	2	M. E.	216 Engg. Graphics II	2
Math.	175 College Algebra*	3	Math.	190 Plane Trig.	3
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	.....	17

SOPHOMORE

Phys.	110 General Physics I	4	Phys.	120 General Physics II	4
Gn. St.	150 Biology I	4	Gn. St.	160 Biology II	4
Psych.	310 Gen. Psychology	3	Educ.	100 Educ. Psychology I	3
M. E.	221 Engg. Graphics III	2	I. E.	134 Woodwork II	2
Spch.	105 Oral Comm. I	2	I. E.	144 Wood Turning	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. Psychology II	3	Educ.	120 Prin. of Sec. Educ.	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
	Elective†	7	I. E.	211 Industrial Safety	2
Engl.	090 English Proficiency	0		Elective†	7
G. E.	115 Engg. Assembly	0	G. E.	115 Engg. Assembly	0
Total	.....	16	Total	.....	17

SENIOR

Engl.	155 Business Letter Writing ..	3	Educ.	150 Tech. Part. in Sec. Sch. ..	4
I. E.	244 Meth. Tech. Ind. Arts ..	3	I. E.	122 Appliance Servicing	4
	Elective†	10		Educ. Elective	3
I. E.	280 Inspection Trip	0		Elective†	5
G. E.	115 Engg. Assembly	0	G. E.	115 Engg. Assembly	0
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.

† Electives are to be chosen with the advice and approval of the head of the department and the dean. At least seven credit hours of electives in Social Science must be selected to complete the requirements for a teaching certificate. Other electives must include courses in the area of wood and/or metal work or those closely allied with the teaching field.

This curriculum with a careful selection of electives meets the requirements for teaching general science, woodwork, machine shop, metal shop, auto mechanics, driver education, and mechanical drawing.

Curriculum in Industrial Engineering

B. S. in Industrial Engineering

FRESHMAN

FIRST SEMESTER				SECOND SEMESTER					
	Course		Sem. Hrs.		Course		Sem. Hrs.		
Engl.	125	Written Comm. I	3	Engl.	136	Written Comm. II	3		
Chem.	140	Chemistry E-I	4	Chem.	170	Chemistry E-II	4		
M. E.	211	Engg. Graphics I	2	M. E.	216	Engg. Graphics II	2		
Math.	175	College Algebra*	3	Math.	215	Anal. Geom. & Calc. I	4		
Math.	190	Plane Trigonometry	3	I. E.	125	Shop A	2		
I. E.	180	Welding	1	I. E.	184	Electric Welding	1		
		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		
Ec. So.	110	Economics I	3	Spch.	105	Oral Comm. I	2		
M. E.	221	Engg. Graphics III	2	I. E.	155	Foundry I	1		
Psych.	310	General Psychology	3	M. E.	110	Steam and Gas Engg. C ..	2		
		Air or Military Science ..	1	M. E.	230	Mechanism	3		
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		
B. A.	330	Prin. of Accounting	3	Engl.	155	Business Letter Writing ..	3		
H. G. P.	190	U. S. Since 1865	3	Ap. M.	410	Mech. of Matls. I	4		
Ap. M.	405	Applied Mechanics	4	Ap. M.	418	Mech. of Matls. Lab.	1		
I. E.	175	Metals and Alloys	2	E. E.	120	Elec. Engg. C Rec.	2		
I. E.	410	Industrial Management ..	3	E. E.	124	Elec. Engg. C Lab.	1		
Engl.	435	Technical Reports	1	I. E.	211	Industrial Safety	2		
Engl.	090	English Proficiency	0	I. E.	460	Metallography I	1		
G. E.	115	Engg. Assembly	0			Elective†	2		
				G. E.	115	Engg. Assembly	0		
Total				18	Total				18

SENIOR

Ec. So.	647	Industrial Sociology	3	B. A.	440	Marketing	3		
Psych.	515	Pers. Psychology	3	E. E.	470	Indus. Electronics Rec. ..	3		
I. E.	415	Production Control	2	E. E.	474	Indus. Electronics Lab. ..	1		
I. E.	419	Mfg. Processes	3	I. E.	421	Prod. Cost Estimating	2		
I. E.	425	Time and Motion	2	I. E.	427	Plant Plan. & Layout	2		
M. E.	490	Engg. Economics	3	I. E.	431	Tool Engineering	2		
		Elective†	2	I. E.	442	Indus. Engg. Practice	3		
I. E.	280	Inspection Trip	0			Elective†	2		
G. E.	115	Engg. Assembly	0	G. E.	115	Engg. Assembly	0		
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. They must be selected from the approved list of Humanities electives, page 199.

Curriculum in Industrial Technology

B. S. in Industrial Technology

FRESHMAN

FIRST SEMESTER				SECOND SEMESTER			
	Course	Sem. Hrs.		Course	Sem. Hrs.		
Engl.	125	Written Comm. I	3	Engl.	136	Written Comm. II	3
Chem.	140	Chemistry E-I	4	Chem.	170	Chemistry E-II	4
M. E.	211	Engg. Graphics I	2	M. E.	216	Engg. Graphics II	2
Math.	175	College Algebra*	3	Math.	190	Plane Trigonometry	3
I. E.	125	Shop A	2	I. E.	144	Wood Turning	2
I. E.	130	Woodwork I	2	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			17	Total			17

SOPHOMORE

Phys.	110	General Physics I	4	Phys.	120	General Physics II	4
Gn. St.	250	Intro. to Humanities I ..	4	Gn. St.	260	Intro. to Humanities II ..	4
M. E.	221	Engg. Graphics III	2	M. E.	225	Engg. Graphics IV	2
Psych.	310	General Psychology	3	Ec. So.	110	Economics I	3
C. E.	120	Surveying I	2	Spch.	105	Oral Comm. I	2
I. E.	155	Foundry I	1	I. E.	150	Pattern Making	2
I. E.	180	Welding	1			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	Total			18

JUNIOR

I. E.	190	Machine Tool I	2	I. E.	194	Machine Tool II	2
B. A.	330	Prin. of Accounting	3	Spch.	115	Oral Comm. II	2
Engl.	155	Business Letter Writing ..	3	Ap. M.	105	Applied Mechanics A	3
I. E.	110	Auto Mechanics I	4	E. E.	120	Elec. Engg. C Rec.	2
I. E.	175	Metals and Alloys	2	E. E.	124	Elec. Engg. C Lab.	1
I. E.	188	Gas Welding	1	I. E.	211	Industrial Safety	2
I. E.	410	Industrial Management ..	3	I. E.	460	Metallography I	1
Engl.	090	English Proficiency	0	M. E.	110	Steam and Gas Engg. C ..	2
G. E.	115	Engg. Assembly	0	M. E.	230	Mechanism	3
				G. E.	115	Engg. Assembly	0
Total			18	Total			18

SENIOR

Psych.	515	Pers. Psychology	3	H. G. P.	190	U. S. Since 1865	3
Engl.	435	Technical Reports	1	I. E.	122	Appliance Servicing	4
Ap. M.	120	Str. of Matls. A Rec.	3	I. E.	184	Electric Welding	1
Ap. M.	124	Str. of Matls. A Lab.	1	I. E.	421	Production Cost	
I. E.	220	Gaging	1			Estimating	2
I. E.	419	Mfg. Processes	3	I. E.	442	Industrial Engineering	
I. E.	425	Time and Motion	2			Practice	3
I. E.	280	Inspection Trip	0			Elective†	5
		Electives†	4	G. E.	115	Engg. Assembly	0
G. E.	115	Engg. Assembly	0	Total			18
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. They are to include courses closely allied to the area of industrial technology.

Curriculum in Mechanical Engineering
B. S. in Mechanical 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.	136 Written Comm. II	3
Chem.	140 Chemistry E-I	4	Chem.	170 Chemistry E-II	4
M. E.	211 Engg. Graphics I	2	M. E.	216 Engg. Graphics II	2
Math.	175 College Algebra*	3	Math.	215 Anal. Geom. & Calc. I ...	4
Math.	190 Plane Trigonometry	3		Elective†	3
I. E.	180 Welding	1		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

SUMMER

Cen.	310 Books and Men I	2	(by home study)
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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
Ec. So.	110 Economics I	3	Ap. M.	408 Statics	3
I. E.	125 Shop A	2	M. E.	221 Engg. Graphics III	2
	Elective†	3		Elective†	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	18	Total	18

SUMMER

Cen.	320a Books and Men II	2	(by home study)
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JUNIOR

M. E.	411 Engg. Thermodynamics I	4	M. E.	412 Engg. Thermodynamics II	2
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
Ap. M.	409 Dynamics	2	Ap. M.	410 Mech. of Matls. I	4
I. E.	460 Metals & Alloys	2	M. E.	621 Machine Design I	5
Spch.	105 Oral Comm. I	2	Ap. M.	471 Fluid Mechanics	3
	Option	2 or 3	G. E.	115 Engg. Assembly	0
Engl.	090 English Proficiency	0			
G. E.	115 Engg. Assembly	0			
Total	17 or 18	Total	18

SUMMER

Cen.	320b Books and Men III	2	(by home study)
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SENIOR

M. E.	622 Machine Design II	3	M. E.	623 Machine Design III or	
M. E.	464 Mech. Engg. Lab. I	2	M. E.	428 Air Conditioning	3
Ap. M.	418 Mech. of Matls. Lab.	1	M. E.	150 Professional Devel.	1
	Option	13 or 12		Elective†	3
G. E.	115 Engg. Assembly	0		Option	12 or 11
			G. E.	115 Engg. Assembly	0
Total	.....	19 or 18	Total	.....	19 or 18

Number of hours required for graduation, 148.

* 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. A minimum of fifteen credit hours of electives must be chosen from lists on page 199, with a minimum of six credit hours from the Humanities group.

Aero Option

JUNIOR

FIRST SEMESTER

	<i>Course</i>	<i>Sem. Hrs.</i>		<i>Course</i>	<i>Sem. Hrs.</i>
Math.	360	Diff. Equa. for Engrs.	<u>2</u>		
			2		

SENIOR

FIRST SEMESTER

M. E.	440	Heat Power Engg. A	3		
M. E.	640	Aerodynamics I Rec.	3		
M. E.	644	Aerodynamics I Lab.	1		
M. E.	421	Heat Transfer	3		
Ap. M.	491	Airplane Stress Anal. I ..	<u>3</u>		
			13		

SECOND SEMESTER

I. E.	460	Metallography	1
M. E.	436	Aircraft Power Plants ...	3
M. E.	480	Aero Engg. Lab.	2
M. E.	666	Aero Engg. Design	2
		Elective†	<u>3</u>
			11

Design Option

JUNIOR

FIRST SEMESTER

Math.	360	Diff. Equa. for Engrs. ..	<u>2</u>
			2

SENIOR

FIRST SEMESTER

M. E.	422	Heat Power Design	3	Ap. M.	
Phys.	560	Atomic Physics	3	M. E.	
M. E.	421	Heat Transfer	3	M. E.	
		Elective†	<u>3</u>	M. E.	
			12		

SECOND SEMESTER

M. E.	414	Mech. of Matls. II	2
M. E.	468	Mech. Engg. Lab. II	2
M. E.	445	Mech. Engg. Design	3
M. E.	616	Mech. Engg. Design A ...	2
		Elective†	<u>3</u>
			12

Management Option

JUNIOR

FIRST SEMESTER

Math.	785	Stat. Qual. Control	<u>3</u>
			3

SENIOR

FIRST SEMESTER

M. E.	440	Ht. Power Engg. A	3	M. E.	
I. E.	410	Ind. Management	3	I. E.	
M. E.	490	Engg. Economics	3	B. A.	
		Elective†	<u>3</u>	Psych.	
			12	I. E.	

SECOND SEMESTER

M. E.	468	M. E. Lab. II	2
I. E.	442	Ind. Engg. Practice	3
B. A.	330	Prin. Accounting	3
Psych.	715	Pers. Psychology	3 or
I. E.	425	Time & Motion	2 plus
I. E.	460	Metallography I	<u>1</u>
			11

Petroleum Option

JUNIOR

FIRST SEMESTER

Gl. Gg.	110	Gen. Geology	<u>3</u>
			3

SENIOR

FIRST SEMESTER

M. E.	440	Ht. Power Engg. A	3	M. E.	
M. E.	510	Petro. Prod. I	3	M. E.	
		Elective†	<u>6</u>	Gl. Gg.	
			12		

SECOND SEMESTER

M. E.	468	M. E. Lab. II	2
M. E.	514	Petro. Prod. II	3
Gl. Gg.	405	Hist. Geology	4
		Elective†	<u>2</u>
			11

† Electives are to be chosen with the advice and approval of the head of the department and the dean. A minimum of six credit hours of electives must be chosen from lists on page 199, with a minimum of six credit hours from the Humanities group.

Curriculum in Nuclear Engineering

B. S. in Nuclear Engineering

FRESHMAN

FIRST SEMESTER				SECOND SEMESTER					
	Course	Sem. Hrs.			Course	Sem. Hrs.			
Engl.	125	Written Comm. I	3	Engl.	136	Written Comm. II	3		
M. E.	211	Engg. Graphics I	2	M. E.	216	Engg. Graphics II	2		
Chem.	210	Chemistry I	5	Chem.	230	Chemistry II Rec.	3		
Math.	175	College Algebra*	3	Chem.	250	Chemistry II Lab.	2		
Math.	190	Plane Trigonometry	3	Ch. E.	201	Ch. E. Orientation	1		
		Air or Military Science ..	1	Math.	215	Anal. Geom. & Calc. I ...	4		
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				16

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	
Ch. E.	205	Ch. E. Materials	2	Ch. E.	211	Indus. Stoichiometry	4	
Chem.	435	Quant. Analysis	4	Ap. M.	205	Applied Mechanics	4	
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.	115	Engg. Assembly	0	
G. E.	115	Engg. Assembly	0	Total				18

SUMMER

Chem.	505	Organic Chemistry	5	Ec. So.	110	Economics I	3
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JUNIOR

Chem.	585	Phys. Chem. I Rec.	3	Chem.	595	Phys. Chem. II Rec.	3	
Chem.	590	Phys. Chem. I Lab.	2	Ch. E.	420	Unit Oper. I Rec.	3	
Ch. E.	492	Ch. E. Thermo. I	3	Ch. E.	425	Unit Oper. I Lab.	2	
Ch. E.	411	Ch. E. Measurements	2	N. E.	450	Elem. of Nuclear Engg. ..	3	
Math.	360	Diff. Equa. for Engineers	2	Chem.	635	Tracer Techniques	3	
Phys.	560	Atomic Physics	3			Elective†	4	
Phys.	591	Modern Physics Lab. I ...	1	G. E.	115	Engg. Assembly	0	
		Elective†	2	Total				18
Engl.	090	English Proficiency	0					
G. E.	115	Engg. Assembly	0					

SENIOR

N. E.	470	Nuclear Reactor Tech. I	3	N. E.	490	Nuclear Reactor Tech. II	3	
Ch. E.	428	Unit Oper. II Rec.	3	Phys.	575	Nuclear Physics	3	
Ch. E.	430	Unit Oper. II Lab.	1	E. E.	470	Indus. Electronics Rec. ..	3	
Ch. E.	496	Ch. E. Thermo. II	3			Elective†	9	
E. E.	120	Elec. Engg. C Rec.	2	G. E.	115	Engg. Assembly	0	
E. E.	124	Elec. Engg. C Lab.	1	Total				18
Ap. M.	410	Mech. of Matls. I	4					
G. E.	115	Engg. Assembly	0					

Number of hours required for graduation, 148.

* 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. A minimum of fifteen credit hours of electives must be chosen from lists on page 199, with at least six credit hours from the Humanities group.

Approved Social Science and Humanities Electives for Students Enrolled in the School of Engineering and Architecture

Social Science Electives

Introduction to Social Science I, Gn. St. 210	4	Latin American Nations, H. G. P. 485	3
Introduction to Social Sci. II, Gn. St. 220	4	French Revolution and Napoleonic	
Economics II, Ec. So. 120	3	Period, H. G. P. 546	3
Money and Banking, Ec. So. 430	3	Europe, 1815-1914, H. G. P. 550	3
Public Finance, Ec. So. 470	3	Europe Since 1914, H. G. P. 556	3
Business Cycles, Ec. So. 480	2	Modern England, H. G. P. 565	3
International Trade, Ec. So. 486	3	Modern Germany, H. G. P. 570	3
Economic Systems, Ec. So. 500	2	Russia and the Soviet Union, H. G. P. 585	3
Introduction to Sociology, Ec. So. 250	3	Modern Democracy, H. G. P. 240	3
Sociology of the Family, Ec. So. 630	3	American Government I, H. G. P. 256	3
Introduction to Anthropology, Ec. So. 280	3	American Government II, H. G. P. 261	2
Cultural Anthropology, Ec. So. 650	3	Constitutional Democracy in America I,	
Social Systems, Ec. So. 655	3	H. G. P. 275	3
Development of Social Thought, Ec. So. 675	3	Constitutional Democracy in America II,	
Personal Finance, B. A. 140	2	H. G. P. 280	3
Administration, B. A. 401	3	Effective Citizenship, H. G. P. 285	2
General Psychology, Psych. 310	3	International Relations, H. G. P. 656	3
General Applied Psychology, Psych. 325	2	International Law and Organization,	
Social Psychology, Psych. 435	3	H. G. P. 666	3
Parliamentary Law, Spch. 205	1	State and Local Politics and	
Contemporary World History, H. G. P. 145	2	Administration, H. G. P. 675	2
Current History, H. G. P. 160	1	Government of Britain and the	
United States Before 1865, H. G. P. 175	3	Commonwealth, H. G. P. 680	3
United States After 1865, H. G. P. 190	3	Governments of Continental Europe,	
American Industrial History, H. G. P. 205	3	H. G. P. 682	3
Early Americas, H. G. P. 405	3	Soviet Systems, H. G. P. 685	3
Jackson to Lincoln, 1829-1860,		City Government, H. G. P. 690	2
H. G. P. 420	2	Federal Politics and Administration,	
Civil War, Reconstruction and the		H. G. P. 705	2
New South, H. G. P. 430	3	American Political Ideas, H. G. P. 711	3
Trans-Mississippi West, H. G. P. 435	3	Political Parties and Pressure Groups,	
Contemporary United States, H. G. P. 445	3	H. G. P. 719	3
Representative Americans, H. G. P. 455	2	Public Policy Toward Business,	
Advanced Economic History of the		H. G. P. 721	3
United States, H. G. P. 465	2	Constitutional Law, H. G. P. 730	3
American Social History, H. G. P. 470	3		

Humanities Electives

Introduction to Humanities I, Gn. St. 250	4	Philosophical Ideas in Literature,	
Introduction to Humanities II, Gn. St. 260	4	H. G. P. 765	3
Civilization I, H. G. P. 115	3	Contemporary World-Views, H. G. P. 770	3
Civilization II, H. G. P. 130	3	Ethics, H. G. P. 775	2
Current History, H. G. P. 160	1	Aesthetics, H. G. P. 777	3
American Intellectual History, H. G. P. 460	3	Contemporary Social Philosophies,	
History and Culture of Greece, H. G. P. 495	3	H. G. P. 780	3
History and Culture of Rome, H. G. P. 505	3	Symbolic Logic, H. G. P. 782	3
Medieval Europe, H. G. P. 515	3	Recent Political Philosophies, H. G. P. 785	2
Medieval and Tudor England, H. G. P. 525	3	Philosophy of Religions, H. G. P. 786	3
Renaissance and Enlightenment,		Introduction to Fiction, Engl. 145	2
H. G. P. 535	3	Introduction to Drama, Engl. 150	2
Far East, H. G. P. 595	3	English Literature I, Engl. 215	3
India and Southeast Asia, H. G. P. 600	3	English Literature II, Engl. 225	3
History of Religions, H. G. P. 605	3	American Literature I, Engl. 245	3
History of Science I, H. G. P. 740	3	American Literature II, Engl. 255	3
History of Science II, H. G. P. 745	3	Books and Men I, Engl. 310	3
Introduction to Philosophy, H. G. P. 350	3	Books and Men II, Engl. 320	3
Elementary Logic, H. G. P. 365	3	Shakespearean Drama I, Engl. 555	3
Introduction to Religion, H. G. P. 375	3	Appreciation of Music, Music 250	2
Oriental Philosophies, H. G. P. 750	2	Music in History, Music 635	3
Philosophy of Science, H. G. P. 752	3	Appreciation of Architecture, Arch. 200	3
Early Western Philosophy, H. G. P. 755	3	History of Painting and Sculpture,	
Modern Western Philosophy, H. G. P. 760	3	Arch. 285	3
American Philosophy, H. G. P. 762	3	Modern Language	6

AGRICULTURAL ENGINEERING

GEORGE H. LARSON, *Head of Department*

For Curriculum in Agricultural Engineering see page 186.

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. 180.
- 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) II. 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. 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.
- 141. Farm Shop.** (3) 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. One hour rec. and six hours lab. a week. For agricultural students.
- 160. Farm Buildings.** (3) II. 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.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 405. Farm Mechanics Methods.** (3) I, 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. One hour rec. and six hours lab. a week. For students in Agricultural Education. Pr.: Ag. E. 110, 120.
- 408. Advanced Farm Mechanics.** (3) S. For teachers of vocational agriculture and those concerned with teaching farm mechanics in high schools; advanced shop techniques, with special emphasis on welding, machine tool, mechanical drawing, sheet metal work, and farm carpentry. One hour rec. and six hours lab. a week. Pr.: Ag. E. 110, 405 or equiv., plus one year's teaching experience or approval of instructor.
- 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. One hour rec. and six hours lab. a week. For students in Agricultural Education. 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. Six hours lab. a week. For students in Agricultural Education. 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. 471, 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. 410.
- 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) I. 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. 471, 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. 471, 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 Agricultural Experiment Station or furnish material for the master's thesis. Pr.: Permission of instructor.

APPLIED MECHANICSMILTON 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; movement of inertia. Three hours rec. a week. Pr.: 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.

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, S. 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, S. 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.** (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.** (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. Testing of selected specimens of various engineering materials in order to determine their mechanical properties; test procedures; instrumentation; data interpretation. One hour lab. instruction and two 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.: or conc.: 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. or conc.: 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.
- 471. Fluid Mechanics.** (3) I, II, S. Physical properties; fluid statics; dynamics of ideal and real fluids (for incompressible and compressible flow); impulse and momentum; laws of similitude; dimensional analysis; flow in pipes; flow in open channels; flow about immersed objects. Three hours rec. a week. Pr.: Ap. M. 405 or 409, M. E. 411 or 115.
- 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. 471.
- 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 Method 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.
- 546. Non-linear Mechanics.** (3) 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.
- 821. Theory of Elasticity I.** (3) 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.
- 825. Theory of Elasticity II.** (3) I. Bending of prismatic bars and circular plates; stresses around cavities; stresses within soils; thermal stresses. Pr.: Ap. M. 821.
- 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. 821, M. E. 630.
- 862. Plasticity.** (3) 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. 471, 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 187.

For Curriculum in Architecture see page 188.

FOR UNDERGRADUATE CREDIT

- 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).
- 123. Architectural Graphics I.** (2) I. Introduction to architectural drawing; preparation for visualizing and graphically presenting subsequent

- drawing and design problems; emphasis placed on proper use of instruments, lettering, analyzing and recording architectural ideas accurately. Six hours lab. a week. Pr.: Math. 030.
- 126. Basic Drawing.** (2) I, II, S. A course in the fundamentals of drawing. May not be taken for more than two semesters. Six hours studio a week.
- 127. Architectural Graphics II.** (2) II. Introduction of third dimensional aspect in drawing—perspective, shades, and shadows. Six hours lab. a week. Pr.: Arch. 123 or equiv.
- 133. Sketching.** (2) I, II, S. Work in pencil, pen and ink, wash and other media for sketching or rendering; both studio and outdoor work. May not be taken for more than four semesters. Six hours studio a week. Pr.: Arch. 126 or approval of instructor.
- 137. Introduction to Architecture.** (1) I. The theory of architecture; investigation of fundamental concepts to properly relate the profession to society and its physical environment. One hour rec. a week.
- 140. Still Life Drawing.** (2) I, S. Sketches of still-life groups in various media; studio and out-of-doors. Six hours lab. a week. Pr.: Arch. 126.
- 142. Creative Drawing.** (2) S. Creative approach to freehand drawing for beginning or advanced students. Various media, such as charcoal, pencil, or pen and ink, may be employed. Six hours studio a week. Pr.: Approval of instructor.
- 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).
- 166. Water Color Painting.** (2) I, II, S. Painting in water color and other water-soluble media; includes both studio and outdoor painting and sketching. May not be taken for more than four semesters. Six hours studio a week. Pr.: Arch. 126 or approval of instructor.
- 176. Figure and Portrait Drawing.** (2) I, II, S. May not be taken for more than six semesters. Six hours studio a week. Pr.: Arch. 126.
- 186. Oil Painting.** (2) I, II, S. Principles of painting with oils and similar media; both studio and outdoor work. May not be taken for more than six semesters. Six hours studio a week. Pr.: Arch. 126 or approval of instructor.
- 188. Creative Painting.** (2) S. Creative approach to painting for beginning or advanced students. Work may be carried out in water color, oil, or other media. Six hours studio a week. Pr.: Approval of instructor.
- 196. Pictorial Composition.** (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. May not be taken for more than four semesters. Six hours studio a week. A course for students not enrolled in the curriculums in Architecture or Architectural Engineering.
- 200. Appreciation of Architecture.** (3) I, II. An analysis of the evolution of architectural styles to determine the relation of architectural expression to the needs of society. Three hours recitation a week. An elective course 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.

- 212. Commercial Illustration.** (2) I, II, S. This course is planned to assist the student in developing a creative approach to commercial problems. Starting with fundamentals of the design of lettering and simple posters, subsequent semesters deal with the composition of more complex problems such as magazine and newspaper advertising layouts. Following this is the study of the design of brochures, packaging, book jackets, etc. For the student wishing to major in commercial art, the last semesters will be devoted to preparing finished illustrations where well-designed layouts are developed with appropriate techniques. May not be taken for more than six semesters. Pr.: Arch. 126 or approval of instructor.
- 230. Elements of Architecture I.** (4) I, II. A study of the fundamentals of architectural design; discussion and graphical presentation of simple space organization and structural problems. Twelve hours lab. a week.
- 234. Elements of Architecture II.** (4) I, II. Cont. of Arch. 230. Twelve hours lab. a week. Pr.: Arch. 230.
- 240. Architectural Design I.** (5) I, II. Cont. of Arch. 234. Fifteen hours lab. a week. Pr.: Arch. 234.
- 244. Architectural Design II.** (5) I, II. 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. A study of the technique of preparing working drawings; integration of various materials and architectural units with structure. Nine hours lab. a week. Pr.: Arch. 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. Cont. of Arch. 320. Three hours rec. and six hours lab. a week. Pr.: Arch. 320.
- 328. Theory of Structures III.** (4) II. 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 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.
- 450. Sculpture.** (2) I, II, S. Work in three dimensions, stone, clay, metal, wood and other media to develop an understanding of mass and volume through an analysis of sculptural form. May not be taken for more than six semesters. Pr.: Arch. 126 or approval of instructor.
- 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 and 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. 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. Cont. of Arch. 250. Fifteen hours lab. a week. Pr.: Arch. 250.
- 495. Architectural Design VI.** (5) I, II. Cont. of Arch. 491. Fifteen hours lab. a week. Pr.: Arch. 491.

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. Cont. of Arch. 830; may furnish material for the master's thesis. Pr.: Arch. 830.
- 840. Advanced Painting and Composition.** Credit arranged. I, II, S. Advanced study and creative work in painting and composition. Pr.: Approval of instructor.
- 850. Advanced Sculpture and Composition.** Credit arranged. I, II, S. Advanced study and creative work in sculpture and composition. Pr.: Approval of instructor.

CHEMICAL ENGINEERING

HENRY T. WARD, *Head of Department*

For Curriculum in Chemical Engineering see page 189.

For Curriculum in Nuclear Engineering see page 198.

FOR UNDERGRADUATE CREDIT

- 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. (Effective September 1, 1959, this course will meet six hours a week for two credit hours and will become course number 425.)
- 428. Unit Operations II Recitation.** (3) I. Class and problem work in 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. 211. (Effective September 1, 1959, this course will meet six hours a week for two credit hours and will become course number 411.)

495. Chemical Engineering Thermodynamics II. (4) I. Thermodynamics applied to physical and chemical equilibrium in complex non-ideal systems. Three hours rec. and three hours lab. a week. Pr.: Ch. E. 492. (Effective September 1, 1960, this course will be taught without the lab. for three credits as course number 496.)

501. Industrial Reaction Rates. (1) II. Fundamentals of chemical reaction rates and the application of kinetic data in process design calculations. One hour rec. a week. Pr.: Ch. E. 495. (Effective September 1, 1960, this course will meet three hours a week for three credit hours and will become course number 502.)

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.

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 ENGINEERING

REED F. MORSE, *Head of Department*

For Curriculum in Civil Engineering see page 190.

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. or conc.: C. E. 125.

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, Math. 245 or 290.
- 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; or conc.: C. E. 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; or conc.: C. E. 424.
- 440. Sanitary Engineering.** (4) I, II. Design, construction, and operation of water supply and sewerage systems. Three hours rec. and three hours lab. a week. Pr.: Ap. M. 471, 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, II. The design, construction, and maintenance of railroads, highways, and airports. Three hours rec. a week. Pr.: C. E. 131, Ap. M. 420, 450, or conc. 471.
- 453. Transportation Engineering Laboratory.** (2) I, II. 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.
- 456. Hydrology.** (2) I, II. A study of the sources of supply and movement of underground and surface waters. Two hours rec. a week. Pr.: Ap. M. 471.
- 458. Hydraulic Engineering.** (3) I, II. Application of the principles of fluid mechanics to the control and utilization of water; river and flood control, dams, reservoirs, power development, navigation, and pipe networks; laboratory-fluid measuring devices, hydraulic models, and

- flow in open channels. Two hours rec. and three hours lab. a week. Pr.: Ap. M. 471.
- 460. Foundations.** (2) I, II. Design and construction of foundations for pavements, bridges, and buildings. Two hours rec. a week. Pr.: Ap. M. 410; or conc.: Ap. M. 450.
- 470. Design of Framed Structures.** (3) I, II, S. Designs and general drawings of highway and railroad truss and girder bridges. Nine hours lab. a week. Pr.: C. E. 421, 424.
- 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. 451.
- 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. 451.
- 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.
- 815. Advanced Photogrammetry.** (3) II. Quantitative photogrammetry, including graphical and analytical space orientation; principles and methods of use of the most recent photogrammetric plotting equipment. Three hours rec. a week. Pr.: C. E. 411.

ELECTRICAL ENGINEERING

RUSSELL M. KERCHNER, *Head of Department*

For Curriculum in Electrical Engineering see page 191.

FOR UNDERGRADUATE CREDIT

- 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 students 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.

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. Characteristics of direct-current machines. Three hours lab. a week. Pr. or conc.: E. E. 411.

426. Alternating-Current Circuits. (5) I, II. 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 synchronous motors. Three hours rec. a week. Pr.: E. E. 426.

437. Alternating-Current Laboratory. (1) I, II. 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. Cont. of E. E. 430, including 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. 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.

450. Circuit Analysis. (3) I, II. Steady-state and transient analysis of circuits employing matrices, vector analysis, operational methods, and transforms. Three hours rec. a week. Pr.: E. E. 426, Math. 360.

460. Electronics I. (2) I, II. The fundamental principles of electron tubes. Two hours rec. a week. Pr.: E. E. 120 or 500; or conc.: E. E. 426.

464. Electronics II Recitation. (4) I, II, S. 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, S. 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. Theory of direct-current circuits and machines, magnetic circuits, and alternating-current circuits and machines. Four hours rec. a week. Pr.: Phys. 140; pr. or conc.: Math. 245 or 290.
- 504. Electrical Engineering M-I Laboratory.** (1) I, II. Experiments on the measurement of resistance and the study of direct- and alternating-current circuits and machinery characteristics. Three hours lab. a week. Pr. or conc.: E. E. 500.
- 508. Electrical Engineering M-II Recitation.** (3) I, II. Theory and application of electronic rectifiers, amplifiers, oscillators, and control circuits. Three hours rec. a week. Pr.: E. E. 500, 504.
- 510. Electrical Engineering M-II Laboratory.** (1) I, II. Experiments on the subjects in E. E. 508. Three hours lab. a week. Pr. or conc.: E. E. 508.
- 531. Electronics III Recitation.** (4) II. Radio-frequency amplifiers and oscillators, modulation, demodulation, limiters, clampers, multi-vibrators, transistors, and other fundamental electronic circuits. Four hours rec. a week. Pr.: E. E. 464, 468.
- 535. Electronics III Laboratory.** (1) II. Experiments on E. E. 531. Three hours lab. a week. Pr. or conc.: E. E. 531.
- 539. Networks Recitation.** (3) I, II. Network theorems, infinite line, wave filters, equalizers, impedance matching. Three hours rec. a week. Pr.: E. E. 426.
- 541. Networks Laboratory.** (1) I, II. Communication circuits and equipment. Three hours lab. a week. Conc.: E. E. 539.
- 550. Electromagnetic Waves Recitation.** (3) I. Principles of guided and free electromagnetic wave propagation, including generation, radiation, and reception. Three hours rec. a week. Pr.: E. E. 450.
- 554. Electromagnetic Waves Laboratory.** (1) I. 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) II. 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 or 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.
- 815. Information Theory.** (3) I. The discrete noiseless channel, the discrete noisy channel, continuous signals theory, modulation theory from the standpoint of information theory. Three hours rec. a week. Pr.: Math. 245 or 290.
- 825. Digital Techniques.** (3) II. Combinational and sequential circuits, counters, adders, accumulators, memory devices, digital differential analyzer, and programming of computers. Three hours rec. a week. Pr.: E. E. 464.
- 835. Network Synthesis.** (3) I. Methods of synthesizing networks to yield specified characteristics. Three hours rec. a week. Pr.: E. E. 539.
- 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, 531.
- 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) I. 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. 531.
- 855. Advanced Electromagnetic Waves.** (3) II. Mathematical development of electromagnetic wave theory. Three hours rec. a week. Pr.: E. E. 554.
- 860. Matrix Methods Applied to Electrical Engineering.** (3) II. Application of matrices to lumped and distributed parameter networks, carrier-frequency servomechanisms, and radar mapping. Three hours rec. a week. Pr.: E. E. 539.
- 880. Advanced Electrical Theory.** Credit arranged. I, II. Pr.: E. E. 464.

GENERAL ENGINEERINGMERRILL 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 ARTSGABE A. SELLERS, *Head of Department*

For Curriculum in Industrial Education see page 193.

For Curriculum in Industrial Engineering see page 194.

For Curriculum in Industrial Technology see page 195.

FOR UNDERGRADUATE CREDIT

- 110. Auto Mechanics I.** (4) I, S. A study of the automobile, its construction and maintenance. Two hours rec. and six hours lab. a week. Pr.: Phys. 120 or equiv.
- 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. An introductory course in forging and heat treating, foundry practice and machine shop work. Six hours lab. a week.
- 130. Woodwork I.** (2) I, 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.
- 144. Wood Turning.** (2) I, II, S. Practice in handling the lathe and turning tools. 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, 130, 144.
- 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) 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.
- 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.: 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, II, 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, II, 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. Cont. of the machine shop phase of I. E. 125. Six hours lab. a week. Pr.: I. E. 125.
- 194. Machine Tool II.** 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.
- 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.
- 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.
- 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, II. 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

- 405. Advanced Appliance Servicing.** Credit arranged. II, S. Pr.: I. E. 122 and consent of instructor.
- 408. Advanced Auto Mechanics.** Credit arranged. I, S. Pr.: I. E. 110 and consent of instructor.
- 410. Industrial Management.** (3) I, II. 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.
- 403. Highway Safety and Driver Education.** (5) I, S. The study, practice, and teaching of accepted driving habits. Meets Kansas Certification requirements for teaching driver education in secondary schools. Three hours rec. and six hours lab. a week. Pr.: Senior standing and valid driver's license.
- 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.
- 427. Plant Planning and Layout.** (2) II. 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.: 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, S. 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.: I. E. 175.
- 464. Metallography II.** (2) I, S. 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.
- 485. Advanced Metallurgy.** Credit arranged. I, S. Studies in some specialized phase of metallurgy, such as metallography, physical metallurgy, heat treatment of metals, processing, and inspection of metals. Pr.: I. E. 175 and approval of instructor.
- 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 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
RALPH G. NEVINS, *Head of Department*

For Curriculum in Mechanical Engineering see page 196.

FOR UNDERGRADUATE CREDIT

- 110. Steam and Gas Engineering C.** (2) 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) I. 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.
- 150. Professional Development.** (1) I, II. The social and professional aspect of engineering. One hour rec. a week. Pr.: Senior classification.
- 211. Engineering Graphics I.** (2) I, II. Engineering lettering; use of drawing instruments; geometrical constructions; sketching; theory of projections of points, lines, and planes; orthographic projections of solids on conventional projection planes and auxiliary planes; conventional sections; fundamentals of dimensioning; pictorial representations. Six hours lab. a week. Pr.: Math. 030.
- 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.: College credit in Engineering Drawing.
- 216. Engineering Graphics II.** (2) I, II. Geometry of engineering graphics relating particularly to lines and planes, non-coplanar lines, intersections and development of surfaces and solids; perspective; problems for developing conceptual ability and for training in concentration and imagination. Six hours lab. a week. Pr.: M. E. 211.
- 221. Engineering Graphics III.** (2) I, II. Pictorial and orthographic working drawings and sketches including details and assemblies, using the principles and standards of geometric control; creative and functional design; A. S. A. Standard conventions and specifications; threads and fasteners; sketching of exploded views; charts and diagrams. Six hours lab. a week. Pr.: M. E. 216 or 215.
- 225. Engineering Graphics IV.** (2) II. Design of jigs, fixtures, and dies. Six hours lab. a week. Pr.: M. E. 221.

230. Mechanism. (3) 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 or 216.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 411. Engineering Thermodynamics I.** (4) I, II, S. 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. Fundamentals of conduction, convection, and radiation; principles of heat exchanger design and dimensional analysis. Two hours rec. and three hours lab. a week. Pr.: M. E. 411, Ap. M. 471, 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. 412.
- 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. 412.
- 436. Aircraft Power Plants.** (3) II. Design and performance of aircraft propulsion systems, including rockets and jets. Three hours rec. a week. Pr.: M. E. 412, Ap. M. 471, Math. 360.
- 440. Heat-Power Engineering A.** (3) I, II, S. Power-plant equipment, fuels, and combustion. Three hours rec. a week. Pr.: M. E. 411.
- 442. Heat-Power Design.** (3) I. Performance and economics of power cycles and cycle components; nuclear power. Three hours rec. a week. Pr. or conc.: M. E. 421.
- 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. 442.
- 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.
- 462. Mechanical Engineering Laboratory E.** (1) I, II. Laboratory course in mechanical equipment for non-mechanical engineering students. Three hours lab. a week. Pr.: M. E. 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 or 442.
- 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. 464.
- 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.
- 506. Automatic Controls.** (3) II. Principles of the design and application of control devices; response and dynamics of control systems. Two hours rec. and three hours lab. a week. Pr.: E. E. 508, Math. 360.
- 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. 471 or 474.
- 530. Problems in Mechanical Engineering.** Credit arranged. I, II, S.
- 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) II. Pr.: M. E. 421.
- 550. Combustion.** (3) I. Dynamics and thermodynamics of combustion processes; solid, liquid, and gaseous fuels. Pr.: M. E. 421, 520.
- 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) I, II, S. 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. 409.
- 622. Machine Design II.** (3) I, II, S. The straining action in machine elements; friction and lubrication; high-speed machinery fastenings. Three hours rec. a week. Pr.: Ap. M. 410, M. E. 221, 621.
- 623. Machine Design III.** (3) I, II. More advanced consideration of the design of machine elements and of simple machines. Three hours rec. a week. Pr.: M. E. 622.
- 626. Mechanical Engineering Design A.** (2) II. Professional-type problems in the machine design area. Six hours lab. a week. Pr.: M. E. 421, 622.
- 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. 409, 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) I. A general introduction to aerodynamics. Three hours rec. a week. Pr.: Ap. M. 471, Math. 360.

- 644. Aerodynamics I Laboratory.** (1) I. Operation of wind tunnel. Three hours lab. a week. Pr. or conc.: M. E. 640.
- 648. Aerodynamics II Recitation.** (3) II. Cont. of Aerodynamics I. Three hours rec. a week. Pr.: M. E. 640.
- 650. Aerodynamics II Laboratory.** (1) II. Determination of performance curves and stability of an airplane. Pr. or conc.: M. E. 648.
- 660. Airplane Design I.** (3) II. 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.
- 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.: Senior standing.
- 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.
- 812. Laboratory Investigations in Thermodynamics, Heat Transfer, Fluid Flow, or Combustion.** Credit arranged. I, II, S. Pr.: Basic undergraduate courses in the area selected and consent of instructor.
- 814. Laboratory Investigations in Machine Design.** Credit arranged. I, II, S. Pr.: Basic undergraduate courses in machine design and consent of instructor.
- 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) I. 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.
- 835. Heat Conduction in Solids.** (3) I. General differential equation of heat conduction and methods of solution for two-dimensional steady state, transient heat flow, periodic heat flow, and internal heat sources. Pr.: M. E. 421.
- 840. Research Methodology.** (2) I. Principles and techniques of engineering research. Two hours rec. a week. Pr.: Graduate standing.
- 845. Dimensional Analysis and Theory of Models.** (2) II. Basic methods of dimensional analysis, with applications to the theory of models and the planning of experiments; similarity and model laws, dimensional analysis applied to problems in stress analysis, fluid mechanics, heat transfer, and electrical engineering. Pr.: Consent of instructor.

NUCLEAR ENGINEERING

, Head of Department

For Curriculum in Nuclear Engineering see page 198.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 450. Elements of Nuclear Engineering.** (3) II. Introduction and scope of nuclear reactor engineering; a study of nuclear reactions and radia-

tions; the utilization of nuclear reactors for power generation; introduction to reactor instrumentation, control, and shielding; the application of these concepts to various reactor types. Pr.: Phys. 140, Math. 245 or 290.

- 470. Nuclear Reactor Technology I.** (3) I. Further treatment of the subjects of instrumentation, control, and shielding; a study of properties of materials of construction; principles and practices in processing of nuclear fuels and isotope separations. Pr.: Ch. E. 420; N. E. 450; Math. 360; Phys. 560, 591; Chem. 505, 595; or conc.: Ch. E. 428.
- 490. Nuclear Reactor Technology II.** (3) II. Basic theory and problems associated with the design, construction, operation and utilization of nuclear reactors. Pr.: Ch. E. 428; N. E. 470; or conc.: Phys. 575.

FOR GRADUATE CREDIT

- 820. Control of Nuclear Reactors.** (3) I. Reactor kinetics, measurement of power level and period. Temperature effects. Servomechanisms and feed-back loops. Three hours rec. a week. Pr.: Phys. 575, N. E. 470.
- 830. Nuclear Reactor Instrumentation.** (3) I. Automatic control components for reactors, their application and design. Three hours rec. a week. Pr.: Phys. 575, N. E. 490.
- 840. Advanced Nuclear Reactor Theory.** (3) II. Major topics considered are the multiplication, slowing down and diffusion of neutrons; the conditions of criticality; time behavior of reactor and other theories. Three hours rec. a week. Pr.: Phys. 575, N. E. 490.
- 850. Nuclear Engineering Laboratory.** (1) II. Simulated reactor start-up, control, operation and shut-down problems. Three hours lab. a week. Pr.: N. E. 820.

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, 1957." 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 225) with Options in
 - Interior Decoration (page 226)
 - Crafts (page 226)
 - Costume Design (page 226)
 - Teaching Art in High School (page 227)
 - Clothing Retailing (page 227)
 - Clothing and Costume Design (page 227)
 - Clothing and Textile Research (pages 227-228)
 - Nursery School Teaching (page 228)
 - Family and Child Development with Community Services (page 228)
 - Homemaking (page 228)
 - Family Economics and Finance (page 229)
 - Household Equipment, Housing, and Home Management (page 229)
 - Foods and Nutrition Research (page 229)
 - Foods Demonstrating (page 230)
 - Home Economics Extension Work (page 230)
 - Teaching Home Economics in High School (page 230)
2. Curriculum in Dietetics and Institutional Management (page 231)
3. Curriculum in Restaurant Management (page 232)
4. Curriculum in Home Economics and Journalism (page 233)
5. Curriculum in Home Economics and Nursing (page 234)

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 economics 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 with Options

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 economics extension 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 extension 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 TV	2
Spch.	285	Radio Speech I	2	Spch.	745	Broadcasting Women's Programs	3
Spch.	295	Radio Continuity	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			
		<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
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.	136	Written Comm. II	3
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.	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			16 or 17

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
		Elective or option	5	C. & T.	170	Pattern Study	3
Gn. H. E.	020	H. E. Lect.	0			Elective or option	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
F. Ec.	202	The House	3	F. C. Dev.	350	Family Relationships	2
		Elective or option	10			Elective or option ..	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			15	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 1	3
Art	106	Lettering	2	Educ.	105	Educ. Psychology 11	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.	401	Administration	3	Engl.	155	Business Letter Writing	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 ..	3	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

laboratories of colleges and universities, commercial firms, or government agencies.

<i>Course</i>		<i>Sem. Hrs.</i>	<i>Course</i>		<i>Sem. Hrs.</i>
Chem.	230	Chemistry II	3	C. & T.	755
Chem.	250	Chemistry II Lab.	2	Math.	175
Chem.	435	General Quan. Analysis ..	4	Math.	320
C. & T.	650	Clothing Economics	3	Phys.	110
C. & T.	610	Intermediate Textiles	3	Phys.	210
Option Requirements				Advanced Textiles	
Electives				College Algebra	
Curriculum Requirements				Elements of Statistics	
(Take Chem. 110 or 210. Take Chem. 505 in place of Chem 330.)				General Physics I	
Total				Household Physics	

Option in Nursery School Teaching (F. C. Dev.)

This option is for the student who wishes to become a nursery school assistant or teacher, a teacher of exceptional children, or a teaching assistant in college.

<i>Course</i>		<i>Sem. Hrs.</i>	<i>Course</i>		<i>Sem. Hrs.</i>
F. C. Dev.	305	Child Guidance I	3	F. C. Dev.	550
F. C. Dev.	350	Family Relationships	2	F. C. Dev.	601
F. C. Dev.	510	Child Guidance II	3	F. Ec.	503
F. C. Dev.	515	Devel. & Guid. of Youth ..	3	Psych.	310
F. C. Dev.	520	Lit. & Music for Young Child	3	Psych.	415
F. C. Dev.	525	Play, Activ. and Matls.	3	Adolescence	
Option Requirements				31 — 31	
Electives				24 — 26	
Curriculum Requirements				69 — 67	
(Take F. C. Dev. 490.)					
Total				124 124	

Option in Family and Child Development with Community Services (F. C. Dev.)

This option appeals to students who are interested in family life programs, child welfare with community agencies, social welfare projects, or in other phases of child and family development.

<i>Course</i>		<i>Sem. Hrs.</i>	<i>Course</i>		<i>Sem. Hrs.</i>
F. C. Dev.	305	Child Guidance I	3	F. Ec.	555
F. C. Dev.	350	Family Relationships	2	Ec. So.	625
F. C. Dev.	510	Child Guidance II	3	Psych.	310
F. C. Dev.	515	Devel. & Guid. of Youth ..	3	Psych.	415
F. C. Dev.	550	The Family	3	Psych. of Child. and Adolescence	
F. Ec.	503	Home Management	2	Psych.	435
Option Requirements				Social Psychology	
Electives				31 — 31	
Curriculum Requirements				24 — 26	
(Take F. C. Dev. 490.)				69 — 67	
Total				124 124	

Option in Homemaking (F. Ec.)

This option is intended to give students additional opportunity in home-applied courses which will prove invaluable to them as homemakers. It also provides sufficient electives that the student can prepare for employment after graduation and until family responsibilities demand their full time. Or, the electives may be used to pursue non-vocational subjects of general educational interest.

<i>Course</i>		<i>Sem. Hrs.</i>	<i>Course</i>		<i>Sem. Hrs.</i>
Art	123	Home Furnishings	2	F. Ec.	504
F. C. Dev.	305	Child Guidance I	3	F. Ec.	555
F. C. Dev.	350	Family Relationships	2	F. Ec.	572
F. Ec.	352	Household Equipment	2	F. & N.	250
F. Ec.	503	Home Management	2	Dietetics	
Option Requirements				22	
Electives				34	
Curriculum Requirements				68	
(Take Ec. So. 110, 250, Psych. 310 in place of Gn. St. 210 and 220; F. C. Dev. 490.)					
Total				124	

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
Ec. So.	120	Economics II	3	F. Ec.	505
Ec. So.	130	Money and Banking	3	Math.	145
F. C. Dev.	305	Child Guidance I	3	Math.	160
F. Ec.	503	Home Management	2	Math.	320
F. Ec.	504	Home Management Lab. ..	2	Psych.	435
F. Ec.	555	Families in Am. Econ. ..	3	Ec. So.	651
					Consumers and the Mkt. 3
					Finan. Prob. of Families 2
					Algebra
					Math. of Finance
					Statistics
					Social Psychology
					Cultural Anthropology
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 TV, 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
F. C. Dev.	305	Child Guidance I	3	F. Ec.	522
F. Ec.	352	Household Equipment	2		Time and Motion in
F. Ec.	422	Housing Requirements	2		Household Tasks
		of Families	2	F. Ec.	555
F. Ec.	452	Adv. Hshld. Equipment ..	3	F. Ec.	572
F. Ec.	503	Home Management	2	F. & N.	240
				Phys.	210
					Families in Am. Ec.
					Consumers and the Mkt. 3
					Foods II
					Household Physics
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

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
Chem.	230	Chem. Recitation II	3	F. & N.	560
Chem.	250	Chem. Laboratory II	2		Seminar in Foods and
Chem.	435	Gen. Quan. Analysis	4		Nutrition
Chem.	650	General Biochemistry	5	F. & N.	557
F. & N.	240	Foods II	3	F. & N.	558
F. & N.	250	Dietetics	3	Phys.	110
F. & N.	412	Human Nutrition	3	Phys.	210
					General Physics I
					Household Physics
Option Requirements					36 — 37
Electives					19 — 17
Curriculum Requirements					69 — 70
(Take Chem. 110 or 210. Take Chem. 505 in place of Chem. 330; Zool. 110 and 465 in place of Gn. St. 150 and 160.)					
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.

	<i>Course</i>	<i>Sem. Hrs.</i>		<i>Course</i>	<i>Sem. Hrs.</i>
A. H.	219 Meat Selec. & Util.		F. & N.	417 Experimental Cookery	3
	H. E.	2	F. & N.	Seminar in Foods and Nutrition	2
Bact.	110 General Microbiology	3	Ins. M.	207 Quantity Food Prep. I	2
F. Ec.	352 Household Equipment	2	Phys.	210 Household Physics	4
F. Ec.	503 Home Management	2	Spch.	385 Radio Talk	2
F. Ec.	504 Home Management Lab.	2	Journ.	220 Reporting I	2
F. & N.	240 Foods II	3	Journ.	221 Reporting Laboratory	1
F. & N.	250 Dietetics	3			
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 Economics Extension Work

This option is designed for the student who wishes to become a county home economics 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 Economics Leader advises with the student who selects this option.

	<i>Course</i>	<i>Sem. Hrs.</i>		<i>Course</i>	<i>Sem. Hrs.</i>
C. & T.	170 Pat. Study & Garment Construction	3	F. C. Dev.	515 Devel. and Guid. of 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.	305 Child Guidance I	3	Phys.	210 Household Physics	4
F. C. Dev.	350 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.

	<i>Course</i>	<i>Sem. Hrs.</i>		<i>Course</i>	<i>Sem. Hrs.</i>
C. & T.	170 Pattern Study and Garment Construction	3	Educ.	575 Voc. Home Ec. Curriculum	3
C. & T.	300 Tailoring	3	F. C. Dev.	305 Child Guidance I	3
Educ.	100 Educ. Psychology I	3	F. C. Dev.	350 Family Relationships	2
Educ.	105 Educ. Psychology II	3	F. Ec.	503 Home Management	2
Educ.	120 Prin. of Sec. Educ.	3	F. Ec.	504 Home Management Lab.	2
Educ.	276 Meth. of Tchg. Home Ec.	2	F. & N.	240 Foods II	3
Educ.	295 Tchg. Partic. in Home Economics	4	Ins. M.	430 School Food Service	3
			Phys.	210 Household Physics*	4
Option Requirements					43
Electives					9
Curriculum Requirements					72
(Take Chem. 110 and 330; F. C. Dev. 490; C. & T. 255; take Psych. 310 in place of F. C. Dev. 210; take F. & N. 400 in place of F. & N. 130.)					
Total					124

* F. Ec. 352, Household Equipment I, and one of the following: Art 123, Home Furnishings; Art 172, Contemporary Homes; F. Ec. 422, Housing Requirements of Families may be substituted upon approval of the Dean of the School of Home Economics.

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.	136	Written Comm. II	3
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			17

SOPHOMORE

Ec. So.	110	Economics I	3	Ec. So.	250	Intro. 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. Physies	4
Spec.	105	Oral Comm.	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.	305	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.	110	Gen. Micro.	3	B. A.	725	Inst. Accounting	2
Educ.	285	Meth. of Tchg. for Diet. Students	3	F. & N.	514	Diet. for Abu. Cond.	2
F. & N.	412	Human Nutr.	3	Ins. M.	403	Org. and Mgmt. of Inst.	3
		Elective	6	Ins. M.	402	Org. and Mgmt. of Inst. Lab.	2
Gn. H. E.	020	H. E. Lect.	0			Elective	5
				Gn. H. E.	020	H. E. Lect.	0
Total			15	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.	136	Written Comm. II	3
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.	210	Human Relations	2	Speh.	105	Oral Comm.	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			17 or 18

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	Gn. H. E.	020	H. E. Lect.	0
Ph. Ed.		Physical Education	0	Ph. Ed.		Physical Education	0
		Air or Military Science ..	1			Air or Military Science ..	1
Total			16 or 17	Total			15 or 16

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
B. A.	275	Business Law I	3 or	Psych.	515	Personnel Psych.	3
B. A.	280	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 Tehg. for				Elective	2
		Diet. Stu.	3	Gn. H. E.	020	H. E. Lect.	0
		Elective	1				
Gn. H. E.	020	H. E. Lect.	0				
Total			15	Total			15

Number of hours required for graduation, men 128 women 124.

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								
	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.	136	Written Comm. II	3			
Art	100	El. Des. I	2		Art	113	Cost. Des. I	2			
F. & N.	110	Foods I	5		Spch.	105	Oral Comm.	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			15	or	16

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.	350	Family Relationships ..	2	or	F. C. Dev.	350	Family Relationships ..	2	or	
F. C. Dev.	305	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							
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	10	
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			15	

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

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.	5
Engl.	125 Written Comm. I	3		Chem.	5
F. C. Dev.	210 Human Relations	2	Engl.	136 Written Comm. II	3
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 Family Finance	2
			Gn. H. E.	020 H. E. Lect.	0
			Ph. Ed.	Physical Education	0
Total		15	Total		17

SUMMER SESSION

Zool.	110 Gen. Zool.	5
Ec. So.	Introd. Soc.	3
Total		8

SOPHOMORE

Gn. St.	250 Intro. to Human. I	4	Gn. St.	260 Intro. to Human. II	4
C. & T.	255 Textiles	3	Bact.	250 Bacteriology	5
Spch.	105 Oral Comm.	2	F. C. Dev.	305 Child Guidance I	3
F. C. Dev.	350 Family Relationships	2		Elective in H. E.	5
F. & N.	130 Applied Nutrition	2	Gn. H. E.	020 H. E. Lect.	0
	Elective in H. E.	4	Ph. Ed.	Physical Education	0
Gn. H. E.	020 H. E. Lect.	0	Engl.	090 English Proficiency	0
Ph. Ed.	Physical Education	0			
Total		17	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).

Educ.	105 Educ. Psych. II	3
Zool.	240 Hum. Anat. and Physiol.	5
Total		8

After the student completes the second summer session she transfers to the Department of Nursing, University of Kansas School of Medicine, for 24 months.* A student qualifies for a Bachelor of Science Degree in Home Economics from Kansas State College on completion of fifteen months of professional training in the Department of Nursing. After completion of the entire prescribed program in nursing, the student qualifies for the degree, Bachelor of Science in Nursing, conferred by the University of Kansas School of Medicine.

* Entrance requirements to the Department of Nursing are: 1) College grades that average C or more. 2) Scores that are acceptable to the Department of Nursing on the battery of orientation tests administered when the student first enrolls at Kansas State College.

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 equiv.
- 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 cooper; 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.
- 419. Silversmithing.** (2), S. Advanced design and work in metal; design of flatware, holloware and decorative silver. Pr.: Art 411 or consent of instructor.
- 421. Ceramics II.** (2) I, II, S. Advanced work in pottery design including experimentation with clay bodies, glazes, and proficiency in using the potter's wheel. Also ceramic sculpture. Pr.: Art 139 or consent of instructor.
- 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.
- 437. Costume Design III.** (3) II alt. years. A cont. of Costume Design II. Factors in fashion trend and acceptance; commercial designing for the market. 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 for 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 227), (2) clothing and costume design (page 227), and (3) textiles research (page 227). 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. Designing 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 consent of 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 Economics.** (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

RUTH HOEFLIN, *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.
- 305. 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.: Sophomore standing or consent of department head. Additional charge for lunch.
- 310. Family Living.** (2) I, II. The family and its relation to health and growth of the individual. Includes planned experiences with children.
- 350. Family Relationships.** (2) I, II, S. Effects of family interaction upon individual development; consideration of pre-marital, marital, and parent-child relationships. Pr.: Sophomore standing.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 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. 305, 490, or conc., 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. 305.
- 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. 305.
- 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. 305.
- 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. 350 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 department leading to the degree B. S. in Home Economics is described under the curriculum **Home Economics with Options** (page 225), (1) Homemaking, (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. Credit will not apply toward a degree in home economics.
- 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. Not open to students having credit in F. & N. 130. Four hours rec. and lab. a week.
- 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 or 175, Gn. St. 160 or Zool. 465, 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

- 400. Principles of Nutrition.** (4) A study of the function of the various nutrients and their inter-relationship in the body economy; factors affecting the need, symptoms and diseases of deficiency, food sources of the nutrients, and the providing of an adequate diet for the family are studied. Not open to foods and nutrition majors. Three hours rec. and two hours lab. a week. Pr.: F. & N. 240, Chem. 330 or 505, and Gn. St. 160 or Zool. 465.
- 405. Advances in Foods.** (3) S. Recent developments in research related to foods. Pr.: 8 hours in foods and consent of head of department. Cannot be used for credit toward the M. S. or Ph. D. degrees in foods and nutrition. NOTE: This course will be offered the first three-weeks session of the 1958 summer school: June 9 through June 27. Visiting professors are to assist the residence faculty.
- 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.
- 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.
- 560. Seminar in Foods and Nutrition.** (2) I, II, S in even years. Individual reports and discussion of current research in foods and nutrition. Pr. or conc.: F. & N. 412 and 417 or consent of head of department.
- 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. Pr.: 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. Pr.: Consent of instructor.

GENERAL HOME ECONOMICS
DORETTA SCHLAPHOFF HOFFMAN, *Head of Department*

FOR UNDERGRADUATE CREDIT

- 920. 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

Courses 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.

INSTITUTIONAL MANAGEMENT
GRACE M. SHUGART, *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.** (2) 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 conc. 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 Ins. M. 207 or 212. Pr.: F. & N. 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 in 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 10:30 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	70.00	165.00
Vet. Med. students	80.00	175.00
Totals—All except Vet. Med. students	<u>\$104.00</u>	<u>\$199.00</u>
Totals—Vet. Med. students	<u>\$114.00</u>	<u>\$209.00</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 98.

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		
	<i>Course</i>	<i>Sem. Hrs.</i>		<i>Course</i>	<i>Sem. Hrs.</i>
Bact.	310 Vet. Microbiology	3	Bact.	310 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. II.	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 Jr.-Sr. Conf.	0	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
B. A.	132 Fundamentals of Busi-		Path.	453 Food Hygiene and	
	ness for Profes-		Pub. Health II	4	
	sional People	2	Surg.	630 Clinics IV	4
Path.	451 Food, Hyg., and Pub.		Surg.	680 Dis. of Sm. Ani.	2
	Health I	3	Path.	495 Autopsy and Clinical	
Path.	440 Pathology IV	3	Path. Lab. II	0	
Surg.	525 Lrg. Ani. Surg. II	4	Gn. V. M.	130 Jr.-Sr. Conf.	0
Surg.	620 Clinics III	4			
Path.	485 Autopsy and Clinical				
	Path. Lab. I	0			
Gn. V. M.	400 Vet. Ethics and Official				
	Lvstkg. 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	Special 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.	510	Special Histology	3 semester hours
Path.	810	Problems in Pathology	Credit to be arranged
Path.	815	Reproductive Organ Pathology	1 to 4 semester hour
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.	400	Diseases of Wildlife	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

DONALD M. TROTTER, *Head of Department*

The classroom instruction consists of lectures, quizzes, recitations, dissection of specimens, study of specially dissected specimens and various models of anatomical areas. The anatomical museum contains hundreds of anatomical specimens, various skeleton models, and bones for individual student 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 the embalmed material. In the undergraduate courses the ruminant is used as the basic-pattern dissection animal and is followed by a dissection of the dog and comparative studies on the horse, pig, chicken, and cat.

Additional courses on the graduate level are offered for veterinary medicine students or graduates and for graduate students in other fields.

FOR UNDERGRADUATE AND GRADUATE CREDIT

- 425. Anatomy I.** (7) I. Dissection of the body cavities, limbs, head, neck, 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. Dissection of the body cavities, limbs, head, and neck of the ruminant and the dog. Parallel comparative studies on the horse, pig, chicken, and cat. Two hours rec. and twelve hours lab. a week. Pr.: Anat. 425.
- 450. Topographic Anatomy.** (1) II. 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.
- 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 chicken. Pr.: Anat. 425, 435, Physi. 131, 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.

FOR GRADUATE CREDIT

- 801. Avian 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.
- 810. Bovine 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.

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 AND GRADUATE 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 GRADUATE CREDIT

- 510. Special Histology.** (3) I, II, S. 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, S. 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, S. 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, Physi. 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.

PHYSIOLOGY

GRAVERS K. L. UNDERBJERG, *Head of Department*

The Department of Physiology presents courses in comparative physiology, problems in physiology, analysis of body fluids, and pharmacodynamics for veterinary and graduate students, and research in physiology. A course in anatomy and physiology is presented for agricultural students. Instruction is by lecture, recitation, laboratory work, and demonstrations.

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 existing 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 circulation, digestion, metabolism, reproduction, endocrine glands and other physiologic systems. 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 function of the urinary system and skin, fluid balance, metabolism, temperature regulation, muscular and nervous system, growth, 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 dynamic action of substances (drugs) other than nutrients in the living structures. Substances to be studied will include chemicals 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 AND GRADUATE 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, S. The purpose of this course is to attempt to solve many of the surgical problems confronting the 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 AND GRADUATE 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.

FOR GRADUATE CREDIT

- 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 AND GRADUATE 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 AND GRADUATE 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, and types of therapy, including biological, thermal, chemotherapeutic, antibiotic, fluid, hormones and vitamins. Three hours rec. a week. Pr.: Surg. 555.

COURSES IN MEDICINE

FOR UNDERGRADUATE AND GRADUATE 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.

FOR UNDERGRADUATE AND GRADUATE CREDIT

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. A cooperative course in which the identification and habitat of plants poisonous to animals are taught during the first six weeks by the Department of Botany. The toxic principles, symptoms, and treatment of poisonous plants and the more common chemical poisoning occurring in domestic animals, their symptoms and treatment to be taught by the Department of Surgery and Medicine during the remainder of the semester. Three hours rec. a week. Pr.: Physi. 455, Surg. 555.

The Division of College Extension

ARTHUR D. WEBER, *Dean*

HAROLD E. JONES, *Director*

PAUL W. GRIFFITH, *Associate Director*

WILBER E. RINGLER, *Assistant 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 made available to the people through two departments within the Division of College Extension; namely, the Cooperative Agricultural Extension Service and Continuing Education.

COOPERATIVE AGRICULTURAL EXTENSION SERVICE

The Cooperative Extension Service is so named because the federal, state, and county governments cooperate with the people of a county in planning, conducting, and financing a county-wide educational program for the people of the county. Kansas State College represents the State in this system through the Division of College Extension. The United States Department of Agriculture represents the federal government. The County Agricultural Extension Council and the Board of County Commissioners, all of whom are elected by the voters, represent the county.

The Federal and State laws which provide this system, now organized and operating in every Kansas county, state that the purpose is to give instruction to the people in agriculture, home economics and related subjects. Modern conditions continually enlarge the span of subjects related to agriculture and home economics so that all of the subject matter departments on the campus contribute information to the Extension program and most of them are represented in the Extension Division by specialists in their subject matter fields.

The number of people participating in the Cooperative Extension program is also expanding and now includes urban and suburban people as well as farm families with whom the original program in agriculture, home economics, and 4-H club work was developed.

EXTENSION TAKES THE COLLEGE TO THE PEOPLE

The basic idea of the Cooperative Extension Service is to take the College to the people, and this is done by stationing members of the faculty in every county. These members of the faculty are not commonly referred to as professors but are known as county extension agents and include agricultural agents, home economics agents, and club agents. To literally thousands of people, these extension agents are a constant channel for communicating to and from Kansas State College.

EXTENSION TEACHES IN MANY WAYS

The methods of instruction used by extension workers are quite informal when compared to classroom methods. Instructions on specific problems may be given by personal conference or in public meetings. Extension workers may train individuals who in turn train others either individually or in groups. There are thousands of these public-spirited lay leaders in Kansas who are continually receiving instructions from members of the faculty of the Division of College Extension. They become, in effect, assistant instructors without pay. Extension agents extend information through the newspapers, farm magazines, radio, and television.

EXTENSION STIMULATES COMMUNITY ACTION

Extension workers may assist people to work together as a group for a common goal that is not attainable to the individual, such as: organizing county-wide campaigns to control diseases, pests, and weeds; to conserve soil and moisture in an entire watershed; to study many different kinds of local, state, and national problems. They help conduct fairs and teach good standards of production in agriculture and home economics by serving as judges at county and state fairs.

EXTENSION TAKES PEOPLE TO THE COLLEGE

Extension agents acquaint many people with the work of the College by organizing and conducting groups to visit the College and its Branch Experiment Stations and Fields. Many of the state-wide organizations in agriculture, home economics, and 4-H club work are given assistance with their annual conference at the College. Included in this type of educational work are the various breed, seed, and feed associations; the Kansas Home Demonstration Advisory Council and the 4-H Round-up.

EXTENSION LINKS LOCAL PEOPLE TO STATE AND NATIONAL PROGRAMS

The county Extension agents, as official representatives of the United States Department of Agriculture, are responsible for the educational program of the Department and serve as the local source of information regarding the programs of all other governmental agencies affecting agriculture, such as: The Soil Conservation Service, Rural Electrification Administration, Farm Credit, Agricultural Stabilization and Conservation Committee, and the Farmers Home Administration.

COUNTY EXTENSION AS PART OF A STATE AND NATIONAL SYSTEM

While the county Extension offices constitute the principal means of contact between the people and the College, they are not isolated agencies. The county Extension offices are integrated with the state and national movements for the betterment of agriculture, home economics, and 4-H club work by means of a highly trained staff of specialists and supervisors and administrative personnel, organized under eight departments, described as follows:

COUNTY EXTENSION PROGRAM ADMINISTRATION

OSCAR W. NORBY, *District Agent—Northwest*

ELMER W. BLANKENHAGEN, *District Agent—Southwest*

FRANK A. HAGANS, *District Agent—Central*

OTIS B. GLOVER, *District Agent—Northeast*

RAY M. HOSS, *District Agent—Southeast*

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 by 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, public meetings, 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 economics agents is used by local leaders in their respective communities.

Home Economics Extension work was made possible in August, 1917, when Congress provided funds for the employment of emergency home demonstration agents. This 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 economics 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 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, 1958, 105 counties had appropriations for home demonstration work, and in addition 11 counties had appropriations for associate home economics agents.

BOYS' AND GIRLS' 4-H CLUB WORK

ROGER E. REGNIER, *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 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 conduct extension schools during the winter months. 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 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 10 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 applica-

tion 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 and television 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.

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, experiment station, 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.

RADIO AND TELEVISION EXTENSION

KENNETH E. THOMAS, *Head of Department*

Radio is divided into two phases: (a) Broadcasting and 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 TV 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

ROMAN J. VERHAALEN, *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.

COMMUNITY SERVICES

The Community Services section of Continuing Education has responsibility for offering a variety of services to Kansas. At the present time the following kinds of services are available to communities, groups, schools, and other organizations:

1. consultation and assistance on community organization and community development problems, and on adult education programs concerned with liberal arts or public affairs,
2. leadership training, including especially designed workshops, institutes, and program planning aids for groups and organizations concerned with community development and adult education programs in the liberal arts or on public affairs, and
3. speakers on many topics from all departments of the College.

Further information about these services may be obtained by writing to Community Services, Department of Continuing Education, Division of Extension.

CONFERENCES AND INSTITUTES

The Conference and Institutes section of Continuing Education is responsible for the conduct of the Department's conference activity. The office also acts as the conference coordinating office for the entire cam-

pus in an attempt to avoid scheduling conflicts. Although any attempt to define a conference would fail to satisfy all requests, the Department considers a conference to be an educational activity designed to bring together a group of people with mutual problems or interests for a brief period of intensive study.

Any group interested in sponsoring or cosponsoring such an activity with the Department is welcome to discuss its proposal with the Conference Coordinator. In general, conferences should conform to the following criteria: (1) the activity must be of an educational nature; (2) Kansas State College must participate actively and make an adequate contribution to the program; and (3) the activity should be of a continuing nature, i.e., lend itself to being repeated annually. Conference planning is regarded as a three-way effort involving the academic department, the off-campus adult group, and the conference coordinator, all three coming on an equal footing and each bringing to the planning table its own peculiar attributes of expert knowledge, an awareness of the problem's scope and the public's needs, practical knowledge, and a background of conference planning and housekeeping procedures.

Fees. Registration fees for conferences will vary to correspond with the total direct costs of the activity.

Refunds. (a) One hundred per cent refund if cancellation of registration is received by official notification at least 48 hours prior to the time of the scheduled event. (b) No refund for cancellations received later than 48 hours before the time of the scheduled event.

EVENING COLLEGE AND EXTENSION CLASSES

Evening College and Extension Classes are organized for groups of adults who wish to continue their education by 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 course, it should contact the Head of the Department of Continuing Education at Kansas State College, Manhattan, for the scheduling of the class. Additional enrollees are sometimes necessary to cover travel costs. Classes are organized on either credit or non-credit basis.

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 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 the degree work.

Fee and refund policy. (a) Fees for college credit courses, resident or non-resident, are \$7.50 per semester; these were the fees in effect on January 1, 1958; fees for certificate or non-credit adult education courses are variable. (b) The refund policy for Evening College and Extension Classes is as follows:

College credit classes:

1. 100 per cent refund if application for refund is made before the second class meeting.
2. 50 per cent refund if application for refund is made after the second class meeting and before one-third of the scheduled class meetings have expired.
3. No refund after one-third of the scheduled class meetings.

Certificate classes:

1. Certificate class fees are non-refundable unless, 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 academic discipline departments of the College, the Department of Con-

tinuing Education may offer the following courses on an extension class or Evening College basis.

CAC 300. Accounting Principles I. (3) Principles and structure of accounts designed to give power to analyze commercial accounts and statements; problems used as an application of principles to practice. Lecture and demonstration.

CAC 310. Accounting Principles II. (3) Partnership and corporation accounting and problems, with special emphasis on payroll records and accounting. Lecture and demonstration. Pr.: Accounting I (CAC 300, Acctg. 300, or equiv.).

CAR 1. Drawing and Appreciation I. (2) One hour lec. on appreciation and two hours lab. instruction.

CAR 2. Drawing and Appreciation II. (2) One hour lec. on appreciation and two hours lab. instruction.

CAR 3. Drawing Fundamentals I. (2) The fundamentals of drawing for non-professional students. Three hours of studio and three hours by arrangement with the instructor a week. Not to be taken for credit by students enrolled in curricula in Architecture and Humanities (Art and Painting Adaptation).

CAR 4. Drawing Fundamentals II. (2) Cont. of CAR 3.

CAR 5. Painting and Appreciation I. (2) One hour lec. on appreciation and two hours lab. instruction.

CAR 6. Painting and Appreciation II. (2) One hour lec. on appreciation and two hours lab. instruction.

CAR 7. Painting I. (2) The fundamentals of painting in oil or water color intended for non-professional students. Three hours of studio and three hours by arrangement with the instructor a week. Not to be taken for credit by students enrolled in curricula in Architecture and Humanities (Art and Painting Adaptation).

CAR 8. Painting II. (2) Cont. of CAR 7.

CAR 10. Appreciation of Art. (2) Study of principles and ideas basic to an intelligent appreciation of drawings, paintings, and sculpture, and of the aims and techniques of the artists who created them. Two hours rec. a week. Not to be taken for credit by students enrolled in curricula in Architecture and Humanities (Art and Painting Adaptation).

CAR 11. Clay Modeling I. (2) The fundamentals of clay modeling for non-professional students. Three hours of studio and three hours by arrangement with the instructor a week. Not to be taken for credit by students enrolled in curricula in Architecture and Art and Painting.

CAR 12. Clay Modeling II. (2) Cont. of CAR 11.

CAR 13. Sculpture I. (2) The fundamentals of sculpture intended for non-professional students. Three hours of studio and three hours by arrangement with the instructor a week. Not to be taken for credit by students enrolled in curricula in Architecture and Art and Painting.

CAR 14. Sculpture II. (2) Cont. of CAR 13.

CBA 610a. Microbiology of Human Diseases. (3) 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.

HOME STUDY

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 lessons in 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 home study syllabus supplements the text with additional subject material or analysis provided by the instructor.

A college credit course contains eight assignments for each hour of credit (e.g., a three-hour course consists of twenty-four assignments). A one-half unit high school course has twenty assignments.

The questions accompanying each assignment are intended to help the student to a 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 of Continuing Education. The instructor reads the student's paper carefully and critically, marks it, and then returns it to the student with such comments, suggestions, and advice as may be necessary.

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 the equivalent course in residence.

While there is considerable difference between courses and between students, the average amount of time a student would be likely to need for each 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 a course 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.

Although a student may complete the course in which he enrolled in less than twelve months, he may not submit more than eight assignments in 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, or a one-hour college credit course in less than one week. (A ruling of the North Central Association of Colleges and Secondary Schools.)

College Credit. Credits earned from college courses taken through this department can be applied 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 consult the dean of his college to be sure that he is eligible and that the subject will satisfy degree requirements in his curriculum.

Kansas State College and most other collegiate institutions do not grant graduate credit for home study courses.

High School Credit and Diplomas. The department does not grant high school diplomas. If a student is interested in receiving credit toward a diploma by taking high school home study courses, he should make the necessary arrangements with the principal of the high school from which he plans to receive his diploma. It is advisable for the student to make such arrangements before he registers for any courses.

Teaching Certificates. This department does not issue teaching certificates; however, all the college credit courses offered by the Department of Continuing Education can be applied to teaching certificates within the requirements and limitations established by the State Department of Public Instruction. A student working toward a certificate should consult his superintendent of schools or the Director of Certification, State Department of Public Instruction, Topeka, for certification requirements.

Admission. Acceptance of an enrollment for a course offered by this department does not constitute official admission to Kansas State College. A student admitted to home study or extension classes 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 send his application (which can be secured upon request from this department), together with the appropriate fees, to Home Study, Department of Continuing Education, Kansas State College. No transcripts of previous high school or college work are required.

When his application has been approved, the student will receive the syllabus for his course, together with instructions for preparing and submitting assignments.

Students are encouraged to enroll in only one course at a time. No more than two courses may be taken simultaneously unless the student shows that he has sufficient time to devote to his studies.

A student who is currently in residence at Kansas State College must present with his application for enrollment a permit from the dean of his school before his home study enrollment can be accepted.

A student who has enrolled in but not completed a home study course before enrolling in residence at Kansas State College may not continue to submit home study assignments while in residence unless he has a permit from his dean.

Fees.

A. For residents of Kansas:

1. College courses \$8.00 per credit hour.
2. High school courses \$12.00 per $\frac{1}{2}$ unit course.

B. For non-residents:

1. College courses \$9.00 per credit hour.
2. High school courses \$15.00 per $\frac{1}{2}$ unit course.

C. Extension of time \$1.00 for six months.

D. Refund or transfer of fees:

1. 75 per cent of the enrollment fee will be refunded or transferred to another course for the same student if application for refund or transfer is received within three weeks after the date of enrollment and before any of the assignments have been submitted by the student.
2. 50 per cent of the enrollment fee will be refunded or transferred to another course for the same student if application for refund or transfer is received within six months from the date of enrollment and before one-third of the assignments have been submitted by the student.
3. 25 per cent of the enrollment fee will be refunded or transferred to another course for the same student if application for refund or transfer is received after six months but before the end of one year from the date of enrollment, and before one-third of the assignments have been submitted.
4. No refund or transfer will be made if application for withdrawal is received after one year has passed from the date of enrollment, or after one-third of the assignments have been submitted by the student.

The student pays the postage for the lessons and letters he sends to the department. Except in special cases (e. g., overseas air mail) the department assumes all other postage costs.

Textbooks. Each student is expected to make his own arrangements for obtaining the textbooks required in a home study course. This department does not lend, rent, or sell textbooks, nor can it receive orders for them. The department makes available to all students a list of textbooks used in home study courses, their prices, and the firms from which they can be obtained.

Examinations. All credit courses require final examinations. The 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. College students living at a distance from Manhat-

tan may take their final examinations at any of the other four state colleges, 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.

A college student who is working toward a degree at a school other than one of the five Kansas state colleges may take his examination under the supervision of his dean or another official of his college.

High school examinations are to be taken under the supervision of the principal of the high school where credit is to be accepted.

Grades. The final grade which a student receives on completion of a home study course is based on both the quality of his written assignments and his final examination. The relative importance of the assignments and the final examination varies slightly 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 cannot receive a passing grade in the course.

Upon successful completion of any college credit course, the student receives 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 receive a duplicate copy for his records.

Veterans. A veteran may enroll in home study courses under Public Law 550 during any period when he is not registered in a residence program; that is, residence and correspondence study cannot be pursued concurrently under Public Law 550. (A veteran who elects to pay his own fee may, of course, enroll in a home study course on the same basis and under the same regulations as any non-veteran student.)

Public Law 550 provides for reimbursement for home study fees, but does not provide any subsistence allowance for veterans enrolled in home study courses. A veteran desiring to enroll in a home study course should first seek information from and make application with the Veterans Service Office, Anderson Hall, Kansas State College, or his district Veterans Administration office.

United States Armed Forces Institute (USAFI). Kansas State College has a contract with the United States Government to furnish home study instruction to men and women in the armed services under the USAFI plan. For further information servicemen should see the education officer of their unit or write to the United States Armed Forces Institute, Madison 3, Wisconsin.

National University Extension Association. Kansas State College is a member of the National University Extension Association (NUEA). Students who wish to study courses not listed in this bulletin may write to the Secretary of the NUEA, University of Minnesota, Minneapolis 14, Minnesota, requesting a **Guide to Correspondence Study** (price 25c), which lists all home study courses offered by institutions belonging to the NUEA.

College Credit Courses. Students who plan to apply a home study college credit course to a degree from Kansas State College are advised to meet all prerequisites for the course before enrolling in it. Prerequisites for a home study course are the same as for the equivalent course in residence, and are listed in the description of the course. Unless otherwise indicated, the prerequisite is simply high school graduation.

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.

Kansas State College does not designate courses as "upper level, lower level, freshman, senior," etc. However, courses in this catalogue carrying

numbers from 400 to 799 may be considered, in general, to be more advanced than those carrying lower numbers.

School of Agriculture

AGRONOMY

CA 3. Farm Crops A. (3) An introductory course in agronomy, with special emphasis on agronomic problems of Kansas. Equivalent: Agron. 106 minus 1 hour of laboratory credit. Pr.: Bot. 110 (General Botany), or Gn. St. 160 (Biology II).

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

110. Elements of Horticulture. (2) An introductory course in the general principles of plant growing, with emphasis on plants of horticultural interest. Pr.: Bot. 110 (General Botany), or Gn. St. 150 (Biology I).

CH 2. Vegetable Gardening. (2) A study of vegetable growing from the standpoint of home production, especially Kansas gardening. Equivalent: Hort. 189 minus 1 hour of laboratory credit.

CH 3. Floriculture. (2) A study of garden flowers and house plants, propagation, soils, arrangement, and general horticultural practices. Equivalent: Hort. 196 minus 1 hour of laboratory credit.

CH 7. Landscape Gardening. (2) A general study of the principles of landscape design; a study in planning and planting home grounds.

POULTRY HUSBANDRY

104. Farm Poultry Production. (2) An introductory course in poultry management.

School of Arts and Sciences

BUSINESS ADMINISTRATION

275. Business Law I (Not available 1958). (3) Contracts, agencies, and sales.

280. Business Law II (Not available 1958). (3) Negotiable instruments, partnerships, and corporations.

415. Small Business Operation. (3) Opportunities in business ownership; principles governing the starting of a small enterprise; importance, status, problems, and management of small business. Pr.: Ec. So. 110 (Economics I).

ECONOMICS AND SOCIOLOGY

110. Economics I. (3) Introductory study of the fundamental principles of production, distribution, and consumption of goods.

120. Economics II. (3) Cont. of Economics I. Pr.: Ec. So. 110 (Economics I).

250. Introduction to Sociology. (3) A study of the development and functioning of human groups; social and cultural patterns and processes. Pr.: Sophomore standing.

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 application of these elements to community organizations. No exact equivalent in residence.

Pr.: Ec. So. 250 (Introduction to Sociology), or Ec. So. 290 (Rural Sociology).

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 (Educational Psychology I) and sophomore standing.
- 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 (Principles of Secondary Education) and senior standing.
- 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 (General Psychology).
- 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 (Principles of Secondary Education), or Educ. 300 (Principles of Elementary Education).
- CP 4. History of Education.** (3) 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; records and reports; school atmosphere, motives, and incentives; class routine and lesson planning in rural and urban schools; conduct of recitation. School laws which are of interest to teachers are included. 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) Basic freshman English composition course: fundamentals of composition and rhetoric; analyses of thought, content and style; practice in composition.
- 136. Written Communications II.** (3) Cont. of analyses and practice in composition; types of reasoning; emphasis on an investigative theme. Pr.: Engl. 115 (Written Communications IA), or Engl. 125 (Written Communications I).
- CCE 2a. Written Communications IIa.** (1) Brief review of grammar and punctuation, theme writing, and dictionary use. No exact equivalent in residence. Pr.: Engl. 135, or Engl. 136 (Written Communications II).
- 155. Commercial Correspondence.** (3) Writing of adjustment, collection, credit, and sales letters; principles of effective commercial writing. Pr.: Engl. 136 (Written Communications II).
- 215. English Literature I.** (3) From the early Britons through the end of the 17th century. Pr.: Engl. 136 (Written Communications II).
- 225. English Literature II.** (3) Through the 18th, 19th and 20th centuries. Pr.: Engl. 136 (Written Communications II).

- 245. American Literature I.** (3) Through Colonial, Revolutionary, and Romantic periods to the Civil War. Pr.: Engl. 136 (Written Communications II).
- 255. American Literature II.** (3) From Whitman to the present. Pr.: Engl. 136 (Written Communications II).
- CEN 310. Books and Men I.** (2) Introduction to great world classics from present to past. Pr.: Engl. 136 (Written Communications II).
- CEN 320A. Books and Men IA** (Not available 1958). (2) Cont. of CEN 310. Pr.: Engl. 136 (Written Communications II).
- CEN 320B. Books and Men IIB** (Not available 1958-9). (2) Cont. of CEN 320A. Pr.: Engl. 136 (Written Communications II).
(CEN 310, 320A, and 320B include guided readings aimed at the professional development of engineers and related to the program of the Engineering Council for Professional Development. These courses are, however, open to all students who meet the prerequisite.)
- 450. Creative Writing.** (3) The writing of fiction, with special emphasis on the student's own practical writing problems of story construction, technique, and revision. Pr.: Permission of the instructor, or Engl. 425 (Advanced Composition II). (For permission to enroll, send a sample of your writing with your enrollment card.)
- 470. Literature for Children.** (3) Selecting, reading, and evaluating literature for children of various grades and ages; planned especially to meet the needs of mothers and of teachers of rural and grade schools. Pr.: Engl. 136 (Written Communications II).
- 476. Literature for Adolescents.** (3) Selecting, reading, and evaluating books for adolescents. For teachers in the junior and senior high schools and students of guidance for adolescents. Pr.: Junior standing.
- 480. American Short Story** (Not available 1958-9). (3) A critical study of the short story. Not a course in creative story writing. Pr.: Engl. 136 (Written Communications II).

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.
- 205. Introductory Physical Geography.** (3) A study of the geographic factors of our physical environment: map fundamentals, climatic factors, land forms, natural vegetation, soils, and water and mineral resources.

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 the shift from agricultural to industrial and commercial civilization, and to the 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.
- 255. American Government.** (3) Origin and development of our governmental form; basic structure, principles, and interpretations of our constitution.
- 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 or junior standing.

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 Ph. Ed. 136 (Personal and Community Health).

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 Ph. Ed. 136 (Personal and Community Health).

CPE 3. Playground Activities. (2) Organization and administration of playground activities; games suitable for different ages. No exact equivalent in residence.

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 Educ. 105. Pr.: Educ. 100 (Educational Psychology I) and sophomore standing.

310. General Psychology. (3) Human behavior: methods, research, principles. (A basic course for teachers and others interested in social science.)

415. 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 (General Psychology) and sophomore standing.

School of Engineering and Architecture

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 1 hour of laboratory 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.

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 the student's ability to visualize drawings in the third angle. Pr.: M. E. 210 (Engineering Drawing), Math. 110 (Solid Geometry), or equivalent.

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 (Descriptive Geometry).

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 (Plane Trigonometry), M. E. 215 (Descriptive Geometry).

High School Credit Courses. These courses are offered as an aid to those who may be temporarily out of high school, who may not find the courses which they desire offered locally, or who wish to earn high school credit during vacation periods. The courses will be especially advantageous to prospective college students who have entrance deficiencies.

The credits issued by this department are recognized by colleges and by the State Board of Education in Kansas.

The attempt has been made to have each home study course parallel the comparable course offered by the accredited high schools of the state.

Each course carries a 1/2 unit of high school credit.

AGRICULTURE

		<i>Unit H. S. credit</i>
PCA	1. Elementary Agriculture I	1/2
PCA	2. Elementary Agriculture II	1/2

COMMERCE

PCM	7. Bookkeeping I	1/2
PCM	8. Bookkeeping II	1/2

DRAWING

PCD	3. Shop Mechanical Drawing I	1/2
PCD	4. Shop Mechanical Drawing II	1/2

ENGLISH

PCE	1C. Grammar and Composition (first semester, first year)	1/2
PCE	2L. Literature (second semester, first year)	1/2
PCE	3C. Composition (first semester, second year)	1/2
PCE	4L. Literature (second semester, second year)	1/2
PCE	5C. Composition (first semester, third year)	1/2
PCE	6L. Literature (second semester, third year)	1/2

HISTORY AND CIVICS

PCH	5. American History I	1/2
PCH	6. American History II	1/2
PCH	7. Community Civics	1/2
PCH	8. Constitution of United States	1/2
PCH	9. World History I (not open to students who have had Ancient History)	1/2
PCH	10. World History II	1/2

		<i>Unit H. S. credit</i>
MATHEMATICS		
PCM	1. Algebra I	1/2
PCM	2. Algebra II	1/2
PCM	3. Algebra III	1/2
PCM	4. Plane Geometry I	1/2
PCM	5. Plane Geometry II	1/2
PCM	6. Solid Geometry	1/2
SCIENCE		
PCS	1. Physical Geography	1/2
PCS	4. Physiology	1/2
PCS	5. General Science	1/2
SOCIAL SCIENCE		
PCC	2. Elementary Economics	1/2
PCC	3. Elementary Sociology	1/2
PCC	4. Elementary Psychology	1/2

Non-credit Courses. The home study courses of this department are available to students on a non-credit basis regardless of their previous academic experience.

The department also offers two courses which are available for non-credit only:

Cooperative Bookkeeping I. Fundamental principles of double-entry bookkeeping as applied to cooperative associations. For those who have little or no experience or training in accounting. 15 assignments. \$15.00, exclusive of textbook and workbook.

Cooperative Bookkeeping II. Accounting and Management Problems. A continuation of Cooperative Bookkeeping I, with emphasis upon accounting and management problems encountered in the operation of a cooperative enterprise. 15 assignments. \$15.00, exclusive of textbook and workbook.

TECHNICAL AND SPECIAL SERVICES

The Department of Continuing Education also carries on specialized services, financed cooperatively with other state or private agencies; these include the Kansas Rural-Urban Art Program, the Rural Electric Job Training and Safety Program, and the Food Service Training Program.

For further information about the offerings of the Department of Continuing Education write to the Head, Department of Continuing Education, Division of College Extension, Kansas State College, Manhattan, Kansas.

Officers of Administration, Instruction, and Research

Administrative and Service Officers

- WALTER H. ABEL, Counselor; Assistant Instructor in Psychology (1957). B. E., Tulane University.
- 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, Emeritus, College Library (1916, 1947).
- DANIEL D. BEATTY, Business Manager (1956). A. B., Hope College; M. B. A., University of Michigan.
- ELLYN MARIE BLACK, Assistant Instructor, College Library (1957). B. S., Kansas State Teachers College, Emporia.
- 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.
- DONALD L. COOPER, Physician, Student Health Center (1957). B. S., M. D., University of Kansas.
- SULEYMAN CULLU, Physician, Student Health Center (1952). M. D., University of Istanbul.
- ELIZABETH HAMILTON DAVIS, Associate Professor, Emeritus, College Library (1920, 1958). A. B., MacMurray College for Women; B. L. S., University of Illinois.
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- AUBREY THORNTON EDWARDS, Director of Housing; Associate Professor of Psychology (1945, 1949). B. S., M. S., Kansas State College.
- GEORGE H. FADENRECHT, Assistant Professor, College Library (1953, 1956). B. A., Tabor College; M. A., University of Kansas; M. A. L. S., University of Michigan.
- BARBARA ANN FEATHERSTON, Assistant Residence Hall Director; Assistant Instructor (1957). B. S., Kansas State College.
- KENNEY LEE FORD, Alumni Secretary (1928). B. S., M. S., Kansas State College.
- ELLSWORTH M. GERRITZ, Director of Admissions and Registrar; Professor (1954). B. E., St. Cloud State Teachers College; M. S., Ph. D., University of Minnesota.
- RANDOLPH FORNEY GINGRICH, Superintendent of Physical Plant (1923, 1954). B. S., University of Nebraska; M. S., Kansas State College.
- ERNEST JACOB GOERTZEN, Instructor, College Library (1957). A. B., Bethel College; M. S. in L. S., University of Illinois.
- GLADYS F. GRACE, Residence Hall Director; Instructor (1956). B. A., Dakota Wesleyan University; M. A., University of South Dakota.
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- CHARLES FRANCIS HAUGHEY, Physician, Student Health Center (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, Associate Director, Counseling Center; Assistant Professor of Psychology (1954, 1956). 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.
- BARBARA DEES KELLEY, Instructor, College Library (1956). B. S., M. S. in L. S., University of Wisconsin.
- CARROLL EARL KENNEDY, Counselor; Instructor in Psychology (1954). A. B., Wheaton College; M. S., Kansas State College.
- WENDELL ROBERT KERR, Veterans Service Officer; Assistant Professor; Assistant to Housing Director (1947, 1957). B. S., M. S., Kansas State College.
- LOREN V. KOTTNER, Director of the Kansas State Union (1955). B. A., Nebraska Wesleyan University.
- BENJAMIN WILLIAM LAFENE, Director of the Student Health Center; Physician (1946, 1948). B. S., Michigan State College; M. D., Western Reserve University.
- MARGARET N. LAHEY, Associate Dean of Students; Associate Professor (1957). B. S., M. A., University of Minnesota.
- CARLETON H. LEE, Physician, Student Health Center (1955). B. A., University of Wichita; M. D., University of Kansas.
- 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, Assistant to the President; Associate Professor of Journalism (1949, 1957). A. B., University of Wichita.
- 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 Center (1953). B. S., M. S., Kansas State College; Ph. D., University of Wisconsin.
- JANE PRIER, Residence Hall Counselor; 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.
- PATRICIA REMPEL, Residence Hall Nurse, Assistant Instructor (1957). B. S., Kansas State College.
- EDITH MARY RIDGEWAY, Assistant Professor, College Library (1943, 1956). A. B., College of Emporia; B. S. in L. S., University of Illinois; M. S., Kansas State College.
- 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 ROCHIAT, Director of News Bureau; Associate Professor of Journalism (1953, 1954). B. S., Kansas State College; M. S., University of Illinois.
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- VIOLA E. STONE, Assistant Residence Hall Director; Assistant Instructor (1957).
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- WILLIAM C. TREMMEL, Director of Student Religious Activities; Assistant Professor of Philosophy (1956). A. B., Denver University; Th. M. and Th. D., Hiff School of Theology.
- ROGER KEITH WALLACE, Consulting Radiologist (1954). B. S., M. S., University of South Dakota; M. D., University of Nebraska.
- OLIVER RICHARD WHITE, Program Director, K-State Union (1957.) A. B., University of California.
- HERBERT J. WUNDERLICH, Dean of Students; Professor of Education (1955). B. A., University of Idaho; M. A., Harvard University; Ed. D., Stanford University.

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- ERWIN ABMEYER, Assistant Professor of Horticulture; Assistant Pomologist, Northeast Kansas Experiment Fields (1934, 1935). B. S., Kansas State College.
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- 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; Assistant Agronomist (Weed Control), Agr. Exp. Sta. (1953, 1954). B. S., M. S., Ph. D., University of Minnesota.
- HAROLD W. ARNETT, Instructor in Entomology; Assistant Entomologist, Agr. Exp. Sta. (1957). B. S., M. S., Mississippi 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.
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- 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.
- CHARLES DeFOREST DAVIS, Professor of Agronomy Emeritus (1921, 1940). B. S., M. S., Kansas State College.
- CHESTER P. DAVIS, Associate Agricultural Engineer, U. S. D. A., Heat Pump Experiments (1954). B. S., Oklahoma State University; M. S., Purdue University.
- 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.
- ROBERT L. ELLSWORTH, Assistant Instructor in Agronomy, Agr. Exp. Sta. (1958). B. S., Arizona State College.

- 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; Assistant Entomologist, Agr. Exp. Sta. (1945, 1952). 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; M. S., Kansas State College.
- EARL LeROY FARMER, Assistant Professor of Dairy Husbandry; Assistant in Dairy Improvement, Agr. Exp. Sta. (1949). B. S., University of Missouri; M. S., Kansas State College.
- 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, U. S. D. A. (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.
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- 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.
- RUFF L. GENTRY, Assistant Instructor in Agronomy, Agr. Exp. Sta. (1956). B. S. A., M. S., University of Arkansas.
- DON LaDOYNT GOOD, Associate Professor of Animal Husbandry; Associate Animal Husbandman, Agr. Exp. Sta. (1947, 1954). B. S., Ohio State University; M. S., Kansas State College; Ph. D. University of Minnesota.
- 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 State University.
- GORDON M. GROSS, Temporary Instructor; Assistant in Flour and Feed Milling Industries, Agr. Exp. Sta. (1954, 1956). B. Sc. A., University of Manitoba; M. S., University of Minnesota.
- ROY E. GWIN, JR., Assistant Instructor in Irrigation, Tribune Branch Agr. Exp. Sta. (1957). B. S., Kansas State College.
- HAROLD LEROY HACKEROTT, Assistant Professor; Assistant Agronomist, Fort Hays Branch Agr. Exp. Sta. (1954). B. S., M. S., Kansas State College.
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- CHARLES V. HALL, Assistant Professor of Horticulture; Assistant Olericulturist, Agr. Exp. Sta. (1953). B. S., M. S., University of Arkansas.
- DEAN ALBERT HAMMOND, Instructor in Horticulture; Assistant Horticulturist, Agr. Exp. Sta. (1958). B. S., Kansas State College.
- RONALD JOHN HANKS, Agent (Soil Scientist), U. S. D. A. (1953). B. S., Brigham Young University; M. S., Ph. D., University of Wisconsin.
- PHILLIP KEITH HAREIN, Temporary Instructor, Assistant in Entomology (1957). B. S., Mankato State Teachers College; M. S., Virginia Polytechnic Institute.
- WALLACE W. HARRIS, Assistant Professor; Assistant Agronomist, Colby Branch Agr. Exp. Sta. (1954, 1955). B. S., M. S., Kansas State College.
- T. L. HARVEY, Assistant Professor of Entomology; Assistant Entomologist, Agr. Exp. Sta. (1954, 1957). B. S., M. S., Kansas 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.
- EDWIN C. HEINSOHN, Temporary Instructor; Assistant in Agricultural Economics, Agr. Exp. Sta. (1957). B. S., Cornell University.
- ROY BARRETT HERRING, Assistant Professor; Assistant Agronomist, Garden City Branch Agr. Exp. Sta. (1951, 1952). B. S., M. S., Oklahoma State University.
- GEORGE M. HERRON, Instructor; Assistant in Soils, Garden City Branch Agr. Exp. Sta. (1956). B. S., M. S., Oklahoma State University.
- LEONARD B. HERTZ, Assistant Professor of Agronomy; Assistant Agronomist, Agr. Exp. Sta. (1955, 1957). 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; Agricultural 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). B. S., New Mexico A. & M. College; M. S., Colorado State University; Ph. D., Iowa State College.
- LEO MICHAEL HOOVER, Associate Professor of Agricultural Economics; Associate Agricultural Economist, Agr. Exp. Sta. (1947, 1954). B. S., Kansas State College; M. S., Iowa State College; Ph. D., Harvard University.
- ROY M. HOVEY, Temporary Instructor, Assistant in Agricultural Economics (1958). B. S., M. S., North Dakota Agricultural College.
- KEITH HUSTON, Associate Professor of Dairy Husbandry; Associate Dairy Husbandman, Agr. Exp. Sta. (1954). B. S., M. S., Ph. D., University of Wisconsin.
- HYDE S. JACOBS, Assistant Professor of Agronomy; Assistant Agronomist, Agr. Exp. Sta. (1957). B. S. A., M. S., University of Idaho; Ph. D., Michigan State University.
- 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.
- ROBERT RUSSELL JONES, Assistant Professor of Agriculture; Dean's Office (1957). A. B., Washburn Municipal University.
- AMOS J. KAIRS, Assistant Instructor in Poultry Husbandry; Assistant Poultry Husbandman, Agr. Exp. Sta. (1956, 1957). B. S., Kansas State College.
- RAY ALBERT KEEN, Associate Professor of Horticulture; Associate Ornamental Horticulturist, Agr. Exp. Sta. (1947, 1956). B. S., Kansas State College; M. S., Ph. D., Ohio State University.
- PAUL LEO KELLEY, Assistant Professor of Agricultural Economics; Assistant Agricultural Economist, Agr. Exp. Sta. (1943, 1947). B. S., M. S., Ph. D., 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, Associate Professor of Agricultural Economics; Assistant Agricultural Economist, Agr. Exp. Sta. (1948, 1957). 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; M. S., Kansas State College.
- HERBERT KNUTSON, Professor; Head, Department of Entomology; Entomologist in charge, Agr. Exp. Sta. (1953). A. B., 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.
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- HILMER HENRY LAUDE, Professor of Agronomy; Agronomist, Agr. Exp. Sta. (1911, 1931). B. S., Kansas State College; M. S., Texas A. & M. College; Ph. D., University of Chicago.
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- GERMAIN BERNARD MARION, Associate Professor of Dairy Husbandry; Associate Dairy Husbandman, Agr. Exp. Sta. (1953). B. S., Cornell University; M. S., Ph. D., University of Wisconsin.
- WILLARD HUNGATE MARTIN, Professor of Dairy Husbandry; Dairy Husbandman, Agr. Exp. Sta. (1925, 1928). B. S., Purdue University; M. S., Pennsylvania State College.

- DAVID L. MATHEW, Survey Entomologist (Kansas Entomological Commission) (1954). 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 Agricultural Economist, Agr. Exp. Sta. (1940, 1948). B. S., M. S., Kansas State College; Ph. D., University of Wisconsin.
- RAYMOND D. McKINNEY, Assistant Professor of Agricultural Economics; Assistant Agricultural Economist, Agr. Exp. Sta. (1954, 1956). B. S., University of Nebraska; M. P. A., Harvard University.
- CARL STEPHEN MENZIES, Instructor in Animal Husbandry; Assistant Animal Husbandman, Agr. Exp. Sta. (1954, 1955). B. S., Texas Technological College; M. S., Kansas State College.
- ROBERT A. MERKEL, Assistant Professor of Animal Husbandry; Assistant Animal Husbandman, Agr. Exp. Sta. (1957). B. S., M. S., Ph. D., University of Wisconsin.
- CHARLES C. MICHEEL, Agricultural Economist, U. S. D. A., Agricultural Research Service, Production Economics Research Branch (1954). B. S., M. S., South Dakota State College.
- ROSS MICKELSEN, Instructor in Dairy Husbandry; Assistant Dairy Husbandman, Agr. Exp. Sta. (1957). B. S., M. S., Utah State University.
- 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.
- 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.
- RAY W. MORRISON, Instructor in Poultry Husbandry; Assistant Poultry Husbandman, Agr. Exp. Sta. (1955). B. S., M. S., Kansas State College.
- CLYDE WILLIAM MULLEN, Assistant Dean; Associate Professor of Agronomy (1937). B. S., Oklahoma State University; M. S., Kansas State College.
- CHARLES W. NAUHEIM, Agricultural Economist, U. S. D. A., Agricultural Research Service, Production Economics Research Branch (1954). B. S., M. S., Kansas State College.
- RAYMOND VERLIN OLSON, Professor; Head, Department of Agronomy; Agronomist in charge, Agr. Exp. Sta. (1947, 1952). A. S., North Dakota School of Forestry; B. S., North Dakota State College; M. S., Ph. D., University of Wisconsin.
- FRANK ORAZEM, Assistant Professor of Agricultural Economics; Assistant Agricultural Economist, Agr. Exp. Sta. (1956). Cand. Rer. Pol., Dr. Rer. Pol., Karl Franzen University (Graz, Austria); M. S., Kansas State College; Ph. D., Iowa State College.
- MERTON L. OTTO, Associate Professor of Agricultural Economics; Associate Agricultural Economist, Agr. Exp. Sta. (1939, 1947). B. S., M. S., Kansas State College.
- 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; Entomologist, Agr. Exp. Sta. (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, Assistant Professor of Agronomy; Assistant Agronomist, Agr. Exp. Sta. (1951, 1956). B. S., University of Missouri; M. S., Ph. D., Kansas State College.
- LOYAL FREDERICK PAYNE, Professor of Poultry Husbandry; Poultry Husbandman, Agr. Exp. Sta. (1921, 1954). B. S., Oklahoma State University; M. S., Kansas State College.
- JOHN R. PEDERSON, Instructor in Entomology; Assistant Entomologist, Agr. Exp. Sta. (1958). B. S., Kansas State College.
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- WILFRED HAROLD PINE, Professor of Agricultural Economics; Agricultural Economist, Agr. Exp. Sta. (1934, 1949). B. S., M. S., Kansas State College; Ph. D., University of Minnesota.
- LEON REED QUINLAN, Professor of Horticulture; Ornamental Horticulturist, Agr. Exp. Sta. (1927, 1931). B. S., Colorado State University; M. L. A., Harvard University.

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- DRAYTFORD RICHARDSON, Professor of Animal Husbandry; Animal Nutritionist, Agr. Exp. Sta. (1951). B. S., Clemson Agricultural College; M. S., Ph. D., Iowa State College.
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- RAY IAMS THROCKMORTON, Dean and Director, Emeritus, Agriculture (1911, 1952). B. S., Pennsylvania State College; M. S., Kansas State College.
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- 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.
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- ARTHUR D. WEBER, Dean of Agriculture (1924, 1955). B. S., M. S., Kansas State College; Ph. D., D. Sc., Purdue University.
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- 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, Director, School of Agriculture, Assistant Director, Agr. Exp. Sta. (1938, 1956). B. S., M. S., Kansas State College.
- JAMES A. WILSON, Plant Breeder, Fort Hays Branch Agr. Exp. Sta. (1957). B. S., M. S., Oklahoma State University.
- LAURETSON VAN WITHEE, Instructor in Agronomy; Assistant Agronomist, Agr. Exp. Sta. (1953, 1956). B. S., Kansas State College; M. S., University of Nebraska.
- BARBARA WOOD, Assistant Instructor in Entomology; Assistant Entomologist, Agr. Exp. Sta. (1957). A. B., Wellesley College.
- 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; Associate Agronomist, Agr. Exp. Sta. (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.

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- 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, Emeritus (1929, 1957). 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.
- MARTHA ALICE ALY, Instructor in Physical Education (1956). B. S., University of Missouri.
- 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.
- ROBERT LEROY ANACKER, Assistant Professor of Bacteriology (1956). B. S., M. S., Ph. D., University of Washington.
- RICHARD ALAN ANDERSON, Instructor in Physics (1952, 1957). B. A., Augustana College; M. 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.
- ORA JOYE ANSDALL, Assistant Professor of English (1946, 1957). B. S., Kansas State College; M. A., University of Michigan; Ph. D., University of Colorado.
- MELVIN WAYNE ASKEW, Temporary Instructor in English (1957). B. A., M. A., Ph. D., University of Oklahoma.
- 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; Economist, Agr. Exp. Sta. (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; Associate 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.
- CAROL HOFFER BASSETT, Temporary Instructor in Mathematics (1957). B. A., M. A., University of South Dakota.
- 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, Associate Professor of Geology (1946, 1956). B. S., M. S., Kansas State College; Ph. D., University of Kansas.
- ALWYN BERLAND, Assistant Professor of English (1953). M. A., University of Chicago; M. Litt. (Cantab), University of Cambridge (England).
- ALFRED FRANCIS BORG, Professor; Head, Department of Bacteriology; Bacteriologist in charge, Agr. Exp. Sta. (1957). B. S., M. S., Ph. D., University of Washington.
- WILLIAM RAYMOND BRACKETT, Associate Professor of Physics, Emeritus (1919, 1955). B. A., University of Colorado.
- HOWARD RALEY BRADLEY, Assistant Professor of Education (1951). B. S., M. S., Kansas State College.
- ARTHUR HILLS BRAYFIELD, Professor; Head, Department of Psychology; Psychologist in charge, Agr. Exp. Sta. (1951). B. S., Ph. D., University of Minnesota.
- LOUIS BROWDER, Instructor in Botany; Assistant Plant Pathologist, Agr. Exp. Sta.; Agent, U. S. D. A. (1958). B. S., M. S., Oklahoma State University.
- 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, Associate Professor of Chemistry; Associate Biochemist, Agr. Exp. Sta. (1950, 1957). 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.
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- FREDERIC HSIU-MING CHANG, Temporary Instructor in Music (1957). B. M., Bethany College; M. M., Indiana University.
- ERNEST KNIGHT CHAPIN, Associate Professor of Physics (1923, 1932). A. B., M. S., University of Michigan.
- VIRGINIA LEE CHATELAIN, Temporary Instructor in Mathematics (1947). B. S., M. S., Kansas State Teachers College (Emporia).
- 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.
- WILLIAM KLINE CLARK, Instructor in Geology (1949, 1956). B. S., University of Notre Dame; M. S., Kansas State College.
- ROBERT EDWARD CLEGG, Professor of Chemistry; 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.
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- BASIL CURNUTTE, JR., Associate Professor of Physics; Associate Physicist, Agr. Exp. Sta. (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.
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- 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.
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- 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, Associate Professor of Mathematics (1952, 1956). B. A., University of Wyoming; M. S., Ph. D., University of Wisconsin.
- PERCY LEIGH GAINEX, Professor of Bacteriology, Emeritus (1914, 1957). B. S., M. S., University of North Carolina; Ph. D., Washington University.
- ROSA LEE GARRETT, Temporary Instructor in Mathematics (1948). B. S., Kansas State College.
- ANTHONY MICHAEL GAWIENOWSKI, Assistant Professor of Chemistry; Assistant Chemist, Agr. Exp. Sta. (1957). B. S., Villanova University; M. S., Ph. D., University of Missouri.
- 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.
- KINGSLEY WALTON GIVEN, Professor of Speech (1920, 1950). B. A., Park College; M. A., State University of Iowa.
- ESTHER BEACHEL GLENN, Assistant Professor of English (1948, 1954). A. B., Kansas Wesleyan University; M. S., Kansas State College.
- CHARLES STEVEN GOETZINGER, JR., Assistant Professor of Speech (1954). B. S., Kent State University; M. S., Ph. D., Purdue University.
- ARTHUR LEONARD GOODRICH, Professor of Zoology (1929, 1947). B. S., College of Idaho; M. S., University of Idaho; Ph. D., Cornell University.
- JAMES ARTHUR GOSS, Assistant Professor of Botany; Assistant Plant Pathologist, Agr. Exp. Sta. (1956, 1957). B. S., Utah State Agricultural College; Ph. D., University of California.
- ELTON EDMOND GREEN, Instructor in Physical Education (1956). B. S., M. S., Kansas State College.
- FINIS McCRADY GREEN, Professor; Head, Department of Education (1948, 1952). B. S., Kansas State Teachers College (Pittsburg); M. S., University of Kansas; Ed. D., University of Colorado.
- HILDA ROSINE GROSSMANN, Assistant Professor of Music (1927, 1932). B. M., Chicago Musical College; B. S., Kansas State College; M. A., Stanford University.
- C. DAVID GRUENDER, Instructor in Philosophy (1957). B. A., Antioch College; M. S., University of Chicago; Ph. D., University of Wisconsin.
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- ALPHAËUS MATTHEW GUILI, Professor of Zoology; Associate Zoologist, Agr. Exp. Sta. (1943, 1954). B. A., North Central College; M. S., Ph. D., University of Chicago.
- JOSEPH HAJDA, Assistant Professor of Government (1957). B. Pol. Sci., University of Social and Political Sciences (Czechoslovakia); A. M., Miami University; Ph. D., Indiana University.
- JOSEPH LOWE HALL, Associate Professor of Chemistry; Associate Chemist, Agr. Exp. Sta. (1922, 1949). B. S., M. S., Ph. D., University of Illinois.
- LAWRENCE FENOR HALL, Associate Professor of Education (1926, 1941). B. S., M. S., Kansas State College.
- MERLE FREDERICK HANSEN, Associate Professor of Zoology; Associate Parasitologist, Agr. Exp. Sta. (1950, 1951). B. A., M. A., University of Minnesota; Ph. D., University of Nebraska.
- 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.
- MARY THERESA HARMAN, Professor of Zoology, Emeritus (1912, 1950). B. A., M. A., Ph. D., Indiana University.
- JOHN J. HARRIS, Instructor in Mathematics (1953, 1955). B. A., Augustana College; M. S., Kansas State College.
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- FRED HALL HIGGINSON, Associate Professor of English (1950, 1956). A. B., M. A., University of Wichita; Ph. D., University of Minnesota.
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- RANDALL CONRAD HILL, Professor of Sociology (1929, 1935). B. S., M. S., Kansas State College; Ph. D., University of Missouri.
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- ISAMU CLARENCE HISATSUNE, Assistant Professor of Chemistry (1956). A. A., B. S., University of California; Ph. D., University of Washington.
- LEVERETT P. HOAG, Assistant Professor of Geography; Assistant in Agricultural Geography, Agr. Exp. Sta. (1956, 1957). B. Ed., State Teachers College (Moorhead); M. A., University of Minnesota.
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- WILLIAM CASTLE HUMMEL, Professor of English (1950). A. B., Allegheny College; M. A., Ph. D., University of Pittsburgh.
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- LUTHER OMAR LEAVENGOOD, Professor; Head, Department of Music (1945). B. M., University of Kansas; M. M., University of Michigan.
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- CHARLES HOWARD LOCKHART, Assistant Professor of Zoology (1940, 1947). B. S., M. S., Kansas State College.
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- GLENN WESLEY LONG, Assistant Professor of Sociology (1938, 1945). A. B., Baker University; M. S., Kansas State College.
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- SHIRLEY ANN MARTIN, Assistant Instructor in History (1957). B. S., Farmington State Teachers College.
- ORAL BOYD MATTHIAS, Instructor in Physical Science in General Studies (1956). A. S., Weber Junior College; B. S., Utah State Agricultural College; M. S., Kansas State College.
- CHARLES WALTON MATTHEWS, Professor of English (1921, 1925). B. S., Kansas State Teachers College (Pittsburg); M. A., University of Chicago.
- GEORGE WILLARD MAXWELL, Assistant Professor of Physics (1927, 1928). A. B., M. S., University of Michigan.

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- HARRY EDWARD McANARNEY, Instructor in Education (1957). B. S., Kansas State Teachers College (Emporia); B. S., University of Kansas.
- ELIZABETH UNGER McCRAKEN, 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, Associate Professor of Chemistry (1926, 1956). 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.
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- KENNETH JAMES McMAHON, Assistant Professor of Bacteriology (1949, 1954). B. S., South Dakota State College of Agriculture and Mechanic Arts; M. S., Oklahoma State University; Ph. D., Kansas State College.
- LEO EDWARD MELCHERS, Professor of Botany, Emeritus (1913, 1956). B. S., M. S., Ohio State University.
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- JOSEPH FARRINGTON MERRILL, Assistant Instructor of Chemistry, Emeritus (1921, 1955). B. S., University of Maine.
- BERNARD J. MERTESE, 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; Ph. D., Columbia University.
- WILLIAM ARTHUR MILLER, Associate Professor of Bacteriology; Associate Dairy Bacteriologist, Agr. Exp. Sta. (1947, 1952). B. S., University of Illinois; M. S., University of Pennsylvania; Ph. D., University of Illinois.
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- MAURICE CHARLES MOGGIE, Professor of Education (1930, 1945). B. S., M. S., Kansas State College; Ph. D., Ohio State University.
- GEORGE MONTGOMERY, Professor; Head, Department of Economics and Sociology; Agricultural Economist in charge, Agr. Exp. Sta. (1925, 1947). B. S., M. S., Kansas State College; Ph. D., University of Minnesota.
- HELEN MOORE, Professor of Mathematics; Dean of Women, Emeritus (1940, 1957). A. B., University of Kansas; M. A., Columbia University.
- LAURENCE MORGAN, Instructor in Athletics; Athletic Trainer (1951, 1957). B. S., St. Ambrose College.
- HERBERT CHARLES MOSER, Assistant Professor of Chemistry, Assistant Chemist, Agr. Exp. Sta. (1957). B. A., San Jose State College; Ph. D., Iowa State College.
- WILLIAM R. MOSES, Professor of English (1950, 1954). B. A., M. A., Ph. D., Vanderbilt University.
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- JOHN PATRICK MURRY, Academic Adviser; Instructor (1957). B. S., Rockhurst College.
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- THOMAS D. O'BRIEN, Professor; Head, Department of Chemistry; Chemist in charge, Agr. and Engg. 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. (1945, 1952). B. A., M. A., McMaster University (Canada); Ph. D., University of Toronto (Canada).
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- S. THOMAS PARKER, Professor of Mathematics (1947, 1951). B. A., M. A., University of British Columbia (Canada); Ph. D., University of Cincinnati.
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- FRED LOUIS PARRISH, Professor; Head, Department of History, Government and Philosophy (1927, 1942). A. B., M. A., Northwestern University; B. D., Garnett Biblical Institute; Ph. D., Yale University.
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- ALFRED THOMAS PERKINS, Professor of Chemistry; Soil Chemist and in charge of Chemistry Service Lab., Agr. Exp. Sta. (1925, 1938). B. S., Pennsylvania State University; M. S., Ph. D., Rutgers University.
- JOHN CHRISTIAN PETERSON, Professor of Psychology Emeritus (1917, 1954). A. B., University of Utah; Ph. D., University of Chicago.
- DOROTHY BRADFORD PETTIS, Associate Professor of Modern Languages (1927, 1937). B. A., M. A., University of Nebraska; Certificate, University of Paris, Middlebury College.
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- THOMAS EUGENE SHELLENBERGER, Assistant Instructor in Chemistry, Agr. Exp. Sta. (1955). B. S., M. S., Montana State College.
- CLAUDE WESLEY SIENKEL, JR., Associate Professor of Geology (1949, 1954). B. S., Kansas State College; M. S., Ph. D., University of Colorado.
- DONALD FOX SHOWALTER, Professor of Psychology (1928, 1957). A. B., M. A., University of Nebraska; Ph. D., University of Kansas.
- WILLIAM E. SIEVEKING, Temporary Assistant Instructor in Botany (1958). B. S., University of Illinois; M. S., Cornell University.
- 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., Associate Professor of Botany; Associate Plant Pathologist, Agr. Exp. Sta. (1952, 1956). B. S., West Virginia Wesleyan College; M. A., Boston University; Ph. D., University of Wisconsin.
- SARAH GOLDA SITZ, Temporary Instructor in Mathematics (1952). B. S., Iowa State College.
- 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.
- 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.
- JOAN S. SPENCER, Temporary Instructor in Music (1957). A. B., William Jewell College.
- ARTHUR BRADLEY SPERRY, Professor of Geology Emeritus (1921, 1953). B. S., University of Chicago.
- KARL STACEY, Associate Professor of Geography (1943, 1948). B. A., M. A., University of Colorado; Ph. D., Clark University.
- WILLIAM L. STAMEY, Associate Professor of Mathematics (1953, 1957). 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.
- CHARLES WILLIAM STRATTON, Professor of Music (1927, 1947). B. M., M. S., Kansas State College.
- WILLIAM TIMOTHY STRATTON, Professor of Mathematics Emeritus (1910, 1951). A. B., A. M., Indiana University; Ph. D., University of Washington.
- VIVAN LEWIS STRICKLAND, Professor of Education Emeritus (1917, 1950). A. B., M. S., Ph. D., University of Nebraska.

- ANNA MARIE STURMER, Professor of English Emeritus (1920, 1950). A. B., A. M., University of Nebraska.
- VERNE SEBASTIAN SWEEDLUN, Professor of Social Sciences in General Studies (1941, 1947). A. B., Bethany College; M. A., University of Kansas; Ph. D., University of Nebraska.
- ROBERT BARTLEY TAYLOR, Temporary Instructor in Sociology (1957). B. S., Wheaton College; M. S., University of Oregon.
- IRWIN FREDERICK THOMLE, Assistant Professor of Humanities in General Studies (1957). B. of Mus. Ed., M. Mus., M. A., Ph. D., Northwestern 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 E. THRALL, Instructor in Physical Education (1954). B. S., Wisconsin State College (La Crosse); M. S., University of Colorado.
- JEAN LAVON THROCKMORTON, Assistant Professor of Humanities in General Studies (1956). A. B., Friends University; M. A., Ph. D., University of Kansas.
- OTTO WILLIAM TIEMEIER, Associate Professor of Zoology; Associate Wildlife Conservationist, Agr. Exp. Sta. (1947, 1957). A. B., M. A., University of Kansas; Ph. D., University of Illinois.
- HARLAN JEAN TRENNEPOHL, Assistant Professor of Education (1956). B. S., M. S., Kansas State Teachers College (Emporia); Ed. D., University of Colorado.
- DON ARTHUR TRUMBO, Instructor in Psychology (1957). B. S., Western Michigan University; M. A., Michigan State University.
- LOIS BELLE TURNER, Assistant Professor of History (1946, 1955). B. S., M. S., Kansas State College.
- WILLEM VAN DER BIJL, Associate Professor of Physics; Associate Meteorologist, Agr. Exp. Sta. (1956). B. Sc., M. Sc., Free University (Netherlands); Ph. D., State University of Utrecht (Netherlands).
- GERARD JAN VAN DER MAAS, Temporary Assistant Professor of Physics (1957). B. S., M. S., Ph. D., Vrije Universiteit (Netherlands).
- MARY ANN VAN METER, Instructor in Physical Education (1956). B. S., Fort Hays State College.
- 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 (1936, 1948). B. S., M. S., Kansas State College; Ph. D., Cornell University.
- 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.
- STANLEY WEARDEN, Assistant Professor of Mathematics; Assistant Statistical Consultant, Agr. Exp. Sta. (1957). B. S., St. Louis University; M. S., University of Houston; Ph. D., Cornell University.
- 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.
- RALPH LEE WHITE, Temporary Instructor of Social Science in General Studies (1957). B. S., University of Tennessee; A. A., Tennessee Wesleyan College; M. A., George Peabody College for Teachers.
- CARRELL HENRY WHITNAH, Professor of Chemistry; Chemist, Agr. Exp. Sta. (1929, 1957). B. A., University of Nebraska; M. S., University of Chicago; Ph. D., University of Nebraska.
- GEORGE DENT WILCOXON, Professor of History and General Studies (1946, 1948). A. B., M. A., Ph. D., University of California.
- DWIGHT WILLIAMS, Professor of Business Administration (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.
- PAUL SIDNEY WINGARD, Instructor in Geology (1957). A. B., M. S., Miami University.
- MORICE FREDERICK WINTER, Head Basketball Coach; Professor of Athletics (1947, 1953). B. S., University of Southern California.
- DALE E. WOERNER, Assistant Professor of Chemistry (1955, 1957). B. S., Kansas State College; M. S., Ph. D., University of Illinois.
- GRACE S. WOLDT, Instructor in Mathematics (1946). A. B., Ohio Wesleyan University.
- MAURICE DUFFIELD WOOLF, Professor of Education (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 McCURE YOUNG, Acting Dean; Director of Summer School; Professor of Mathematics (1947, 1957). A. B., Miami University; M. A., Ph. D., Ohio State University.

- PHILIP YOUNG, Associate Professor of English (1953). B. A., Amherst College; Ph. D., University of Iowa.
- WILLIAM FRANK ZORNOW, Assistant Professor of History (1951). A. B., A. M., Ph. D., Western Reserve University.
- JOSEF ZVEROW, Temporary Instructor in Music (1957). M. S., Roosevelt School of Music.

DEPARTMENT OF AIR SCIENCE

- RAYMOND LAWRENCE ANDERSON, Assistant Instructor in Air Science (1956).
- LEROY HERSHEL BARTON, JR., Associate Professor of Air Science (1957).
- ROBERT JOSEPH BROWN, JR., Assistant Professor of Air Science (1957). B. S., University of Nevada; Squadron Officers School.
- RAYMOND CHESTER HESTERBERG, Associate Professor of Air Science (1957). D. C., Lincoln College; Squadron Officers School.
- HAROLD MUNN HETH, JR., Assistant Instructor in Air Science (1956). A. A., Parsons Junior College.
- NATHAN SPENCER HOLLOWELL, Assistant Instructor in Air Science (1957).
- DUDLEY GORDON KAVANAUGH, Assistant Professor of Air Science (1955). B. A., Sacramento State College; Pilot Supervisors School.
- CHARLES EDWIN MARTIN, Assistant Instructor in Air Science (1957).
- JOHN ANDREA MOE, Assistant Professor of Air Science (1956). B. S., University of North Dakota.
- RALPH DALE OAKLEY, Assistant Professor of Air Science (1954). B. A., University of Oklahoma; Squadron Officers School.
- LAURENCE HOWARD ROBINSON, Assistant Instructor in Air Science (1953).
- RICHARD LLOYD SAWYER, Assistant Instructor in Air Science (1957).
- GERALD DUANE SCHEUFLER, Assistant Professor of Air Science (1955). B. S., Colorado State University; 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).
- 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

- JAMES RUSSELL ANDERSON, Assistant Professor of Military Science (1957). B. S., University of Kentucky; The Armor Advanced School; The Infantry Parachutist School.
- NEAL HAYNES BARKER, Instructor in Military Science (1957). B. S., Harvard University.
- EDWIN GRIFFIN CLAPP, JR., Associate Professor of Military Science (1957). B. S., United States Military Academy; Command and General Staff College; The Artillery School.
- DAVID ARTHUR DUNSON, Assistant Professor of Military Science (1954).
- ALFRED CLAUDE EDWARDS, Associate Professor of Military Science (1956). B. S., University of Arizona; The Infantry School.
- WILLARD FREDERICK FRANTZ, JR., Assistant Professor of Military Science (1957). B. CE., University of Minnesota; The Engineers' School.
- JOHN FRANKLIN GERRITY, Assistant Professor of Military Science (1957). Texas A. & M. College; The Artillery School.
- WILLIAM WALTER HARVEY, JR., Professor and Head of Department of Military Science (1955). B. S., University of Missouri; Command and General Staff College; The Armor School.
- EVERAD FRANKLIN HORTON, Instructor in Military Science (1957). Officers' Candidate School.
- CHARLES MILLER HUGHES, Assistant Professor of Military Science (1955). A. B., Harvard University; The Signal School.
- PRESTON JOHN HUNDLEY, Assistant Instructor in Military Science (1957).
- EARNEST HADEN LANCASTER, Assistant Instructor in Military Science (1956).
- FERDINAND FREDERICK LEISER, Instructor in Military Science (1957).
- HARRISON M. MURPHY, Instructor in Military Science (1954).
- ROBERT BEEGHLY TOBIAS, JR., Assistant Professor of Military Science (1954). B. S., United States Military Academy; The Infantry School.

School of Engineering and Architecture

- PETER DRAKE ANDERSON, Instructor in Mechanical Engineering (1956). B. S., Marquette University.
- CORLISS J. BALLOU, Instructor in Industrial Arts (1954). B. S., Kansas State College.
- MORRIS HENRY BECKMAN, Associate Professor of Architecture (1948, 1956). B. S., Illinois Institute of Technology. Registered Architect.
- EDWARD CLARENCE BERTNOLLI, Instructor in Electrical Engineering (1957, 1958). 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.
- WILLIAM McKINLEY BURLEY, JR., Instructor in Mechanical Engineering (1957). B. S., Oklahoma State University.
- LOUIS CASIMIR BURMEISTER, Instructor in Mechanical Engineering (1957). B. S., Kansas State College.
- EARLE CONRAD BYERS, Assistant Professor of Industrial Arts (1946, 1956). 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 Mechanical Engineering (1955). B. S., U. S. Naval Academy. Professional Engineer.
- JOHN PAUL CLIFTON, Associate Professor of Industrial Engineering (1947, 1956). B. S., University of Kansas; M. S., Kansas State College. Professional Engineer.
- GLENN FRANK COCHRANE, JR., Instructor in Mechanical Engineering (1957). B. S., Oklahoma State University.
- LOWELL EDWIN CONRAD, Professor of Civil Engineering Emeritus (1908, 1949). B. S., C. E., Cornell College; M. S., Lehigh University. Professional Engineer.
- VINCENT JUNIOR COOL, Assistant Professor of Architecture (1957). B. S., Kansas State College.
- 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; Iowa State College.
- THOMAS FRANKLIN CREECH, Instructor in Applied Mechanics (1957). B. S., Kansas State College.
- MOHAMED SIDIQ DAR, Instructor in Applied Mechanics (1956). B. A., Punjab University; B. S., University of Illinois; M. S., Kansas State College.
- 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.
- GERALD WILLIAM DEIBLER, Instructor in Drawing and Painting (1956). B. A., University of Nebraska; M. F. A., University of Colorado.
- VERNON PHILLIP DEINES, Instructor in Mechanical Engineering (1957). B. S., Kansas State College. Professional Engineer.
- HARVEY FREDERICK DIETRICH, Assistant Professor of Industrial Arts (1948, 1957). B. S., Kansas State College.
- 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 State University; M. S., Kansas State College. Registered Architect.
- MERRILL AUGUSTUS DURLAND, Dean; Professor of Mechanical Engineering; Director, Engg. Exp. Sta. (1919, 1949). B. S., M. S., Kansas State College. Professional Engineer.
- LAWRENCE EDWARD EHLERS, Instructor in Applied Mechanics (1957). B. S., Kansas State College.
- GUSTAVE EDMUND FAIRBANKS, Professor of Agricultural Engineering; Agricultural Engineer, Agr. Exp. Sta. (1941, 1957). B. S., M. S., Kansas State College. Professional Engineer.
- LIANG-TSENG FAN, Instructor in Chemical Engineering (1952, 1958). B. S., National Taiwan University; M. S., Kansas State College; Ph. D., West Virginia University.
- FREDERICK CHARLES FENTON, Professor of Agricultural Engineering; Agricultural Engineer, Agr. Exp. Sta., Engg. Exp. Sta. (1928). B. S., M. S., Iowa State College. Professional Engineer.
- EMIL CARL FISCHER, Professor; Head, Department of Architecture and Allied Arts; Architect, Engg. 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.
- FORREST FAYE FRAZIER, Professor of Civil Engineering, Emeritus (1911, 1954). C. E., Ohio State University. Professional Engineer.
- RAY DENTON FRITZEMEYER, Instructor in Electrical Engineering (1958). B. S., Kansas State College.
- JOHN WILLIAM FUNK, Assistant Professor of Agricultural Engineering; Assistant Engineer, Agr. Exp. Sta. (1947, 1951). B. S., M. S., Kansas State College. Professional Engineer.

- MONROE LYLE FUNK, Instructor in Civil Engineering (1956). B. S., Kansas State College.
- UGO GAGLIARDI, Assistant Professor of Electrical Engineering (1956, 1957). M. S., Columbia University; Dott. Ing., University of Naples.
- WALTER WILLIAM GARTH, Assistant Professor of Civil Engineering (1957). B. S., University of Missouri.
- KENNETH KING GOWDY, Instructor in Mechanical Engineering (1957). B. S., Kansas State College.
- PHILIP COURTNEY GREGORY, Instructor in Mechanical Engineering (1957). B. S., Kansas State College.
- CHARLES AUGUST HALIJAK, Associate Professor of Electrical Engineering (1956). B. S., M. S., Ph. D., University of Wisconsin.
- RAYMOND CLARENCE HALL, Assistant Professor of Chemical Engineering (1951, 1952). B. S., Iowa State College; M. S., Kansas State College.
- CARL ULLMAN HANSEN, Instructor in Industrial Engineering (1957). B. S., Kansas State College.
- RICHARD BAY HEAGLER, Instructor in Applied Mechanics (1957). B. S., Missouri School of Mines.
- BURNS EDWARD HEGLER, Instructor in Electrical Engineering (1957). B. 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 of Mechanical Engineering (1935). B. S., University of Illinois. Professional Engineer.
- JOHN FREDERICK HELM, JR., Professor of Drawing and Painting (1924, 1938). B. D., Syracuse University; D. F. A., Bethany College.
- PING-LIONG HO, Instructor in Electrical Engineering (1957). B. S., University of Wisconsin.
- LELAND STANFORD HOBSON, Professor of Industrial Engineering; Associate Director, Engg. Exp. Sta. (1946, 1953). B. S., Kansas State College. Professional Engineer.
- MURLIN RAY HODGELL, Associate Professor of Architecture (1949, 1957). B. S., Kansas State College; M. S., University of Illinois; M. R. P., Cornell University. Registered Architect.
- WILLIAM HENRY HONSTEAD, Professor of Chemical Engineering; Chemical Engineer, Engg. and Agr. Exp. Sta. (1943, 1957). B. S., M. S., Kansas State College; Ph. D., Iowa 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 JORGENSON, Professor of Electrical Engineering, Emeritus (1925, 1954). B. S., M. S., Kansas State College. Professional Engineer.
- SANEHIKO KAKIHANA, Instructor in Electrical Engineering (1957). B. S., Lafayette College.
- RUSSELL MARION KERCHNER, Professor; Head, Department of Electrical Engineering; Electrical Engineer, Engg. Exp. Sta. (1922, 1955). B. S., University of Illinois; M. S., Kansas State College. Professional Engineer.
- WILLIAM ROBERT KIMEL, Associate Professor of Mechanical Engineering (1946, 1955). B. S., M. S., Kansas State College; Ph. D., University of Wisconsin. Professional Engineer.
- JOHN EDWARD KIPP, Assistant Professor of Applied Mechanics (1956). B. S., M. S., University of Kansas.
- PHILLIP GEORGE KIRMSER, Associate Professor of Applied Mechanics (1942, 1954). B. S., M. S., University of Minnesota.
- ROYCE GERALD KLOEFFLER, Professor of Electrical Engineering (1916, 1923). B. S., University of Michigan; S. M., Massachusetts Institute of Technology. Professional Engineer.
- BEVERLY H. KNAPP, Assistant Instructor in Architecture and Allied Arts (1957). B. A., University of Idaho.
- HARRY DANIEL KNOTSMAN, Instructor in Applied Mechanics (1957). B. S., Kansas State College.
- ALDEN KRIDER, Associate Professor of Architecture (1949, 1955). B. S., M. S., Kansas State College. Registered Architect.
- WILHELM KARL KUBITZA, Assistant Professor of Civil Engineering (1953, 1957). Diploma in Engineering. Technical University of Darmstadt.
- BENJAMIN GAYLE KYLE, Assistant Professor of Chemical Engineering (1958). B. S., Georgia Institute of Technology; M. S., Ph. D., University of Florida.
- OSCAR VANCE LARMER, Assistant Professor of Drawing and Painting (1950, 1956). B. F. A., University of Kansas; M. F. A., Wichita University.
- GEORGE HERBERT LARSON, Professor; Head, Department of Agricultural Engineering; Agricultural Engineer, Agr. Exp. Sta. (1946, 1956). B. S., M. S., Kansas State College; Ph. D., Michigan State University. Professional Engineer.
- EDWIN CURGUS LINDLY, Assistant Professor of Applied Mechanics (1949, 1954). B. S., Oklahoma State University; M. S., Purdue University; M. S., Kansas State College. Professional Engineer.
- RALPH IDEN LIPPER, Associate Professor of Agricultural Engineering; Associate Agricultural Engineer, Agr. Exp. Sta. (1946, 1957). B. S., M. S., Kansas State College. Professional Engineer.

- HARRY LEO MANGES, Instructor in Agricultural Engineering; Agricultural Engineer, Agr. Exp. Sta. (1956). B. S., Kansas State College.
- WALTER FRANCIS MASON, Instructor in Mechanical Engineering (1954). B. S., University of Vermont.
- 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.
- ENRICO PAUL MERCANTI, Instructor in Mechanical Engineering (1949, 1956). B. S., New York University; M. S., Kansas State College.
- ALVA ERNEST MESSENHEIMER, Assistant Professor of Mechanical Engineering (1942, 1946). B. S., Kansas State College. Professional Engineer.
- JOHN ORVILLE MINGLE, Instructor in Chemical Engineering (1956). B. S., Kansas State College.
- REED FRANKLIN MORSE, Professor; Head, Department of Civil Engineering; Civil Engineer, Engg. Exp. Sta. (1923, 1947). B. A., Cornell College; B. S., Iowa State College; M. S., Kansas State College; Ph. D., Cornell University. Professional Engineer.
- HAROLD HAWLEY MUNGER, Associate Professor of Applied Mechanics (1942, 1954). B. S., M. S., Kansas State College. Professional Engineer.
- GEORGE HERBERT MYCROFT, Instructor in Electrical Engineering (1958). B. S., Nottingham University.
- HENRY MASON NEELY, JR., Instructor in Mechanical Engineering (1958). B. S., Kansas State College.
- CLARENCE LESLIE NELSON, Instructor in Industrial Arts (1943).
- DWIGHT ALVIN NESMITH, Assistant Professor of Engineering, Engg. Exp. Sta. (1948, 1953). B. S., Northwestern University; M. S., Kansas State College.
- RALPH GRIFFITH NEVINS, Professor; Head, Department of Mechanical Engineering; Mechanical Engineer, Engg. Exp. Sta. (1948, 1957). 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 of Mechanical Engineering (1917, 1922). S. B., Massachusetts Institute of Technology; M. S., Cornell University. Professional Engineer.
- JOHN PETERSON, JR., Instructor in Agricultural Engineering; Assistant Chemical Engineer, Agr. Exp. Sta. (1957). B. S., South Dakota State College.
- RICHARD CARTER POTTER, Associate Dean; Professor of Mechanical Engineering (1949, 1955). B. S., M. S., Ph. D., Purdue University. Professional Engineer.
- MILTON EDWARD RAVILLE, Professor; Head, Department of Applied Mechanics (1946, 1956). B. S., Norwich University; M. S., Kansas State College; Ph. D., University of Wisconsin.
- KERMIT WILLIAM REISTER, JR., Instructor in Electrical Engineering (1955). B. S., University of Nevada; M. S., Kansas State College.
- RAYMOND CHARLES RICHARDSON, Instructor in Chemical Engineering; Assistant Chemical Engineer, Agr. Exp. Sta. (1957). B. S., University of Colorado.
- WALTER FREDERICK ROBOHN, Assistant Professor of Civil Engineering (1949, 1952). B. S., M. S., Kansas State College. Professional Engineer.
- VERNON HART ROSEBRAUGH, Associate Professor of Civil Engineering (1953, 1954). B. S., Oregon Institute of Technology; B. S., Oregon State College; M. A., University of Portland. Professional Engineer.
- RUTH ELOISE SAFFELL, Instructor in Mechanical Engineering (1957). B. S., University of Kansas.
- CHARLES HENRY SCHOLER, Professor of Applied Mechanics; Materials Testing Engineer, Engg. Exp. Sta. (1919, 1922). 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; Head, Department of Industrial Engineering and Industrial Arts; Industrial Engineer, Engg. 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 Mechanical Engineering (1946, 1952). B. S., Kansas State College.
- LAUREN WOODROW SINGLETON, Associate Professor of Applied Mechanics (1956). B. S., Citadel College; M. S., Vanderbilt; M. S., University of Illinois. Professional Engineer.
- 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 (1939, 1952). B. S., Bradley Polytechnic Institute; M. S., Kansas State College.
- HOWARD DWIGHT 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.

- FLOYD ALONZO SMUTZ, Professor of Mechanical Engineering (1918, 1934). B. S., Kansas State College.
- ROBERT ROSS SNELL, Instructor in Civil Engineering (1957). B. S., Kansas State College.
- PAUL NELSON STEVENSON, Associate Professor of Farm Mechanics (1957). B. S., University of Missouri; M. S., Iowa State College.
- BOBBY GEORGE STRAIT, Instructor in Electrical Engineering (1958). B. S., Kansas State College.
- DONALD KARL STROHMEYER, Instructor in Architecture (1957). B. S., University of Kansas.
- DELOS CLIFTON TAYLOR, Professor of Applied Mechanics (1931, 1956). 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; M. S., Kansas State College.
- WILSON TRIPP, Professor of Mechanical Engineering (1936, 1947). B. S., M. S., University of California; Ph. D., University of Illinois. Professional Engineer.
- VIRDEN LEE TURNER, Instructor in Industrial Arts (1956). B. S., Kansas State College.
- ISAAC WAKABAYASHI, Instructor in Electrical Engineering (1955). B. S., University of California.
- HENRY TIBBELS WARD, Professor; Head, Department of Chemical Engineering; Chemical Engineer, Engg. 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.
- LEO ANDREW WIRTZ, Assistant Professor of Electrical Engineering (1947, 1957). B. S. in E. E., B. S. in B. A., M. S., Kansas State College. Professional Engineer.
- JOE NATE WOOD, Professor of Mechanical Engineering (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.
- JOHN COLVIN WYLIE, Instructor in Drawing and Painting (1956). B. A., University of Minnesota; M. F. A., Cranbrook Academy of Art.
- ALLEN ROY YOWELL, Instructor in Industrial Arts (1947).
- GERALD LeROY ZACHARIAH, Instructor in Agricultural Engineering; Assistant Agricultural Engineer, Agr. Exp. Sta. (1955). B. S., Kansas State College.

School of Home Economics

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- PHYLLIS R. ARMSTRONG, Assistant Instructor in Institutional Management (1956). 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.
- GERVA BAKER, Assistant Instructor in Foods and Nutrition, Agr. Exp. Sta. (1957). A. B., Baker University.
- SYBIL BANGS, Assistant Instructor in Institutional Management (1957). 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 (1939, 1954). B. S., M. S., Kansas State College.
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- MAREA BORDT BISHOP, Instructor in Family Economics (1956). B. S. in Ed., University of Tampa; 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 Textile Economist, Agr. Exp. Sta. (1926, 1937). B. S., Kansas State College; A. M., University of Chicago.

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- 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.
- TWILA JO GRAY DORSEY, Assistant Instructor in Institutional Management (1957). B. S., Kansas State College.
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- ANGELO C. GARZIO, Assistant Professor of Art (1957). B. A., M. S., Syracuse University; Diploma di Profitto, University of Florence, Italy; M. A., M. F. A., State University of Iowa.
- ALICE LOUISE GEIGER, Assistant Professor of Art (1945). A. B., B. F. A., University of Kansas; M. A., Colorado State College of Education.
- 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.
- JOHN HANNAN, Instructor in Art (1957). B. F. A., University of Buffalo; M. F. A., University of Illinois.
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- OPAL BROWN HILL, Assistant Professor of Art (1944, 1954). B. S., M. S., Kansas State College.
- RUTH HOEFLIN, Professor; Head, Department of Family and Child Development (1957). B. S., Iowa State College; M. A., University of Michigan; Ph. D., Ohio State University.
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- EVA MYRTLE McMILLAN, Associate Professor of Foods and Nutrition (1930, 1939). Ph. B., S. M., University of Chicago.
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- JANET MARIE WILSON, Assistant Professor of Family Economics (1955). B. S., Northwest Missouri State College; M. Ed., University of Missouri.
- MERNA M. ZEIGLER, Associate Professor of Institutional Management; Director of Food Service of the Student Union (1940, 1957). B. S., M. S., Kansas State College.
- EILEEN ZEITLER, Assistant Professor of Foods and Nutrition; Assistant Food Economist, Agr. Exp. Sta. (1957). B. S., Purdue University; M. S., University of Minnesota.

School of Veterinary Medicine

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- 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; Assistant Pathologist, Agr. Exp. Sta. (1954). D. V. M., Kansas State College; M. S., Iowa State College.
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- 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.
- ROBERT HOWARD FEATHERSTON, Temporary Instructor in Surgery and Medicine (1958). B. S., D. V. M., Kansas State College.
- 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.
- WILLIAM HAROLD HAY, Assistant Professor of Surgery and Medicine (1952, 1954). B. S., D. V. M., M. S., Kansas State College.
- KENNETH W. HUFFMAN, Instructor in Anatomy (1957). D. V. M., Oklahoma State University.
- DONALD CLIFFORD KELLEY, Associate Professor of Pathology; Associate Pathologist, Agr. Exp. Sta. (1958). D. V. M., M. S., Kansas State College.
- ALICE DAY KIMBALL, Instructor in Pathology Emeritus (1934, 1955). B. S., Kansas State 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 Emeritus (1924, 1957). D. V. M., M. S., Kansas State College.
- MAURICE COLLETTE MORRISSETTE, Assistant Professor of Physiology; Assistant Physiologist, Agr. Exp. Sta. (1957). B. S., D. V. M., Kansas State College; M. S., Oklahoma State University.
- JACOB EUGENE MOSIER, Professor of Surgery and Medicine (1945, 1954). D. V. M., M. S., Kansas State College.
- DALLAS LEROY NELSON, Instructor in Pathology; Assistant Pathologist, Agr. Exp. Sta. (1956). B. S., D. V. M., 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.
- DONALD McLEAN TROTTER, Professor; Head, Department of Anatomy (1956, 1957). D. V. M., M. S., 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; Pathologist, Agr. Exp. Sta. (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 of Foods and Nutrition (1929, 1947). B. S., University of Minnesota; M. S., Kansas State College.
- WILLIAM GERALD AMSTEIN, Professor; Head, Department of Agricultural Specialists (1929, 1952). B. S., University of Massachusetts; M. S., Kansas State College.
- ROBERTA ARLENE ANDERSON, Assistant Professor; Assistant State Club Leader (1958). B. S., University of Minnesota; M. S., University of Wisconsin.
- GEORGE WASHINGTON ARMANTROUT, Instructor; Extension Area Engineer (1957). B. S., Kansas State College.
- HARRY CHARLES BAIRD, Professor Emeritus; District Agent (1919, 1957). B. S., Kansas State College.
- MAE BAIRD, Professor; Department Head; State Home Economics Leader (1954). B. S., University of Nebraska; M. A., Columbia University.
- CLARENCE EDWARD BARTLETT, Instructor; 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.
- 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.
- CLIFFORD RANDOLPH BISWELL, Instructor; District Extension Forester (1957). B. A., B. S., University of Missouri.
- ELMER WARFORD BLANKENHAGEN, Assistant Professor; District Agent (1950, 1956). B. S., Kansas State College.
- FRANK OTTO BLECHA, Professor Emeritus; District Agent (1917, 1958). B. S., M. S., Kansas State College.
- ROBERT ARTHUR BOHANNON, Assistant Professor; Extension Specialist in Soil Testing (1951, 1954). B. S., Michigan State University; M. S., Kansas State College; Ph. D., University of Illinois.
- EDWIN RALPH BONEWITZ, Assistant Professor; Extension Specialist in Dairy Husbandry (1943, 1949). B. S., M. S., Kansas State College.
- 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; Assistant State Club Leader (1941, 1948). B. S., Kansas State College; M. S., Cornell University.
- EUGENE ARTHUR CLEAVINGER, Professor; Extension Specialist in Agronomy (1926, 1947). B. S., Kansas State College.
- JOHN HERBERT COOLIDGE, Professor; Extension Economist in Farm Management (1926, 1949). B. S., M. S., Kansas State College.

- HARLAN GENE COPELAND, Assistant Professor; Extension Specialist in Boys' and Girls' Club Work (1954, 1957). B. S., Kansas State College; M. S., University of Maryland.
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- ANNABELLE JEANETTE DICKINSON, Assistant Professor; District Home Economics Agent (1940, 1953). B. S., Fort Hays Kansas State College; M. S., University of Missouri.
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- 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.
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- JOAN VERLENE ENGLE, Instructor; District Home Economics Agent (1955, 1957). B. S., Kansas State College; M. S., University of Maryland.
- 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.
- HAROLD GREEN GALLAIHER, 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.
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- WILLIAM DONALD GUY, Instructor; Extension Economist in Farm Management (1951, 1953). Chanute. B. S., Kansas State College.
- FRANK ALEXANDER HAGANS, Associate Professor; District Agent (1930, 1956). B. S., Kansas State College.
- CHARLES ADRIAN HAGEMAN, Instructor; Extension Economist in Farm Management (1936, 1953). Hutchinson. B. S., Kansas State College.
- GEORGE CHRIST HALAZON, Assistant Professor; Extension Specialist in Predator and Rodent Control (1954, 1956). B. S., M. S., University of Wisconsin.
- JOHN BONAR HANNA, Assistant Professor; Assistant State Club Leader (1934, 1947). B. S., M. S., Kansas State College.
- HAROLD BYRON HARPER, Assistant Professor; Extension Soil Conservationist (1932, 1946). B. S., M. S., Kansas State College.
- DONICE AVERNE HAWES, Instructor; Extension Specialist in Home Furnishings (1955, 1956). B. S., M. S., Kansas State College.
- HELEN MARIE HENDERSHOT, Instructor; District Home Economics 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).
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- CLARENCE ROY JACCARD, Professor; Coordinator of Extension Program Planning (1922, 1957). 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 Emeritus; Head, Department of Boys' and Girls' Club Work; State Club Leader (1927, 1958). B. S., Kansas State College; M. S., George Washington University.
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- FRANCIS EUGENE JONES, Instructor; Extension Specialist in Radio Programming (1956). B. S., Kansas State Teachers College, Emporia.
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- 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; M. S., University of Nebraska.
- ETHEL WATSON SELF, Assistant Professor; Extension Specialist in Home Management (1929, 1953). B. S., M. S., Kansas State College.
- HAROLD GLEASON SHANKLAND, Associate Professor; Associate Extension Editor (1943, 1949). A. B., College of Emporia.
- DALE LEROY SHAW, Instructor; District Extension Forester (1957). B. S., M. S., University of Missouri.
- JOHN FREDERICK SMERCHEK, Instructor; Extension Economist in Farm Management (1942, 1950). Greensburg. B. S., Kansas State College.
- VIRGINIA MARGARET SMITH, Assistant Professor; District Home Economics Agent (1952, 1957). B. S., Kansas State College; M. S., University of Wisconsin.
- GEORGIANA HOPE SMURTHWAITE, Professor Emeritus; Extension Specialist in Home Economics Program Development (1924, 1954). B. S., Utah State College; M. S., Kansas State College.
- WINONA McNEIGHT STARKEY, Assistant Professor; Extension Specialist in Home Furnishings (1944, 1956). B. S., M. S., Kansas State College.

- HAROLD EARL STOVER, Professor; 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; Coordinator of Extension Program Analysis (1929, 1952). B. S., Kansas State College.
- MARJORIE ANN TENNANT, Instructor; Assistant Extension Editor (1947, 1952). B. S., M. S., Kansas State College.
- KENNETH EUGENE THOMAS, Associate Professor; Director, Radio Station KSAC (1951, 1956). A. B., Southwestern College; M. S., Kansas State College.
- VIRGINIA EMILY TWITTY, Instructor; Extension Specialist in Clothing and Textiles (1956). B. S., University of Missouri; M. S., Kansas State College.
- ROMAN J. VERHAALEN, Professor; Head, Department of Continuing Education (1954, 1957). B. A., M. A., Ph. D., Wyoming University.
- MILDRED LUCILLE WALKER, Instructor; Extension Specialist in Consumer Education (1952, 1956). B. S., Kansas State College.
- EUGENE DECATUR WARNER, Associate Professor; Associate Extension Editor (1935, 1947). B. S., Kansas State College.
- RUTH IRENE WELLS, Instructor; District Home Economics Agent (1953, 1956). B. S., Central Missouri State College; M. S., Kansas State College.
- LEO THEODORE WENDLING, Assistant Professor; Extension Agricultural Engineer (1947, 1949). B. S., M. S., Kansas State College.
- BESSIE BROOKS WEST, Professor of Institutional Management; Continuing Education (1928, 1958). A. B., M. A., University of California; M. S., Michigan State Normal College.
- NORMAN VINCENT WHITEHAIR, Associate Professor; 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.
- ROGER HAROLD WILKOWSKE, Associate Professor; Extension Specialist in Dairy Marketing (1957). B. S., Kansas State College; M. S., Michigan State University; Ph. D., Pennsylvania State University.

COUNTY CLUB AGENTS

- JOHN HAYDEN BARNES, Brown County (1953). Hiawatha.
- ROBERT FRANKLIN BARNES, Russell County (1953). Russell.
- CHARLES THOMAS BATES, JR., McPherson County (1956). McPherson.
- WILLIAM HENRY BORST, Wyandotte County (1953). Kansas City.
- ROBERT GAYLE CARSWELL, Clay County (1958). Clay Center.
- JAMES R. CHILDERS, Reno County (1944, 1954). Hutchinson.
- BILLY DEAN COLLINS, Harvey County (1954, 1958). Newton.
- LOIS GLENN DAVIS, Sedgwick County (1957). Wichita.
- JAMES LEONARD DOERING, Ellsworth County (1957). Ellsworth.
- DONALD LOUIS ESSLINGER, Rice County (1957, 1958). Lyons.
- HAROLD EDWIN EVERSMEYER, Lyon County (1951, 1956). Emporia.
- MERLE LINTON EYESTONE, Shawnee County (1947). Topeka.
- JOHN JOSEPH FEIGHT, JR., Cowley County (1952, 1953). Winfield.
- ALBERT HAROLD GOTTSCH, Butler County (1954, 1956). El Dorado.
- ROGER HECHT, Miami County (1952). Paola.
- LARRY GAY HENRY, Washington County (1956, 1958). Washington.
- DALE HENSLEY, Montgomery County (1957, 1958). Independence.
- SAMUEL J. HUNDLEY, Kingman County (1956). Kingman.
- WILLIAM CLAY HUNDLEY, JR., Douglas County (1955). Lawrence.
- JOHN WILLIS JORDAN, Labette County (1953). Altamont.
- ORVILLE LOWELL LAGASSE, Greenwood County (1957). Eureka.
- DONALD GLEN LOYD, Crawford County (1948, 1949). Girard.
- KENNETH EUGENE McGINNESS, Johnson County (1954). Olathe.
- PAUL HENRY MAYGINNES, Marion County (1951, 1955). Marion.
- CLIFFORD LEO MEIREIS, Pratt County (1955). Pratt.
- THOMAS W. ORWIG, Dickinson County (1955). Abilene.
- RALPH B. RECTOR, Leavenworth County (1956). Leavenworth.
- JOHN F. ROBERTSON, Cherokee County (1956). Columbus.
- LESLIE HERMAN SALLE, Franklin County (1958). Ottawa.
- JIMMIE WAYNE SMITH, Riley County (1958). Manhattan.
- DONALD MELVIN SPRINGER, Republic County (1957). Belleville.
- WILLIAM VINCENT VANSKIKE, Barton County (1950, 1956). Great Bend.
- WILL DEE WHITMIRE, Saline County (1956, 1957). Salina.
- WILLIAM GRANT WILLIS, Sumner County (1950, 1957). Wellington.
- THURMAN S. WREN, Sedgwick County (1949, 1955). Wichita.
- SAMUEL RAY ZIMMERMAN, Marshall County (1957). Marysville.

COUNTY HOME ECONOMICS AGENTS

LOIS CLARA ADAMS, Jackson County (1957). Holton.
 MAHALA MARY ARGANBRIGHT, Norton County (1949, 1951). Norton.
 DELORES L. BAAS, Anderson County (1955, 1957). Garnett.
 MARION BARNES, Sedgwick County (1955). Wichita.
 CORA ALICE BLACKWELL, Kearny County (1948, 1950). Lakin.
 ELSIE PAINTER BRANDEN, Stevens County (1955). Hugoton.
 BLANCHE BROOKS, Osage County (1941, 1957). Lyndon.
 RUTH ALLENE BROTHERS, Doniphan County (1956). Troy.
 LAURA JANE BROWN, Wabaunsee County (1957). Alma.
 NORMA LEE BROWN, Hodgeman County (1956, 1957). Jetmore.
 JEAN KEMPTON CARLSON, Lyon County (1950, 1954). Emporia.
 ANNA GRACE CAUGHRON, Coffey County (1944, 1952). Burlington.
 LUCILLE GILKISON CLINE, Sherman County (1955). Goodland.
 NELLIE W. CLINE, Wallace County (1955). Sharon Springs.
 DORIS WIERENGA COBB, Trego County (1956, 1957). Wakeeney.
 DONNA RIFE COBLE, Elk County (1956, 1957). Howard.
 JOSEPHINE M. CONLEY, Johnson County (1955). Olathe.
 MABEL COVERDILL, Scott County (1947, 1956). Scott City.
 JEANICE BLAUER CRESS, Allen County (1956). Iola.
 ROSEMARY ALTHEA CRIST, Mitchell County (1950, 1954). Beloit.
 TRELLE CURRIE, Cloud County (1955). Concordia.
 MARY JO DUNBAR, Miami County (1957). Paola.
 ELIZABETH ANN ELLIOTT, Republic County (1956). Belleville.
 CAROLYN JANETTE ELMORE, McPherson County (1956). McPherson.
 DORIS JEAN EMMONS, Rooks County (1957). Stockton.
 MARY OLIVE EVANS, Lincoln County (1953, 1954). Lincoln.
 PAULINE WOOD FERRELL, Ellsworth County (1952, 1958). Ellsworth.
 WILLA LOIS FICKEN, Grant County (1957). Ulysses.
 NEOSHO LOUISE FREDENBERG, Morris County (1953). Council Grove.
 ALICE LETTIE FREY, Clay County (1955, 1957). Clay Center.
 MARY LOU GIBBS, Pottawatomie County (1957). Westmoreland.
 ALMA HALBOWER GILES, Linn County (1949, 1954). Mound City.
 VIVIAN EWY GRABER, Kingman County (1955, 1957). Kingman.
 MARTHA A. HANSEN, Barber County (1957). Medicine Lodge.
 FRED A. KAYANN HEINLY, Rice County (1957). Lyons.
 MAY BETH HERNDON, Rush County (1953). La Crosse.
 MARIAN V. HESTER, Barton County (1953). Great Bend.
 MARY DEAN HOLLE, Franklin County (1953, 1955). Ottawa.
 GERTRUDE HOVE, Montgomery County (1949). Independence.
 MARY NADINE HOWARD, Wilson County (1954, 1955). Fredonia.
 DOROTHY LOUISE HOYT, Pratt County (1953, 1955). Pratt.
 O. DALE HUFFMAN, Marshall County (1956). Marysville.
 FAYE ANNE JOHNSON, Russell County (1955, 1957). Russell.
 JUANITA BILLINGTON JOHNSON, Crawford County (1948). Girard.
 MARIELLEN JONES, Dickinson County (1955). Abilene.
 BETTY RUTH KERN, Osborne County (1957). Osborne.
 BEVERLY LOUISE KINDLER, Decatur County (1951, 1952). Oberlin.
 PATRICIA GALLAGHER KINEN, Cheyenne County (1950, 1951). St. Francis.
 EULA GEIST KITTLE, Edwards County (1956, 1957). Kinsley.
 RUTH MAURINE KUBLER, Cowley County (1957). Winfield.
 ROSA ELLEN LARSON, Chase County (1957). Cottonwood Falls.
 ELEANORA LEIKAM, Gray County (1954). Cimarron.
 PATRICIA JUNE LITTLE, Jewell County (1957). Mankato.
 ANNABELLE BRAKKE LONG, Shawnee County (1955). Topeka.
 BETTY GRACE McBEE, Atchison County (1952, 1954). Effingham.
 VELMA MAYSLE McGAUGH, Douglas County (1943, 1958). Lawrence.
 EVA PEARL MANSFIELD, Leavenworth County (1953). Leavenworth.
 MARGARET NETTLETON MAUK, Saline County (1944, 1947). Salina.
 MARY E. MEEK, Dickinson County (1953, 1955). Abilene.
 ALICE LOUISE MILLER, Ford County (1953, 1955). Dodge City.
 BETTE J. MILLER, Brown County (1957). Hiawatha.
 DIXIE IRENE MOLZ, Stafford County (1953). St. John.
 ALVERDA MOORE, Riley County (1955). Manhattan.

RACHEL SARAH MORELAND, Geary County (1955). Junction City.
 ERMA M. NEELLY, Ness County (1950). Ness City.
 DOROTHY H. NEUFELD, Pawnee County (1957). Larned.
 OCIE ALICE NEUSCHWANDER, Greeley County (1957). Tribune.
 ALICE McKAUGHEN OLEN, Seward County (1956). Liberal.
 BETTY MAE ORR, Kiowa County (1955, 1958). Greensburg.
 RACHEL FEATHERINGILL PALMER, Sedgwick County (1941, 1954). Wichita.
 INEZ PASS, Ottawa County (1947, 1949). Minneapolis.
 MURIEL FRANCES PEASE, Bourbon County (1957). Fort Scott.
 MARJORIE ELEANOR PRICE, Neosho County (1957). Erie.
 ARRIA NEAL PTACEK, Sheridan County (1954). Hoxie.
 VELDA FRANCES RANKIN, Sumner County (1952). Wellington.
 CLAYRE DONNELLY RATZLAFF, Cherokee County (1948). Columbus.
 PHYLLIS ROGGENDORFF, Chautauqua County (1955, 1956). Sedan.
 ARDELLA RUTH RUSK, Jefferson County (1957). Oskaloosa.
 MARY JOAN SAGE, Phillips County (1953). Phillipsburg.
 AMANDA V. SCHALL, Marion County (1957). Marion.
 DORTHEA ANN SCHROEDER, Wyandotte County (1942, 1950). Kansas City.
 LUCILLE MAY SHAFER, Butler County (1949, 1951). El Dorado.
 MABEL RACHEL SMITH, Rice County (1929, 1953). Lyons.
 BEVERLY JUNE SPRIGGS, Nemaha County (1956). Seneca.
 DELORES ROSE STOVER, Saline County (1957). Salina.
 LUCILLE STUBBS, Reno County (1955). Hutchinson.
 KATHRYN SUGHRUE, Finney County (1937, 1954). Garden City.
 FAYE EVELYN VICE, Labette County (1946, 1947). Altamont.
 MAE K. WEAVER, Barton County (1952). Great Bend.
 MARY EILEEN WENDLAND, Greenwood County (1953). Eureka.
 NANCY ANN WEST, Wyandotte County (1955, 1957). Kansas City.
 LUCILLE ROSENBERGER WHIPPS, Shawnee County (1943, 1955). Topeka.
 LOIS ETHEL WINEGARNER, Ellis County (1957). Hays.
 ELIZABETH WONER, Harper County (1948, 1950). Anthony.
 MARY DUNLAP ZIEGLER, Sedgwick County (1928, 1955). Wichita.

COUNTY AGRICULTURAL AGENTS

KENNETH BAIRD ALBRIGHT, Ellis County (1955, 1957). Hays.
 CHARLES JACK BAIRD, Chautauqua County (1953, 1954). Sedan.
 EDWARD KIRK BAKER, Russell County (1955). Russell.
 ARNOLD BARBER, Atchison County (1955). Effingham.
 DONALD DEAN BERNBECK, Hodgeman County (1956, 1957). Jetmore.
 FREEMAN E. BIERY, Jewell County (1953). Mankato.
 DONALD LEE BIGGE, Sherman County (1956, 1958). Goodland.
 WILLIS LEE BLUME, Haskell County (1948). Sublette.
 HAROLD EUGENE BROADIE, Stevens County (1955). Hugoton.
 DONALD ALBERT BROWN, Franklin County (1950, 1951). Ottawa.
 HERBERT WILLIAM BULK, Nemaha County (1949, 1952). Seneca.
 JOHN MILES BUOY, Chase County (1932, 1956). Cottonwood Falls.
 ELGIN R. BUTTON, McPherson County (1943, 1950). McPherson.
 HAL DEAN BYARLAY, Lincoln County (1953). Lincoln.
 WALTER WILLIAM CAMPBELL, Osage County (1946). Lyndon.
 JOHNNY VAN CAREY, Cherokee County (1955). Columbus.
 MONTE CHARLES CLARK, Kiowa County (1950). Greensburg.
 LAWRENCE JOSEPH COX, Mitchell County (1954). Beloit.
 MANFORD LESTER COX, Riley County (1945, 1955). Manhattan.
 DARRELL DEAN DICKEN, Scott County (1942, 1953). Scott City.
 HARRY GARFIELD DUCKERS, JR., Wyandotte County (1943, 1948). Kansas City.
 KERMIT VERNON ENGLE, Ellsworth County (1936, 1946). Ellsworth.
 LYLE LEROY ENGLE, Leavenworth County (1947, 1956). Leavenworth.
 DONALD LEE FAIDLEY, Phillips County (1956). Phillipsburg.
 LESLIE PEARL FRAZIER, Rice County (1944, 1953). Lyons.
 HOBART WILLIAM FREDERICK, Reno County (1941, 1953). Hutchinson.
 KENNETH WILLIAM FROMM, Lane County (1953, 1956). Dighton.
 RAYMOND GLENN FRYE, Sumner County (1943, 1953). Wellington.
 JEWELL OLIVER GEBHART, Washington County (1945, 1954). Washington.
 PAUL GILPIN, Smith County (1946). Smith Center.
 HARVEY E. GOERTZ, Brown County (1937, 1950). Hiawatha.

LAURENZ STEPHEN GREENE, Cloud County (1952, 1957). Concordia.
LESTER EDWARD GRIFFITH, Wilson County (1949, 1950). Fredonia.
OTIS RAY GRIGGS, Reno County (1949, 1954). Hutchinson.
HENRY PAUL GRONWOLLER, Decatur County (1952). Oberlin.
WILLARD CARL HAGER, Elk County (1956). Howard.
CHARLES TOMAS HALL, Johnson County (1934, 1939). Olathe.
ROBERT JOHN HAMILTON, Rush County (1956). La Crosse.
WARREN GAMALIEL 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.
JON GREVE HEROD, Morton County (1957). Elkhart.
CLARENCE ATHEL HOLLINGSWORTH, Greenwood County (1937, 1953). Eureka.
JERRY CLIFTON HOPE, Woodson County (1955). Yates Center.
GERALD LEE HUNTINGTON, Sedgwick County (1955, 1957). Wichita.
CLARENCE IMEL, Kingman County (1950). Kingman.
DONALD WALTER INGLE, Sedgwick County (1930, 1947). Wichita.
KENNETH RALPH JAMESON, Comanche County (1953, 1954). Coldwater.
RICHARD LOUIS JEPSON, Sheridan County (1953). Hoxie.
HARRY LEE KIVETT, Edwards County (1957). Kinsley.
RUSSELL KLOTZ, Labette County (1943, 1950). Altamont.
JOHN WILLIAM KNOX, Barton County (1955, 1956). Great Bend.
WILBUR S. KRAISINGER, Pratt County (1947, 1950). Pratt.
THERON CLAIRE KREHBIEL, Barber County (1954, 1956). Medicine Lodge.
RICHARD S. KUBIK, Thomas County (1949). Colby.
MERLIN ELMER LINE, Kearny County (1946, 1949). Lakin.
DONALD EDWIN LOVE, Cheyenne County (1955, 1956). St. Francis.
ROBERT DALE LYNCH, Stanton County (1957, 1958). Johnson.
BRUCE EDWARD McLAURY, Miami County (1950, 1953). Paola.
GERALD ORESTES McMASTER, Rooks County (1951). Stockton.
KENNETH LEROY McREYNOLDS, Clay County (1949, 1954). Clay Center.
DONALD DALE McWILLIAMS, Logan County (1956). Oakley.
ALVIN EDWARD MALEY, Morris County (1953). Council Grove.
ALVIS MANIS, JR., Harvey County (1954, 1955). Newton.
RAY DAMPTON MANN, Wallace County (1956, 1957). Sharon Springs.
E. CLIFFORD MANRY, Pawnee County (1940, 1947). Larned.
DAROLD DEAN MARLOW, Wabaunsee County (1950). Alma.
THOMAS ROBERT MAXWELL, Allen County (1954, 1956). Iola.
WILLIAM ARTHUR MONTGOMERY, JR., Jackson County (1955). Holton.
DOUGLAS HAROLD MORRIS, Osborne County (1954, 1955). Osborne.
WESLEY GALE MULLEN, Neosho County (1952, 1957). Erie.
JOSEPH P. NEILL, Anderson County (1957). Garnett.
BOB WELDON NEWSOME, Jefferson County (1955, 1957). Oskaloosa.
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.
IRL WALLACE PARKER, JR., Linu County (1953). Mound City.
RALPH STANLEY PARSONS, Lyon County (1952). Emporia.
VICTOR EUGENE PAYER, Butler County (1939, 1943). El Dorado.
EUGENE ROSS, Stafford County (1955, 1956). St. John.
HERMAN DWANE SANTALA, Hamilton County (1956, 1957). Syracuse.
JOHN RALPH SCHLENDER, Saline County (1950, 1956). Salina.
NORMAN EDWARD SCHLESENER, Ottawa County (1956). Minneapolis.
GEORGE W. SIDWELL, Trego County (1919, 1952). Wakeeney.
DEAL DEMI SIX, Douglas County (1935). Lawrence.
JOHNNY EDWARD SLOUP, Marion County (1948, 1952). Marion.
CHARLES WESLEY SMITH, Cowley County (1955). Winfield.
BEVERLY DAVID STAGG, Norton County (1946). Norton.
NELSON EDWIN STROUD, Geary County (1952, 1958). Junction City.
JAMES WADELL STURDEVANT, Crawford County (1948, 1952). Girard.
WARREN CHALMER TEEL, Shawnee County (1939, 1953). Topeka.
MILTON N. THOMAS, Gray County (1949, 1952). Cimarron.
WILTON BRADLEY THOMAS, Dickinson County (1946, 1952). Abilene.
OBED LEE TOADVINE, Greeley County (1957). Tribune.

DANNY DALE TRAYER, Finney County (1950, 1957). Garden City.
WAYNE HOWARD TYLER, Bourbon County (1955). Fort Scott.
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.
DON KOENIG WILES, Clark County (1956, 1958). Ashland.
JACK HARLAN WILSON, Wichita County (1946, 1950). Leoti.
PAUL HENRY WILSON, Barton County (1946, 1947). Great Bend.
GAYLE LESLIE WOLF, Ness County (1955). Ness City.
GARNETT ALLAN ZIMMERLY, Republic County (1953, 1955). Belleville.

Statistical Summary for 1955-56

Students by States, Foreign Countries, and Kansas Counties

States

Alabama	2	Maine	2	Ohio	11
Arizona	6	Maryland	4	Oklahoma	15
Arkansas	17	Massachusetts	5	Oregon	3
California	19	Michigan	1	Pennsylvania	30
Colorado	18	Minnesota	10	South Carolina	2
Connecticut	10	Mississippi	2	South Dakota	24
District of Columbia	5	Missouri	170	Tennessee	7
Florida	5	Montana	4	Texas	29
Georgia	4	Nebraska	110	Utah	9
Idaho	9	Nevada	1	Vermont	2
Illinois	59	New Hampshire	1	Virginia	7
Indiana	25	New Jersey	44	Washington	4
Iowa	18	New Mexico	7	West Virginia	2
Kansas	6155	New York	61	Wisconsin	21
Kentucky	3	North Carolina	1	Wyoming	6
Louisiana	1	North Dakota	7	Total	6958

Foreign Countries and Territories Outside the Continental United States

Alaska	2	India	22	Philippines	9
Bogota	1	Iran	2	Puerto Rico	18
Brazil	4	Iraq	8	Sweden	2
Canada	7	Israel	2	Switzerland	1
Canal Zone	3	Italy	1	Syria	1
China	20	Japan	2	Turkey	1
Cuba	1	Jordan	7	Venezuela	2
Cyprus	1	Khorasan	1	Total	167
Denmark	1	Korea	6	Grand Total:	
Egypt	4	Liberia	1	States	6958
England	1	Mexico	2	Countries	167
Finland	1	Nigeria	4		
Germany	2	Pakistan	1		
Hawaii	25	Peru	1		

Kansas Counties

Allen	19	Greeley	3	Osborne	49
Anderson	31	Greenwood	33	Ottawa	53
Atchison	39	Hamilton	6	Pawnee	33
Barber	45	Harper	47	Phillips	41
Barton	95	Harvey	59	Pottawatomie	118
Bourbon	28	Haskell	14	Pratt	54
Brown	58	Hodgeman	24	Rawlins	20
Butler	93	Jackson	48	Reno	143
Chase	22	Jefferson	28	Republic	67
Chautauqua	11	Jewell	58	Rice	58
Cherokee	13	Johnson	152	Riley	964
Cheyenne	23	Kearny	8	Rooks	23
Clark	19	Kingman	20	Rush	22
Clay	108	Kiowa	13	Russell	41
Cloud	81	Labette	40	Saline	187
Coffey	35	Lane	14	Scott	22
Comanche	18	Leavenworth	36	Sedgwick	275
Cowley	65	Lincoln	46	Seward	24
Crawford	38	Linn	27	Shawnee	228
Decatur	20	Logan	26	Sheridan	15
Dickinson	108	Lyon	51	Sherman	42
Doniphan	22	McPherson	100	Smith	30
Douglas	24	Marion	56	Stafford	59
Edwards	24	Marshall	158	Stanton	2
Elk	13	Meade	8	Stevens	6
Ellis	48	Miami	30	Sumner	73
Ellsworth	44	Mitchell	64	Thomas	53
Finney	50	Montgomery	71	Trego	9
Ford	40	Morris	54	Wabaunsee	48
Franklin	49	Morton	5	Wallace	9
Geary	164	Nemaha	51	Washington	83
Gove	16	Neosho	51	Wichita	8
Graham	19	Ness	22	Wilson	39
Grant	8	Norton	55	Woodson	18
Gray	22	Osage	53	Wyandotte	197
				Total	6155

Statistical Summary for 1956-57

Students by States, Foreign Countries, and Kansas Counties

States

Alabama	6	Louisiana	5	North Dakota	7
Arizona	3	Maine	3	Ohio	9
Arkansas	15	Maryland	11	Oklahoma	21
California	19	Massachusetts	7	Oregon	6
Colorado	17	Michigan	8	Pennsylvania	19
Connecticut	11	Minnesota	18	South Carolina	2
Delaware	2	Mississippi	2	South Dakota	26
District of Columbia	1	Missouri	190	Tennessee	7
Florida	6	Montana	3	Texas	24
Georgia	3	Nebraska	114	Utah	7
Idaho	5	Nevada	1	Vermont	2
Illinois	73	New Hampshire	1	Virginia	14
Indiana	23	New Jersey	37	Washington	4
Iowa	19	New Mexico	7	West Virginia	1
Kansas	6698	New York	56	Wisconsin	26
Kentucky	3	North Carolina	4	Wyoming	3
				Total	7549

Foreign Countries and Territories Outside the Continental United States

Alaska	1	Indonesia	1	Spain	2
Brazil	3	Iran	3	Switzerland	1
Canada	4	Iraq	8	Syria	2
Canal Zone	6	Israel	3	Turkey	1
China	21	Italy	1	Venezuela	1
Colombia	2	Japan	2	Yugoslavia	2
Cyprus	1	Jordan	9	Counted Twice	7
Egypt	4	Korea	10		
France	1	Mexico	5	Total	187
Germany	2	Nepal	1		
Guatemala	1	Nigeria	4	Grand Total:	
Hawaii	28	Pakistan	2	States	7549
Honduras	1	Philippines	6	Countries	187
India	21	Puerto Rico	20		7736

Kansas Counties

Allen	31	Greeley	4	Osborne	54
Anderson	28	Greenwood	48	Ottawa	64
Archison	45	Hamilton	3	Pawnee	37
Barber	40	Harper	44	Phillips	41
Barton	124	Harvey	60	Pottawatomie	130
Bourbon	31	Haskell	13	Pratt	67
Brown	57	Hodgeman	20	Rawlins	29
Butler	114	Jackson	61	Reno	167
Chase	26	Jefferson	28	Republic	75
Chautauqua	12	Jewell	60	Rice	74
Cherokee	21	Johnson	183	Riley	955
Cheyenne	22	Kearny	8	Rooks	33
Clark	16	Kingman	23	Rush	23
Clay	108	Kiowa	16	Russell	47
Cloud	92	Labette	49	Saline	217
Coffey	33	Lane	17	Scott	23
Comanche	17	Leavenworth	29	Sedgwick	299
Cowley	74	Lincoln	43	Seward	32
Crawford	50	Linn	24	Shawnee	255
Decatur	26	Logan	23	Sheridan	15
Dickinson	128	Lyon	60	Sherman	52
Doniphan	28	McPherson	123	Smith	37
Douglas	38	Marion	53	Stafford	52
Edwards	26	Marshall	150	Stanton	6
Elk	16	Meade	13	Stevens	8
Ellis	40	Miami	39	Sumner	84
Ellsworth	64	Mitchell	59	Thomas	54
Finney	54	Montgomery	86	Trego	10
Ford	42	Morris	63	Wabaunsee	52
Franklin	55	Morton	7	Wallace	9
Geary	173	Nemaha	61	Washington	84
Gove	10	Neosho	55	Wichita	10
Graham	25	Ness	25	Wilson	31
Grant	13	Norton	61	Woodson	19
Gray	18	Osage	56	Wyandotte	189
				Total	6698

Degrees Conferred in the Year 1956

SCHOOL	Men	Women	Total
SCHOOL OF AGRICULTURE (B. S.)	154	1	155
Agriculture	132	1	133
Agricultural Journalism	3		3
Feed Technology	12		12
Landscape Design	3		3
Milling Industry	4		4
SCHOOL OF ARTS AND SCIENCES (B. S.)	348	152	500
Bachelor of Science	201	64	265
Business Administration	106	11	117
(Industrial) Chemistry	4		4
Elementary Education	7	56	63
Bachelor of Music	1		1
Bachelor of Music Education	3	5	8
Physical Education	17	9	26
Technical Journalism	9	7	16
SCHOOL OF ENGINEERING AND ARCHITECTURE (B. S.)	164		164
Agricultural Engineering	5		5
Architectural Engineering	5		5
Architecture	16		16
Chemical Engineering	16		16
Civil Engineering	29		29
Electrical Engineering	45		45
Nuclear Engineering	4		4
Industrial Education	6		6
Mechanical Engineering	30		30
Industrial Technology	4		4
Industrial Engineering	4		4
SCHOOL OF HOME ECONOMICS (B. S.)		129	129
Home Economics		108	108
Home Economics & Journalism		8	8
Home Economics & Nursing		13	13
SCHOOL OF VETERINARY MEDICINE (D. V. M.)	63	1	64
Veterinary Medicine	63	1	64
Total undergraduate degrees	729	283	1012
GRADUATE SCHOOL (M. S.)	119	20	139
Agricultural Economics	5	1	6
Agricultural Engineering	3		3
Agronomy	8		8
Animal Husbandry	4		4
Architectural Engineering	3		3
Architecture	3		3
Bacteriology	1		1
Business Administration	1		1
Chemical Engineering	4		4
Chemistry	5		5
Civil Engineering	2		2
Clothing and Textiles		3	3
Dairy Husbandry	3		3
Economics	1		1
Education	12	3	15
Electrical Engineering	3		3
English	3		3
Entomology	6		6
Family Economics		1	1
Family and Child Development		3	3
Farm Mechanics	2		2
Flour Milling	1		1
Foods and Nutrition		3	3
Geology	9		9
Government	1		1
History	4	1	5
Home Economics Education		1	1
Horticulture	1		1
Industrial Engineering	2		2
Institutional Management		1	1
Mathematics	4		4
Mechanical Engineering	4		4
Music	2		2
Physical Education	1		1
Physics	6		6
Poultry Husbandry	1		1

Degrees Conferred in the Year 1956—Concluded

SCHOOL	Men	Women	Total
Psychology	5	2	7
Speech	1	1	2
Zoology	3		3
Technical Journalism	1		1
Pathology	4		4
GRADUATE SCHOOL (Ph. D.)	30		30
Agronomy	5		5
Animal Nutrition	1		1
Applied Mechanics	1		1
Bacteriology	2		2
Botany	1		1
Chemistry	11		11
Entomology	6		6
Genetics	1		1
Parasitology	1		1
Physics	1		1

Degrees Conferred in the Year 1957

SCHOOL	Men	Women	Total
SCHOOL OF AGRICULTURE (B. S.)	180		180
Agriculture	163		163
Agricultural Journalism	2		2
Feed Technology	5		5
Landscape Design	1		1
Milling Industry	9		9
SCHOOL OF ARTS AND SCIENCES (B. S.)	371	147	518
Bachelor of Science	206	60	266
Business Administration	110	5	115
Chemistry	4		4
Elementary Education	19	61	80
Bachelor of Music		1	1
Bachelor of Music Education	2	9	11
Physical Education	15	6	21
Technical Journalism	15	5	20
SCHOOL OF ENGINEERING AND ARCHITECTURE (B. S.)	247		247
Agricultural Engineering	17		17
Architectural Engineering	12		12
Architecture	27		27
Chemical Engineering	17		17
Civil Engineering	32		32
Electrical Engineering	71		71
Nuclear Engineering	2		2
Industrial Education	6		6
Mechanical Engineering	50		50
Industrial Technology	5		5
Industrial Engineering	8		8
SCHOOL OF HOME ECONOMICS (B. S.)	3	121	124
Home Economics	2	105	107
Home Economics & Journalism		4	4
Home Economics & Nursing		11	11
Restaurant Management	1	1	2
SCHOOL OF VETERINARY MEDICINE (D. V. M.)	59		59
Veterinary Medicine	59		59
Total undergraduate degrees	860	268	1128
GRADUATE SCHOOL (M. S.)	158	34	192
Agricultural Economics	13		13
Agricultural Education	3		3
Agricultural Engineering	1		1
Agronomy	9		9
Animal Husbandry	16		16
Applied Mechanics	3		3
Architecture		1	1
Art		2	2

Degrees Conferred in the Year 1957—Concluded

SCHOOL	Men	Women	Total
Bacteriology	7		7
Botany	2		2
Chemical Engineering	3		3
Chemistry	8		8
Civil Engineering	2		2
Clothing and Textiles		3	3
Dairy Husbandry	7		7
Economics	2		2
Education	12	2	14
Electrical Engineering	2		2
English	2	4	6
Entomology	6		6
Extension Education	1		1
Family Economics		1	1
Family and Child Development	1	3	4
Feed Technology	2		2
Foods and Nutrition		5	5
Geology	9		9
Government		1	1
History	4		4
Home Economics Education		4	4
Horticulture	6		6
Industrial Education	1		1
Mathematics	5	2	7
Mechanical Engineering	1		1
Music	3		3
Physical Education	3		3
Physical Science Teaching		3	3
Physics	4		4
Poultry Husbandry	1		1
Psychology	4	1	5
Sociology	2		2
Speech	2		2
Surgery and Medicine	1		1
Zoology	6	1	7
Technical Journalism		1	1
Pathology	3		3
GRADUATE SCHOOL (Ph. D.)	26		26
Agronomy	3		3
Animal Nutrition	2		2
Applied Mechanics	1		1
Bacteriology	3		3
Botany	1		1
Chemistry	8		8
Entomology	5		5
Genetics	1		1
Parasitology	2		2

Tabulation for First, Second and Summer Semester 1955-56

(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	135	3	109		62		98				404	3	407
Agriculture (Two-Year)			2								2		2
Agric. Administration	40		34		17		37		1		129		129
Agric. Economics	4		5								9		9
Agric. Education	59		57		26		33				175		175
Agric. Journalism	2	1	4		4		3				13	1	14
Dairy Manufacturing	14		12		8		6				40		40
Feed Technology	19		15		6		16				56		56
Horticulture (Specialized)	2	1	5		1		1				9	1	10
Landscape Design	7		8		2		2		1		20		20
Milling Technology	16		6		7		11				40		40
Technical Agronomy	10		11	1	1		12				40	1	41
Soil Conservation							1				1		1
Special Students									4		4		4
TOTAL	308	5	268	1	140		220		6		942	6	948

SCHOOL OF ARTS AND SCIENCES

Humanities	27	50	30	45	15	17	20	34	1	2	93	148	241
Social Science	49	27	64	30	20	10	56	30			189	97	286
Biological Science	29	38	48	28	11	17	45	8	1		134	91	225
Business Administration	198	38	150	26	89	7	149	12	5		591	83	674
Chemistry (Professional)	12	3	11	1	2		6				31	4	35
Elementary Education	9	134	13	157	7	101	11	101	1	11	41	504	545
Geology (Professional)	37		31	2	10		11		1		90	2	92
Secondary Education	14	6	7	9	7	5	5	1			33	21	54
Music, Applied	1	3	1				1	1			3	4	7
Music Education	12	9	7	12	1	9	5	10			25	40	65
Physical Education	44	19	28	9	11	5	27	10			110	43	153
Physical Science	25	6	16	6	23	1	45	4			109	17	126
Physics	6	1	3	1	5		7				21	2	23
Pre-Veterinary	90	3	108	2	2		1		1		202	5	207
Technical Journalism	20	11	10	12	9	1	16	7			55	31	86
Special Students		1	1			1			30	44	31	46	77
TOTAL	573	349	528	340	212	174	405	218	40	57	1758	1138	2896

SCHOOL OF ENGINEERING AND ARCHITECTURE

Agric. Engineering	28		16		11		16		4		75		75
Arch. Engineering	16		20	1	6		16		2		60	1	61
Architecture	61		53	5	24		47	1	8		193	6	199
Chem. Engineering	27		32		26		23		1		109		109
Civil Engineering	71		78	1	24		54		2		229	1	230
Electrical Engineering	141		110		55		104	1	10		420	1	421
Industrial Arts					1						1		1
Industrial Education	3		10		5		7		1		26		26
Industrial Engineering	9	1	15		11		9				44	1	45
Industrial Technology	8		7		5		6		2		28		28
Mechanical Engineering	149		106		74		68		11		408		408
Nuclear Engineering	19	1	16		3		5				43	1	44
Special Students	1		1						8		10		10
TOTAL	533	2	464	7	245		355	2	49		1646	11	1657

SCHOOL OF HOME ECONOMICS

Home Economics		126		94		64		140		1		425	425
Diet. and Inst. Mngt		13	1	7	1	12	2	11			4	43	47
Home Econ. and Journ.		16		8		3		12			39		39
Home Econ. and Nursing		27		9		1		1		1	39		39
Restaurant Management		1		2		2	1				5	1	6
Special Students		1									1		1
TOTAL	1	183	3	118	3	81	2	164		2	9	548	557

SCHOOL OF VETERINARY MEDICINE

Veterinary Medicine	71		62	1	58		62	1			253	2	255
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SUMMARY

Total Undergraduate	1486	539	1325	467	658	255	1044	385	95	59	4608	1705	6313
Dual Assignment			3	1	1		18				22	1	23
Net Total Undergraduates	1486	539	1322	466	657	255	1026	385	95	59	4586	1704	6290
Graduate School											708	204	912
Total											5294	1908	7202
Undergraduate Students Taking Graduate Work											71	6	77
GRAND TOTAL											5223	1902	7125

Tabulation for Summer Session 1956

SCHOOL OF AGRICULTURE

	Freshmen		Sophomores		Juniors		Seniors		Specials		Totals		Total
	M	W	M	W	M	W	M	W	M	W	M	W	
Agriculture	5		5		9		9				28		28
Agric. Administration			4		3		4				11		11
Agricultural Education	6		8		6		7				27		27
Agricultural Journalism					1						1		1
Dairy Manufacturing	3		1		2						6		6
Feed Technology	3		4				2				9		9
Horticulture (Specialized)	1										1		1
Landscape Design	1		3								4		4
Milling Technology	3		1				3				7		7
Technical Agronomy	3		1	1			3				7	1	8
TOTAL	25		27	1	21		28				101	1	102

SCHOOL OF ARTS AND SCIENCES

Humanities	3	6	3	4	3	4	6	11		1	15	26	41
Social Science	7	2	12	9	4	1	15	5			38	17	55
Biological Science	3	9	7	4		2	6	1			16	16	32
Business Administration	22	2	26	2	19	1	28	1	1		96	6	102
Chemistry	2	1	1				1				4	1	5
Elementary Education	1	38	8	54	5	63	9	44		8	23	207	230
Secondary Education	1	2	2	3	3	3	3	1			9	9	18
Music, Applied								1				1	1
Music Education	1	1	3	2		6	2	1			6	10	16
Physical Education (Men) ..	2		5				3				10		10
Physical Education (Women)		1		3				1				5	5
Physical Science	5	1	12	1	10		16	1			43	3	46
Physics (Professional)			1	1			1				2	1	3
Pre-Veterinary	21	1	20		1				1		43	1	44
Technical Journalism	2	2	1	2	2		2				7	4	11
Special Students									18	26	18	26	44
TOTAL	70	66	101	85	47	80	92	67	20	35	330	333	663

SCHOOL OF ENGINEERING AND ARCHITECTURE

Agric. Engineering	2		2		2		1		2		9		9
Arch. Engineering	1		7		3		5				16		16
Architecture	4		11		9		22		3		49		49
Chemical Engineering	1		5		2		5				13		13
Civil Engineering	11		18		3		7				39		39
Electrical Engineering	35		30		13		15		6		99		99
Industrial Arts					1						1		1
Industrial Education			6		2						8		8
Industrial Engineering	2		5		3		3				13		13
Industrial Technology			2		4		1				7		7
Mechanical Engineering	28		17		8		9		2		64		64
Nuclear Engineering	1	1	3		1						6	1	7
Special Students									6		6		6
TOTAL	86	1	106		51		68		19		330	1	331

SCHOOL OF HOME ECONOMICS

Home Economics		7		18		15		25				65	65
Diet. and Inst. Management		1			1	1	1				2	2	4
Home Econ. and Journ.				1		2		2				5	5
Home Econ. and Nursing		1		7				1				9	9
TOTAL		9		26	1	18	1	28			2	81	83

SCHOOL OF VETERINARY MEDICINE

Veterinary Medicine	19						1				20		20
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SUMMARY

Total Undergraduate	200	76	234	112	120	98	190	95	39	35	783	416	1199
Dual Assignment					1		2				3		3
Net Total Undergraduate	200	76	234	112	119	98	188	95	39	35	780	416	1196
Graduate School											382	137	519
Total											1162	553	1715
Undergraduate Students Taking Graduate Work											3		3
GRAND TOTAL											1159	553	1712

Tabulation for First and Second Semester 1955-56

(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	141	3	116		58		101				416	3	419
Agriculture (Two-Year)			2								2		2
Agric. Administration	42		34		17		38		1		132		132
Agricultural Economics	1										1		1
Agricultural Education	60		57		26		39				182		182
Agricultural Journalism	1	1	4		4		4				13	1	14
Dairy Manufacturing	9		10		8		6				33		33
Feed Technology	21		13		6		15				55		55
Horticulture (Specialized)	2	1	5		1		1				9	1	10
Landscape Design	7		9		2		3		1		22		22
Milling Technology	17		6		8		11				42		42
Technical Agronomy	9		10		7		12				38		38
Soil Conservation							1				1		1
Special Students									4		4		4
TOTAL	310	5	266		137		231		6		950	5	955

SCHOOL OF ARTS AND SCIENCES

Biological Science	30	33	39	28	12	17	47	8			128	86	214
Humanities	26	41	30	47	13	14	21	29	1		91	131	222
Social Science	45	27	63	27	18	10	59	30			185	94	279
Business Administration	193	38	147	25	86	7	146	12	5		577	82	659
Chemistry	12	2	11	1	2		6				31	3	34
Elementary Education	8	104	8	121	3	51	8	71			27	347	374
Geology	36		29	2	10		10		1		86	2	88
Secondary Education	11	3	4	5	8	2	5	1			28	11	39
Music, Applied	1	3	2				1	1			4	4	8
Music Education	10	8	6	11	1	7	6	10			23	36	59
Physical Education	43	22	29	9	11	5	28	11			111	47	158
Physics	4	1	3	1	3		6				16	2	18
Physical Science	25	6	17	6	24		50	4			116	16	132
Pre-Veterinary	89	4	111	2	2		1				203	6	209
Technical Journalism	20	12	10	11	9	1	16	7			55	31	86
Special Students									15	25	15	25	40
TOTAL	553	304	509	296	202	114	410	184	22	25	1696	923	2619

SCHOOL OF ENGINEERING AND ARCHITECTURE

Agric. Engineering	28		16		11		16		4		75		75
Arch. Engineering	15		21	1	6		15		2		59	1	60
Architecture	61		51	5	24		46	1	7		189	6	195
Chemical Engineering	29		30		26		21		1		107		107
Civil Engineering	70		76	1	24		54		2		226	1	227
Electrical Engineering	138		109		56	1	103	1	10		416	2	418
Industrial Education	3		10		5		7		1		26		26
Industrial Engineering	9	1	14		6		9				38	1	39
Industrial Technology	7		7		5		6		1		26		26
Mechanical Engineering	141		107		73		69		9		399		399
Nuclear Engineering	19		16		4		6		1		46		46
Special Students									4		4		4
TOTAL	520	1	457	7	240	1	352	2	42		1611	11	1622

SCHOOL OF HOME ECONOMICS

Home Economics		127		94		60		135			416		416
Diet. and Inst. Management		13	1	7	1	12	2	11			4	43	47
Home Econ. and Journ.		18		8		3		12				41	41
Home Econ. and Nursing		29		9		1		2				41	41
Restaurant Management		1		2		2		1			5	1	6
Special Students										1		1	1
TOTAL	1	187	3	118	3	77	2	160		1	9	543	552

SCHOOL OF VETERINARY MEDICINE

Veterinary Medicine	71		65	2	58		63	1			257	3	260
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SUMMARY

Total Undergraduate	1455	497	1300	423	640	192	1024	381	70	26	4523	1485	6008
Dual Assignment			4		1		17				22		22
Net Total Undergraduate	1455	497	1296	423	639	192	1007	381	70	26	4501	1485	5986
Graduate School											506	95	601
Total											5007	1580	6587
Undergraduate Students Taking Graduate Work											61	6	67
GRAND TOTAL											4946	1574	6520

Tabulation for First, Second and Summer Semester 1956-57

(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	107	2	96	2	94	.....	96	.....	1	.....	394	4	398
Agric. Administration	2	.....	23	.....	22	.....	29	.....	.....	.....	76	.....	76
Agricultural Economics	21	.....	19	.....	12	.....	2	.....	.....	.....	54	.....	54
Agric. Econ. (Technical) .....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	1	.....	1
Agricultural Education	56	.....	40	.....	45	.....	43	.....	.....	.....	184	.....	184
Agricultural Journalism	1	.....	1	.....	3	.....	4	.....	.....	.....	9	.....	9
Dairy Manufacturing	8	.....	22	.....	12	.....	11	.....	.....	.....	53	.....	53
Feed Technology	23	.....	20	.....	19	.....	10	.....	.....	.....	72	.....	72
Agriculture (Specialized)	8	1	5	.....	5	.....	2	.....	.....	.....	20	1	21
Landscape Design	7	.....	9	.....	6	.....	2	.....	.....	.....	24	.....	24
Milling Technology	9	.....	12	.....	8	.....	14	.....	.....	.....	43	.....	43
Technical Agronomy	9	.....	10	.....	15	.....	13	.....	.....	.....	47	.....	47
Soil Conservation .....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	1	.....	1
Special Students .....	.....	.....	.....	.....	.....	.....	.....	.....	4	.....	4	.....	4
TOTAL	251	3	257	2	242	.....	227	.....	5	.....	982	5	987

SCHOOL OF ARTS AND SCIENCES

Humanities	27	45	25	39	20	40	24	23	1	.....	97	147	244
Social Science	49	27	48	18	47	25	40	12	2	.....	186	82	268
Biological Science	7	28	19	32	19	15	17	3	1	1	63	79	142
Business Administration	171	41	165	33	130	23	121	6	.....	.....	587	103	690
Chemistry (Professional)	7	1	11	4	9	1	4	.....	.....	.....	31	6	37
Elementary Education	5	107	7	128	11	136	13	90	1	6	37	467	504
Geology (Professional)	26	.....	37	.....	40	.....	23	.....	.....	.....	126	.....	126
Secondary Education	23	26	16	14	6	26	9	10	1	.....	55	76	131
Music, Applied	1	4	.....	2	.....	.....	.....	1	.....	.....	1	7	8
Music Education	5	12	5	9	7	7	4	10	.....	.....	21	38	59
Physical Education	42	19	28	16	17	6	21	7	.....	.....	108	48	156
Physical Science	19	4	21	3	29	7	41	2	.....	1	110	17	127
Physics (Professional)	6	.....	12	1	7	1	6	.....	.....	.....	31	2	33
Pre-Medicine	27	2	17	2	20	.....	8	.....	.....	.....	72	4	76
Pre-Veterinary	109	3	108	.....	1	.....	.....	.....	.....	.....	218	3	221
Technical Journalism	12	8	14	8	9	12	15	1	.....	.....	50	29	79
Special Students .....	.....	1	1	.....	.....	.....	.....	.....	17	53	18	54	72
TOTAL	536	328	534	309	372	299	346	165	23	61	1811	1162	2973

SCHOOL OF ENGINEERING AND ARCHITECTURE

Agricultural Engineering	29	.....	32	.....	20	.....	23	.....	2	.....	106	.....	106
Arch. Engineering	19	.....	15	.....	15	1	18	.....	.....	.....	67	1	68
Architecture	60	2	78	2	42	5	56	.....	12	.....	248	9	257
Chemical Engineering	31	.....	34	.....	39	.....	25	.....	2	.....	131	.....	131
Civil Engineering	75	.....	79	.....	61	1	47	.....	5	.....	267	1	268
Electrical Engineering	152	1	161	.....	119	.....	106	.....	12	.....	550	1	551
Industrial Education	6	.....	5	.....	7	.....	8	.....	.....	.....	26	.....	26
Industrial Engineering	11	.....	12	1	22	.....	14	.....	2	.....	61	1	62
Industrial Technology	11	.....	16	.....	8	.....	8	.....	1	.....	44	.....	44
Mechanical Engineering	151	1	130	.....	100	.....	97	.....	17	.....	495	1	496
Nuclear Engineering	27	2	20	.....	12	.....	4	.....	1	.....	64	2	66
Special Students	1	.....	.....	.....	.....	.....	.....	.....	7	1	8	1	9
TOTAL	573	6	582	3	445	7	406	.....	61	1	2067	17	2084

SCHOOL OF HOME ECONOMICS

Home Economics .....	.....	120	.....	120	.....	81	.....	100	.....	.....	421	.....	421
Diet. and Inst. Management .....	.....	9	.....	11	1	7	2	10	.....	.....	3	.....	37
Home Econ. and Journ. .....	.....	9	.....	11	.....	6	.....	4	.....	.....	.....	.....	30
Home Econ. and Nursing .....	.....	31	.....	15	.....	1	.....	1	.....	.....	.....	.....	48
Restaurant Management .....	.....	.....	.....	2	.....	.....	.....	1	.....	.....	.....	.....	2
Special Students .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	13	.....	.....	13
TOTAL .....	.....	169	2	157	1	96	4	116	.....	13	7	551	538

SCHOOL OF VETERINARY MEDICINE

Veterinary Medicine	72	2	68	63	1	58	261	3	264
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SUMMARY

Total Undergraduate	1432	508	1443	471	1123	403	1041	281	89	75	5128	1738	6866
Dual Assignment	1	.....	2	.....	3	4	14	.....	.....	.....	20	4	24
Net Total Undergraduate	1431	508	1441	471	1120	399	1027	281	89	75	5108	1734	6842
Graduate School .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	767	231	998
Total .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5875	1965	7840
Undergraduate Students Taking Graduate Work .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	96	8	104
GRAND TOTAL .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5779	1957	7736

Tabulation for Summer Session 1957

SCHOOL OF AGRICULTURE

	Freshmen		Sophomores		Juniors		Seniors		Specials		Totals		Total
	M	W	M	W	M	W	M	W	M	W	M	W	
Agriculture	3		3	2	12		5				23	2	25
Agric. Administration			1		4		1				6		6
Agricultural Economics	3		2		3						8		8
Agric. Economics (Technical)					1						1		1
Agricultural Education	7		6		7		10				30		30
Dairy Manufacturing	1		7		6						14		14
Feed Technology			1		5		2				8		8
Horticulture (Specialized)	1		1		1						3		3
Landscape Design	1		4		2		1				8		8
Milling Technology			2		3						5		5
Technical Agronomy	1		2		1		1				5		5
Special Students									1		1		1
TOTAL	17		29	2	45		20		1		112	2	114

SCHOOL OF ARTS AND SCIENCES

Humanities	2	5	3	6	4	9	5	2			14	22	36
Social Science	4	4	5	2	7	5	8	3	1		25	14	39
Biological Science	1	6	4	5	2	1	3			1	10	13	23
Business Administration	19	5	34	5	47	4	24				124	14	138
Pre-Medicine	4	1	1		4						9	1	10
Chemistry	1		2	2	2						5	2	7
Elementary Education	2	17	3	39	7	80	7	37	1	6	20	179	199
Geology (Professional)	5		9		17		7				38		38
Secondary Education	3		3	2	2	9		2			8	13	21
Music		4	3	4	4	2	1				8	10	18
Physical Education	3	1	2	4	2						7	5	12
Physical Science	4		6	1	9		7	1		1	26	3	29
Physics (Professional)	2		5		2	1	2				11	1	12
Pre-Veterinary	12		32								44		44
Technical Journalism	1	2	4	2	3	2	1	1			9	7	16
Special Students									9	36	9	36	45
TOTAL	63	45	116	72	112	113	65	46	11	44	367	320	687

SCHOOL OF ENGINEERING AND ARCHITECTURE

Agric. Engineering	1		2		2		1				6		6
Arch. Engineering	1		1		5		6				13		13
Architecture	3		9		18	2	17		6		53	2	55
Chemical Engineering	1		2		8		6				17		17
Civil Engineering	9		10		9		9				37		37
Electrical Engineering	25		41		38		17		4		125		125
Industrial Education	1				4		3				8		8
Industrial Engineering	4		3	1	12		3				22	1	23
Industrial Technology	2		4		1		3				10		10
Mechanical Engineering	19		18		8		11		2		58		58
Nuclear Engineering	1		2		5				1		9		9
Special Students									7		7		7
TOTAL	67		92	1	110	2	76		20		365	3	368

SCHOOL OF HOME ECONOMICS

Home Economics		8		14		20		6				48	48
Diet. and Inst. Management				1			1				1	1	2
Home Econ. and Journ.		1		2		1						4	4
Home Econ. and Nursing		2		10								12	12
Special Students									3			3	3
TOTAL		11		27		21	1	6		3	1	68	69

SCHOOL OF VETERINARY MEDICINE

Veterinary Medicine	6										6		6
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SUMMARY

Total Undergraduate	153	56	237	102	267	136	162	52	32	47	851	393	1244
Dual Assignment			1		2	2	4				7	2	9
Net Total Undergraduate	153	56	236	102	265	134	158	52	32	47	844	391	1235
Graduate School											412	160	572
Total											1256	551	1807
Undergraduate Students Taking Graduate Work											10	1	11
GRAND TOTAL											1246	550	1796

Tabulation for First and Second Semester 1956-57

(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	105	2	96	2	93		98		1		393	4	397
Agric. Administration	2		23		22		28				75		75
Agricultural Economics	21		18		11		2				52		52
Agric. Econ. (Technical)			1		1						2		2
Agricultural Education	56		40		43		44				183		183
Agricultural Journalism	1		1		3		4				9		9
Dairy Manufacturing	8		20		12		14				54		54
Feed Technology	22		22		18		9				71		71
Horticulture (Specialized) ..	8	1	5		5		2				20	1	21
Landscape Design	6		9		6		2				23		23
Milling Technology	10		10		8		15				43		43
Technical Agronomy	9		10		15		13				47		47
Soil Conservation							1				1		1
Special Students									3		3		3
TOTAL	248	3	255	2	237		232		4		976	5	981

SCHOOL OF ARTS AND SCIENCES

Biological Science	7	27	18	32	19	15	17	3	1		62	77	139
Humanities	27	43	25	39	20	37	23	21	1	1	96	141	237
Social Science	48	25	47	16	45	24	40	10	1		181	75	256
Business Administration	164	38	168	32	128	23	115	6			575	99	674
Chemistry	7	2	11	3	8	1	4				30	6	36
Elementary Education	4	92	4	100	6	82	6	59			20	333	353
Geology	23		35		41		22				121		121
Secondary Education	23	24	15	14	7	21	9	7	1		55	66	121
Music, Applied	2	3		2				1			2	6	8
Music Education	4	10	5	7	7	7	3	10			19	34	53
Physical Education	40	18	27	15	17	6	21	7			105	46	151
Physics	5		10	1	8	1	6				29	2	31
Physical Science	19	4	23	2	26	7	42	2			110	15	125
Pre-Medicine	26	1	18	2	19	1	8				71	4	75
Pre-Veterinary	110	4	105		1						216	4	220
Technical Journalism	12	6	13	7	9	11	15	2			49	26	75
Special Students		1	1						12	20	13	21	34
TOTAL	521	298	525	272	361	236	331	128	16	21	1754	955	2709

SCHOOL OF ENGINEERING AND ARCHITECTURE

Agricultural Engineering	30		32		20		23		3		108		108
Arch. Engineering	19		15		16	1	18		1		69	1	70
Architecture	59	2	79	2	42	5	55		8		243	9	252
Chemical Engineering	30		34		39		24		2		129		129
Civil Engineering	72		77		61	1	46		5		261	1	262
Electrical Engineering	156	1	161		117		106		13		553	1	554
Industrial Education	5		5		7		7				24		24
Industrial Engineering	9		11	1	21		14		2		57	1	58
Industrial Technology	10		14		8		8		1		41		41
Mechanical Engineering	150	1	128		100		96		17		491	1	492
Nuclear Engineering	28	2	20		11		4		1		64	2	66
Special Students									1	1	1	1	2
TOTAL	568	6	576	3	442	7	401		54	1	2041	17	2058

SCHOOL OF HOME ECONOMICS

Home Economics		120		118		76		96				410	410
Diet. and Inst. Management		9		11	1	7	2	11			3	38	41
Home Econ. and Journalism		8		11		7		4				30	30
Home Econ. and Nursing		31		15		1		1				48	48
Restaurant Management			2			1	2	1			4	2	6
Special Students									11			11	11
TOTAL		168	2	155	1	92	4	113		11	7	539	546

SCHOOL OF VETERINARY MEDICINE

Veterinary Medicine	71	2	69		66	1	59				265	3	268
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SUMMARY

Total Undergraduate	1408	477	1427	432	1107	336	1027	241	74	33	5043	1519	6562
Dual Assignment	1		2		3	3	13				19	3	22
Net Total Undergraduate	1407	477	1425	432	1104	333	1014	241	74	33	5024	1516	6540
Graduate School											570	100	670
Total											5594	1616	7210
Undergraduate Students Taking Graduate Work											90	7	97
GRAND TOTAL											5504	1609	7113

Record of Enrollment and Degrees Conferred, 1863-1957

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...											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...				72	109		79	23	318		348	183	80	74	40	52	1321	60	9	
1901-'02...				41	66		125	87	19	298	396	206	120	65	32	59	1396	52	3	
1902-'03...				63	38		123	78	36	342	471	229	141	86	24	57	1574	55		
1903-'04...	17	51		16	122		72	33	443		403	206	161	114	20	36	1605	102	1	
1904-'05...	15	88		24	99		12	30	500		289	198	122	117	26	43	1462	107	2	
1905-'06...	18	92		28	118			46	598		373	214	145	110	30	64	1690	96	4	
1906-'07...	18	134		23	179			48	144	511	411	269	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			120			560	575	368	383	321	48	200	3089	223	6
1915-'16...	536	85	17		207			175			484	605	454	305	401	76	219	3314	341	18
1916-'17...	586	103	14		228			191			422	693	471	378	282	68	279	3339	197	13
1917-'18...	481	84	8		119			135			231	483	349	294	238	36	190	2406	216	17
1918-'19...	519	25	5		160			400			216	810	322	254	201	34	144	2991	167	7
1919-'20...	415	57	3		117			362			224	894	400	297	273	44	167	3376	260	11
1920-'21...	604	30	10		96			278			280	878	602	318	273	42	294	3395	249	14
1921-'22...	820	19	10		59			173			297	931	628	422	296	125	813	3560	272	28
1922-'23...	884	19	8		55			83			220	1004	656	460	401	118	457	3626	341	31
1923-'24...	978	12	7		43			57			167	1160	657	458	413	171	475	3812	342	43
1924-'25...	1120	14	14		55			54			47	1391	679	467	347	185	486	4031	335	53
1925-'26...	947	12	11		41			29			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			1077	790	605	528	506	589	4045	424	91	
1931-'32...	1059		12		29			54			933	752	633	572	572	688	3928	486	119	

RECORD OF ENROLLMENT AND DEGREES CONFERRED, 1863-1957—CONCLUDED

YEAR	Summer school	Housekeepers' short course	Dairy Mfg. short course	Dairy short course	Farmers' short course	Apprentice	Special	Preparatory	Vocational school	Subfreshman	Freshman	Sophomore	Junior	Senior	Graduate	Counted twice	Net total	Graduated	Advanced degrees
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						175				1950	1501	825	1178	812	65	6376	928	167
1955-'56....	1712						154				2025	1788	912	1411	912	77	7125	1012	169
1956-'57....	1796						159				1939	1912	1519	1281	894	128	7736	1128	218

* 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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